Canadian National Vegetation Classification:

Status report of units described in Canada [draft]

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May 3, 2022

Citations:

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These data are extracted from:

NatureServe. 2022. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA. U.S.A. Data current as of **Error! Reference source not found.**.

[1] NatureServe is an international organization including NatureServe regional offices, a NatureServe central office, U.S. State Natural Heritage Programs, a national program in Canada (NatureServe Canada) and Conservation Data Centres (CDC) in Canada. Ecologists from the following organizations have contributed the development of the CNVC classification, which at broad scales contains types that cover North America and beyond.:

United States

Central NatureServe Office, Arlington, VA; Eastern Regional Office, Boston, MA; Midwestern Regional Office, Minneapolis, MN; Southeastern Regional Office, Durham, NC; Western Regional Office, Boulder, CO; Alabama Natural Heritage Program, Montgomery AL; Alaska Natural Heritage Program, Anchorage, AK; Arizona Heritage Data Management Center, Phoenix AZ; Arkansas Natural Heritage Commission Little Rock, AR; Blue Ridge Parkway, Asheville, NC; California Natural Heritage Program, Sacramento, CA; Colorado Natural Heritage Program, Fort Collins, CO; Connecticut Natural Diversity Database, Hartford, CT; Delaware Natural Heritage Program, Smyrna, DE; District of Columbia Natural Heritage Program/National Capital Region Conservation Data Center, Washington DC; Florida Natural Areas Inventory, Tallahassee, FL; Georgia Natural Heritage Program, Social Circle, GA; Great Smoky Mountains National Park, Gatlinburg, TN; Gulf Islands National Seashore, Gulf Breeze, FL; Hawaii Natural Heritage Program, Honolulu, Hawaii; Idaho Conservation Data Center, Boise, ID; Illinois Natural Heritage Division/Illinois Natural Heritage Database Program, Springfield, IL; Indiana Natural Heritage Data Center, Indianapolis, IN; Iowa Natural Areas Inventory, Des Moines, IA; Kansas Natural Heritage Inventory, Lawrence, KS; Kentucky Natural Heritage Program, Frankfort, KY; Louisiana Natural Heritage Program, Baton Rouge, LA; Maine Natural Areas Program, Augusta, ME; Mammoth Cave National Park, Mammoth Cave, KY; Maryland Wildlife & Heritage Division, Annapolis, MD; Massachusetts Natural Heritage & Endangered Species Program, Westborough, MA; Michigan Natural Features Inventory, Lansing, MI; Minnesota Natural Heritage & Nongame Research and Minnesota County Biological Survey, St. Paul, MN; Mississippi Natural Heritage Program, Jackson, MI; Missouri Natural Heritage Database, Jefferson City, MO; Montana Natural Heritage Program, Helena, MT; National Forest in North Carolina, Asheville, NC; National Forests in Florida, Tallahassee, FL; National Park Service, Southeastern Regional Office, Atlanta, GA; Navajo Natural Heritage Program, Window Rock, AZ; Nebraska Natural Heritage Program, Lincoln, NE; Nevada Natural Heritage Program, Carson City, NV; New Hampshire Natural Heritage Inventory, Concord, NH; New Jersey Natural Heritage Program, Trenton, NJ; New Mexico Natural Heritage Program, Albuquerque , NM; New York Natural Heritage Program, Latham, NY; North Carolina Natural Heritage Program, Raleigh, NC; North Dakota Natural Heritage Inventory, Bismarck, ND; Ohio Natural Heritage Database, Columbus, OH; Oklahoma Natural Heritage Inventory, Norman, OK; Oregon Natural Heritage Program, Portland, OR; Pennsylvania Natural Diversity Inventory, PA; Rhode Island Natural Heritage Program, Providence, RI; South Carolina Heritage Trust, Columbia, SC; South Dakota Natural Heritage Data Base, Pierre, SD; Tennessee Division of Natural Heritage, Nashville, TN; Tennessee Valley Authority Heritage Program, Norris, TN; Texas Conservation Data Center, San Antonio, TX; Utah Natural Heritage Program, Salt Lake City, UT; Vermont Nongame & Natural Heritage Program, Waterbury, VT; Virginia Division of Natural Heritage, Richmond, VA; Washington Natural Heritage Program, Olympia, WA; West Virginia Natural Heritage Program, Elkins, WV; Wisconsin Natural Heritage Program, Madison, WI; Wyoming Natural Diversity Database, Laramie, WY

Canada

Alberta Natural Heritage Information Centre, Edmonton, AB, Canada; Atlantic Canada Conservation Data Centre, Sackville, New Brunswick, Canada; British Columbia Conservation Data Centre, Victoria, BC, Canada; Manitoba Conservation Data Centre. Winnipeg, MB, Canada; Ontario Natural Heritage Information Centre, Peterborough, ON, Canada; Quebec Conservation Data Centre, Quebec, QC, Canada; Saskatchewan Conservation Data Centre, Regina, SK, Canada; Yukon Conservation Data Centre, Yukon, Canada

NatureServe also has partnered with many International and United States Federal and State organizations, which have also contributed significantly to the development of the International Vegetation Classification. Partners include the following The Nature Conservancy; Provincial Forest Ecosystem Classification Groups in Canada; Canadian Forest Service; Parks Canada; United States Forest Service; National GAP Analysis Program; United States National Park Service; United States Fish and Wildlife Service; United States Geological Survey; United States Department of Defense; Ecological Society of America; Environmental Protection Agency; Natural Resource Conservation Services; United States Department of Energy; and the Tennessee Valley Authority. Many individual state organizations and people from academic institutions have also contributed to the development of this classification.

TABLE OF CONTENTS

1. FOREST & WOODLAND

Tropical, temperate and boreal forests, woodlands and tree savannas characterized by broadly mesomorphic (including scleromorphic) tree growth forms (including *broad-leaved, needle-leaved, sclerophyllous, palm, bamboo trees*, and *tree ferns*), typically with at least 10% cover (but tropical tree savannas up to 40% cover, when trees <8 m tall), irregular horizontal spacing of vegetation structure, and spanning humid to seasonally dry tropical to boreal and subalpine climates and wet to dry substrate conditions. Includes native forests, as well as managed, and some plantation forests where human management is infrequent.

1.B. Temperate & Boreal Forest & Woodland

Temperate & Boreal Forest & Woodland is typically dominated by broad-leaved deciduous and needle-leaved trees, with some broad-leaved evergreens in warmer regions, and a climate that varies from warm-temperate with only rare frosts to very cold subarctic conditions. It is found across the globe in the mid-latitudes, typically between 25° and 60-70°N and S latitude, and includes boreal, cool-temperate, and warm-temperate/Mediterranean forests.

1.B.2. Cool Temperate Forest & Woodland

Cool Temperate Forest & Woodland includes temperate deciduous forest and woodland, temperate needle-leaved forest and woodland, and temperate rainforest, dominated by broad-leaved or needle-leaved tree growth forms.

Macrogroups in Canada:

- **CM742a Warm Eastern Canadian Temperate Deciduous Forest []**
- **M882 Central Midwest Mesic Forest []**
  These hardwood forests are dominated by a mixture of *Acer saccharum, Fagus grandifolia, Quercus rubra*, and *Tilia americana* found on rich, mesic sites in the central hardwood region of the Midwest from Ohio to the Ozark/Ouachita regions and west into the eastern Great Plains.
- **M012 Central Midwest Oak Forest, Woodland & Savanna []**
  This north-central oak - hardwood type, with closed forest to open savanna and barrens structure, is dominated by oak and hickory tree species within glaciated regions of the Midwest, from southern Minnesota to northern Missouri and east to western New York and southern Ontario. It is found on dry to dry-mesic sites on primarily glaciated sandy to loamy soils. Fire is critical to maintaining the oak species and the diverse herb and shrub layers.
- **CM014-2 Eastern North American Temperate Hardwood-Conifer Forest - Mesic [Forêts mixtes de la zone tempérée de l'Est de l'Amérique du Nord - mésiques]**
- **CM742b Cool Eastern Canadian Temperate Deciduous Forest []**
- **CM014-1 Eastern North American Temperate Hardwood-Conifer Forest - Dry [Forêts mixtes de la zone tempérée de l'Est de l'Amérique du Nord - sèches]**
- **CM744 Acadian Temperate Forest [Forêts acadiennes de la zone tempérée]**
- **M013 Eastern North American Ruderal Forest []**
  This ruderal forest macrogroup is found in eastern temperate North America, and shows evidence of former and heavy human disturbance, including to the soil, and contains a disparate mix of exotic and generalist native tree, shrub and herb species.
- **M500 Central Rocky Mountain Mesic Lower Montane Forest [Forêts mésiques des montagnes de faible altitude du centre des Rocheuses]**
  Mesic to moist conifer forests and woodlands of the lower montane zone of the central Rocky Mountains and interior Pacific Northwest, including the eastern Cascades. *Abies grandis, Larix occidentalis, Pseudotsuga menziesii, Thuja plicata*, or *Tsuga heterophylla* are the major dominants.
- **M501 Central Rocky Mountain Dry Lower Montane - Foothill Forest [Forêts sèches des montagnes de faible altitude et du piémont du centre des Rocheuses]**
  Conifer forests, woodlands and savannas of *Pinus ponderosa* and *Pseudotsuga menziesii*, with *Pinus flexilis* and *Juniperus scopulorum*, found on dry settings of the lower montane to foothill zones of the interior Pacific Northwest, and extending east into the northwestern Great Plains regions.
- **M020 Rocky Mountain Subalpine - High Montane Forest [Forêts subalpines et des montagnes de haute altitude des Rocheuses]**
  This is a diverse macrogroup of high montane and subalpine forests and woodland found throughout the mountainous regions of the western U.S. and southwestern Canada.
- **M890 Rocky Mountain Intermontane Subboreal Forest [Forêts subboréales intermontagneuses des Rocheuses]**
- **M024 Vancouverian Coastal Rainforest [Forêts pluviales côtières de la région floristique de Vancouver]**
  This macrogroup consists of lowland temperate rainforests of the Pacific Northwest, dominated by *Abies amabilis, Acer macrophyllum, Alnus rubra, Arbutus menziesii, Chamaecyparis lawsoniana, Picea sitchensis, Pinus contorta var. contorta, Pseudotsuga menziesii, Sequoia sempervirens, Thuja plicata*, and/or *Tsuga heterophylla*. Forests range from coastal very wet hypermaritime to slightly less wet leeward sites.
- **M025 Vancouverian Subalpine - High Montane Forest [Forêts subalpines et des montagnes de haute altitude de la région floristique de Vancouver]**
  These are short to tall, dense to open forests, tree islands and large forest patches dominated by *Abies amabilis, Abies lasiocarpa, Abies magnifica var. magnifica, Abies magnifica var. shastensis, Abies procera, Callitropsis nootkatensis, Pinus albicaulis, Pinus balfouriana, Pinus contorta var. murrayana, Pinus monticola*, and/or *Tsuga mertensiana*. These Pacific coastal subalpine forests approach treeline in mountain regions of the Pacific states, extending from low elevations in southeastern Alaska south into high montane regions of Baja California, Mexico, and the Sierra Nevada of California.
- **M886 Southern Vancouverian Dry Foothill Forest & Woodland [Forêts et terres boisées sèches du piémont du sud de la région floristique de Vancouver]**
- **M405 Vancouverian Ruderal Forest []**
  This macrogroup consists of stands of native and exotic species that establish on soil disturbed sites or of naturalized stands of non-native tree species that have escaped from cultivation, reside in abandoned plantations, were deliberately planted or have otherwise become naturalized on upland sites; dominant non-native species include *Acer platanoides, Crataegus arborea, Ilex aquifolium, Ilex crenata, Pinus nigra, Pinus sylvestris*, or *Prunus padus*.

- **M151 Great Plains Forest & Woodland [Forêts & terres boisées des Grandes Plaines]**
  This macrogroup contains aspen, oak, and mixed hardwood woodlands dominated by *Quercus macrocarpa, Populus tremuloides*, or *Betula papyrifera*, often with an understory dominated by prairie shrubs, grasses and forbs that are more tolerant of shade. It is found throughout northern Great Plains, from central Kansas to the Canadian aspen parkland region.

CM742a Warm Eastern Canadian Temperate Deciduous Forest

[ ]

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: The provisional split of CM742 into its warm and cool submacrogroups is not yet reflected in this description, which was written for the full CM742 concept. CM742 describes the upland temperate forests of southern Ontario as well as the southwestern portion of Quebec. Forest canopies are primarily composed of cold-deciduous broad-leaved species. Anthropogenic disturbance is the dominant factor in determining forest composition, dynamics and distribution. Windthrow, ice loading and insect infestations are the most widespread forms of natural disturbance; fire is generally not a natural disturbance factor. Dominant tree species include sugar maple (*Acer saccharum*), red maple (*A. rubrum*), white ash (*Fraxinus americana*), American basswood (*Tilia americana*) and American beech (*Fagus grandifolia*). Eastern hop-hornbeam (*Ostrya virginiana*), black cherry (*Prunus serotina*) and northern red oak (*Quercus rubra*) are common canopy associates throughout the range; eastern white pine (*Pinus strobus*) is occasional. Balsam fir (*Abies balsamifera*), yellow birch (*Betula alleghanensis*), eastern hemlock (*Tsuga canadensis*), eastern white cedar (*Thuja occidentalis*) and white spruce (*Picea glauca*) are companion species on cooler sites, especially in the northern portion of the range. Hickories (*Carya* spp.), white oak (*Quercus alba*) and blue-beech (*Carpinus caroliniana*) are more common on warmer sites and in southern parts of the range. Depending on overstory and site conditions, understory shrub and herb layers vary from dense to sparse. Shrub layers are typically rich in regenerating maples and/or other broad-leaved tree species, together with cold-deciduous broad-leaved shrubs and vines such as alternate-leaved dogwood (*Cornus alternifolia*), eastern prickly gooseberry (*Ribes cynosbati*), Canada fly-honeysuckle (*Lonicera canadensis*) and poison ivy (*Toxicodendron radicans*). Typical herb/dwarf shrub species include trilliums (*Trillium* spp.), hairy Solomon's seal (*Polygonatum pubescens*), large false Solomon's seal (*Maianthemum racemosum*), wild lily-of-the-valley (*M. canadense*), Jack-in-the-pulpit (*Arisaema triphyllum*) and partridgeberry (*Mitchella repens*). Vernal ephemeral forbs like Carolina spring beauty (*Claytonia caroliniana*), yellow trout lily (*Erythronium americanum*) and wild leek (*Allium tricoccum*) are characteristic of these forests. Numerous native plant species, such as eastern flowering dogwood (*Cornus florida*), black oak (*Quercus velutina*), tulip tree (*Liriodendron tulipifera*) and American ginseng (*Panax quinquefolius*) reach their northern range limits in the southern portion of the CM742 range.

CM742 occurs in the humid, continental cool temperate climate of eastern Canada, generally characterized by cool winters and moist, warm to hot summers. Mean annual temperatures vary from 5°C to >9°C. Mean annual precipitation is >900 mm throughout the range; rainfall significantly exceeds snowfall. Regional geologic and topographic features of the St. Lawrence Lowlands physiographic region produce a mostly subdued topography with low relief, except in the west-central part of the range where the cliffs of the Niagara Escarpment overlook the plains. All parts of the region experienced late Pleistocene glaciation; soils are mostly calcareous Luvisols and Brunisols developed in glacial surficial materials. Two subtypes distinguish regional variation within this Macrogroup. Subtype CM742a [Warm Eastern Canadian Temperate Deciduous Forest] describes forests of warmer sites, mostly near Lake Erie, that are dominated by sugar maple with a floristic assemblage that reflects deciduous forests south of the Great Lakes. CM742b [Cool Eastern Canadian Temperate Deciduous Forest] describes maple-beech-basswood dominated forests that have greater conifer content and occur from Lake Huron eastward into the St. Lawrence valley of southwestern Quebec.

IVC Geographic Range:

IVC Nations: CA

IVC States/Provinces:

ADDITIONAL INFORMATION

CNVC Status: Provisional

Related IVC Macrogroups:

Elcode	Name	Rel to CNVC	Note
M502	Appalachian-Northeastern Oak - Hardwood - Pine Forest & Woodland	<	
M883	Appalachian-Interior-Northeastern Mesic Forest	<	

CNVC Classification Comments: CM742 has provisionally been split into its 2 submacrogroups (warm (CM742a) and cool (CM742b)) to better relate to the USNVC. The submacrogroups are now provisionally considered to be macrogroups. The split is not yet reflected in this description, which was written for the full CM742 concept. CM742 describes temperate, hardwood forests with little conifer content that constitute the northern edge of the eastern North American deciduous forest region, which extends south to the Gulf of Mexico. CM014 [Eastern North American Temperate Hardwood - Conifer Forest] describes the upland cool temperate forests of eastern Canada that are characterized by a conifer - hardwood mixedwood composition with general

presence of *Abies balsamea* in combination with *Betula papyrifera, B. alleghaniensis, Acer rubrum* or *A. saccharum. Pinus strobus, P. resinosa, Picea rubens* and *Tsuga canadensis* are important constituents of CM014 forests and understories contain species with more northern affinities. CM744 [Acadian Temperate Forest] describes temperate forests in maritime-influenced climates of Atlantic Canada, characterized by high abundance of *A. balsamea* and *Picea rubens* in combination with temperate hardwood species.

Many forest and woodland Associations of CM742, and numerous constituent species, occur primarily south of the Great Lakes; Canadian occurrences are restricted to the southern portion of the CM742 range. The combination of natural rarity and intense anthropogenic disturbance has resulted in many ecosystems and species that are considered to be at high risk of extinction in Canada.

Groups in Canada:

- **G742 Appalachian-Northeast Mesic Forest []**
- **G650 Central Appalachian-Northeast Oak Forest & Woodland []**
- **G906 Central Appalachian - Northeast Pine - Oak Rocky Woodland []**
- **G016 Appalachian-Northeast Chinquapin Oak - Red-cedar Alkaline Forest & Woodland []**

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author: K. Baldwin, P. Uhlig, M. Wester
CNVC Description Date: 2019-04-01
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G742 Appalachian-Northeast Mesic Forest

[ ]

IVC Colloquial Name: Appalachian-Northeast Mesic Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This forest group occurs in the central and northeastern U.S., ranging from extreme southern Ontario, north-central New York and lower New England west to Lake Erie and south to the higher elevations of the Carolinas, on relatively cool, mesic sites. Northern hardwoods such as *Acer rubrum, Acer saccharum, Betula alleghaniensis, Betula lenta, Fagus grandifolia, Fraxinus americana, Quercus rubra*, and *Tilia americana* are characteristic, either forming a deciduous canopy or mixed with *Tsuga canadensis* (or in some cases *Pinus strobus*). Other common and sometimes dominant trees include *Quercus* spp. (most commonly *Quercus rubra*, but also *Quercus alba, Quercus montana*), *Aesculus flava, Liriodendron tulipifera*, and *Prunus serotina*. It is of more limited extent and more ecologically constrained in the southern part of its range, in higher elevations of the northern parts of Virginia and West Virginia. This type is one of the matrix forest types in the northern part of the Central Interior and Appalachian Division. In general, this group is dominated by long-lived, mesic species that form multi-layered uneven-aged forests. Canopy dynamics are dominated by single and multiple disturbances, encouraging gap phase regeneration. Larger disturbances include windthrow, insect attack and ice storms. Although stand-replacing wind events are rare, small to medium blowdown events are more common.

IVC Dynamics: In general, this group is dominated by long-lived, mesic species that form multi-layered uneven-aged forests. Canopy dynamics are dominated by single and multiple disturbances encouraging gap phase regeneration (Abrams and Orwig 1996). Larger disturbances include windthrow, insect attack and ice storms. Although stand-replacing wind events are rare, small to medium blowdown events are more common and occur at greater frequency on the plateau and exposed sideslopes (Ruffner and Abrams 2003). This group is currently being devastated in large parts of its range by the hemlock woolly adelgid (*Adelges tsugae*). This sucking insect is continuing to cause close to 100% mortality as it spreads from the north into the southern United States. The insect will most likely cause canopy hemlocks to be replaced by other canopy trees. Historically, this group was probably only subject to occasional fires. Fires that did occur may have been catastrophic and may have led to even-aged stands of pine and hemlock. Fire suppression appears to have increased the extent of this group at the expense of oak-pine systems.

IVC Environment: *Soil/substrate/hydrology:* This group occurs predominantly on mesic sites over a broad range of topographic conditions, such as protected low and midslopes and valley bottoms, at elevations from 305 to 915 m (1000-3000 feet). Soils are usually neutral to acidic, and retain some moisture except during severe droughts. They are moderately well-drained to well-drained loamy or silty soils, and are rocky and usually deep in depressions among boulders. In riparian areas, stands are usually found along high-gradient (1-2%) streams. In the Central Appalachian center of its range, its ecological amplitude is

somewhat broader, and it approaches matrix forest in some areas. At Shenandoah National Park, this group spans a broad range of environmental settings from steep west-facing slopes to south-facing gentle slopes.

DISTRIBUTION

IVC Geographic Range: This group is found from central New England and north-central New York, south to higher elevations in North Carolina, and probably in adjacent eastern Kentucky.

IVC Nations: CA,US

IVC States/Provinces: CT, GA, KY, MA, MD, ME, NC, NH, NJ, NY, OH, ON, PA, QC?, RI, SC?, TN, TV, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G4 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3301 *Acer saccharum - Fagus grandifolia - Tilia americana* Forest Alliance** [Sugar Maple - American Beech - American Basswood Forest Alliance] []
  This forested alliance is dominated by a variety of mesic - transitional northern hardwoods, including *Acer rubrum, Acer saccharum, Betula alleghaniensis, Betula lenta, Fagus grandifolia, Fraxinus americana, Liriodendron tulipifera, Prunus serotina, Quercus rubra*, and *Tilia americana*. It occurs in the northeastern U.S., ranging from central New England west to the Lake Erie-Lake Ontario ecoregion in southern Ontario and south to the higher elevations of Virginia and West Virginia.
- **A4126 *Acer saccharum - Tilia americana - Quercus rubra* Rocky Forest Alliance** [Sugar Maple - American Basswood - Northern Red Oak Rocky Forest Alliance] []
  This semi-rich to rich rocky forest is dominated by *Acer saccharum, Fraxinus americana, Quercus rubra*, and *Tilia americana*, with a relatively rich understory. It occurs from southern New England to southern Ontario south to the Allegheny and central Appalachian Mountains on circumneutral to calcareous talus slopes or shallow rocky soils.
- **A3303 *Quercus rubra - Acer saccharum - Liriodendron tulipifera* Forest Alliance** [Northern Red Oak - Sugar Maple - Tuliptree Forest Alliance] []
  This alliance, found in the Allegheny, Lake Erie-Lake Ontario, and Lower New England regions south to the Central Appalachians, contains mesic forests dominated by *Quercus rubra* with a variety of mesic hardwoods, on shallow to deep, moist to well-drained loams and silt loams on north and east midslopes and coves.
- **A3302 *Tsuga canadensis - Betula lenta - Betula alleghaniensis* Forest Alliance** [Eastern Hemlock - Sweet Birch - Yellow Birch Forest Alliance] []
  This mixed conifer-hardwood forest alliance is dominated by *Tsuga canadensis*, in combination with *Pinus strobus*, mesic hardwoods such as *Acer saccharum, Acer rubrum, Betula alleghaniensis*, and *Fagus grandifolia*, with minor associates of *Betula lenta, Liriodendron tulipifera, Prunus serotina*, and *Quercus rubra*. It occurs in the northeastern U.S. ranges from Lower New England west to the Lake Erie-Lake Ontario ecoregion in Ontario and south to the higher elevations of Virginia and West Virginia.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2012)

IVC Description Author: D. Faber-Langendoen, S.C. Gawler, R. White, R. Evans, M. Pyne

IVC Description Date: 2015-05-05

IVC Acknowledgments:

A3301 Sugar Maple - American Beech - American Basswood Forest Alliance

[ ]

Acer saccharum - Fagus grandifolia - Tilia americana Forest Alliance

Central Appalachian-Northeast Hardwood Forest

IVC Scientific Name: *Acer saccharum - Fagus grandifolia - Tilia americana* Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This forested alliance is dominated by hardwoods, such as *Acer saccharum, Acer rubrum, Fagus grandifolia, Fraxinus americana*, and *Tilia americana*, with common associates of *Betula alleghaniensis, Betula lenta, Liriodendron tulipifera, Prunus serotina*, and *Quercus* spp. (most commonly *Quercus rubra*). The shrub layer is characterized by *Acer pensylvanicum, Amelanchier* spp., *Cornus florida* (most common in the southern part of range), *Hamamelis virginiana, Lindera benzoin, Sambucus racemosa, Staphylea trifolia*, and *Viburnum* spp. This community is characterized by a fairly diverse herbaceous flora. Typical herbs include *Allium tricoccum, Anemone quinquefolia, Asarum canadense, Caulophyllum thalictroides, Cystopteris bulbifera, Dicentra cucullaria, Sanguinaria canadensis*, among others. Characteristic graminoids include *Brachyelytrum erectum, Carex platyphylla, Carex sprengelii, Elymus hystrix*, and *Patis racemosa*. This alliance occurs in the northeastern U.S., ranging from central New England west to the Lake Erie-Lake Ontario ecoregion in southern Ontario and south to the higher elevations of Virginia and West Virginia. Stands occur on both glaciated and unglaciated till, on deep, typically circumneutral to somewhat alkaline, mesic soils. This type is one of the matrix forest types in the region.

IVC Dynamics: Disturbances include windthrow, ice-storm damage, and insects. Fires are very rare.

IVC Environment: Stands occur on both glaciated and unglaciated till, on deep, typically circumneutral to somewhat alkaline, mesic soils.

DISTRIBUTION

IVC Geographic Range: This is found in the southern Lake Erie-Lake Ontario ecoregion, Allegheny Plateau, and Lower New England south to the Central Appalachians. It is of more limited extent and more ecologically constrained in the southern part of its range, in northern parts of Virginia and West Virginia.

IVC Nations: CA,US

IVC States/Provinces: CT, MA, MD, NC, NH, NJ, NY, OH, ON, PA, QC?, RI, TN, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006045** ***Acer saccharum - Betula alleghaniensis - Prunus serotina*** **Forest** [Sugar Maple - Yellow Birch - Black Cherry Forest] []
  G4 (2001-09-28) MD, NY, PA, VA, WV
- **CEGL006632** ***Acer saccharum - Fagus grandifolia - Fraxinus americana / Arisaema triphyllum*** **Forest** [Sugar Maple - American Beech - White Ash / Jack-in-the-Pulpit Forest] []
  G5 (2014-12-02) CT?, MA, NJ, NY, ON, PA
- **CEGL006637** ***Acer saccharum - Tilia americana / Acer pensylvanicum / Caulophyllum thalictroides*** **Forest** [Sugar Maple - American Basswood / Striped Maple / Blue Cohosh Forest] []
  G4? (2014-12-03) CT, MA, MD?, NJ, NY, ON, PA, RI, VA, WV

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A4126 Sugar Maple - American Basswood - Northern Red Oak Rocky Forest Alliance

[ ]

Acer saccharum - Tilia americana - Quercus rubra Rocky Forest Alliance

Central Appalachian-Northeast Rich Rocky Forest

IVC Scientific Name: *Acer saccharum - Tilia americana - Quercus rubra* Rocky Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Canopy dominants of this semi-rich to rich rocky forest are *Acer saccharum, Fraxinus americana*, and *Tilia americana*. Canopy associates include *Carya ovata, Juglans cinerea, Ostrya virginiana, Quercus rubra*, and, less commonly, *Betula alleghaniensis* or *Thuja occidentalis*. The open shrub layer is characterized by *Acer pensylvanicum, Rubus odoratus, Sambucus racemosa, Staphylea trifolia*, and, more rarely, *Cornus rugosa*. This community is characterized by a fairly diverse herbaceous flora. Typical herbs include *Adiantum pedatum, Allium tricoccum, Anemone quinquefolia, Aralia racemosa, Asarum canadense, Caulophyllum thalictroides, Cystopteris bulbifera, Dicentra cucullaria, Dryopteris goldieana, Sanguinaria canadensis*, and others. Characteristic graminoids include *Carex platyphylla, Carex sprengelii, Elymus hystrix*, and *Patis racemosa*. This association can grade into open talus woodland. This alliance occurs from southern New England to the Lake Erie-Lake Ontario ecoregion of southern Ontario south to the Allegheny and central Appalachian Mountains on circumneutral to calcareous talus slopes or shallow rocky soils.

IVC Dynamics:

IVC Environment: This forest occurs on circumneutral to calcareous talus slopes or shallow rocky soils.

DISTRIBUTION

IVC Geographic Range: This semi-rich to rich rocky forest occurs from southern New England to southern Ontario south to the Allegheny and central Appalachian Mountains of Pennsylvania, Maryland, Virginia and West Virginia.

IVC Nations: CA,US

IVC States/Provinces: CT, MA, MD, NH, NJ, NY, ON, PA, QC?, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006577** ***Acer saccharum - Fraxinus americana - Juglans cinerea / Staphylea trifolia / Adlumia fungosa*** **Forest** [Sugar Maple - White Ash - Butternut / American Bladdernut / Allegheny-vine Forest] []
  GNR. CT, MA, NH, NJ, NY, PA, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2014)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A3303 Northern Red Oak - Sugar Maple - Tuliptree Forest Alliance

[ ]

Quercus rubra - Acer saccharum - Liriodendron tulipifera Forest Alliance

Central Appalachian-Northeast Red Oak - Mesic Hardwoods Forest

IVC Scientific Name: *Quercus rubra - Acer saccharum - Liriodendron tulipifera* Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance, found in the Allegheny, Lake Erie-Lake Ontario, and Lower New England regions south to the Central Appalachians, contains mesic forests dominated by *Quercus rubra* with a variety of mesic hardwoods, including *Acer rubrum, Acer saccharum, Betula lenta, Fagus grandifolia, Fraxinus americana, Quercus alba*, and *Tilia americana*. Typical shrubs include *Amelanchier* spp., *Hamamelis virginiana, Lindera benzoin*, and *Viburnum acerifolium*. Herbs include *Polystichum acrostichoides, Medeola virginiana*, and *Geranium maculatum*. These forests typically occur on deep, moist to well-drained loams and silt loams on north and east midslopes and coves.

IVC Dynamics: Current *Quercus rubra*-dominated stands in parts of this alliance's range may result from a combination of natural and human-caused disturbances (Nowacki et al. 1990).

IVC Environment: These forests typically occur on deep, moist to well-drained loams and silt loams on north and east midslopes and coves. The role of fire in these mesic red oak stands is not clear.

DISTRIBUTION

IVC Geographic Range: This alliance is found in high-elevation areas of the Central Appalachians in Virginia, West Virginia, Maryland, and Pennsylvania. Northward, it occurs in lower elevations across southern Ontario, much of New York (excluding much of the Adirondacks, Catskills and St. Lawrence River valley) and across Lower New England. In Virginia, this vegetation type is widely but locally distributed at higher elevations of the Northern Blue Ridge, Ridge and Valley, and Allegheny Mountains. It is rare and local on the Blue Ridge south of Roanoke Gap, and in the Cumberland Mountains of southwestern Virginia.

IVC Nations: CA,US

IVC States/Provinces: CT, MA, MD, ME, NH, NJ, NY, OH, ON, PA, QC?, RI, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006635 *Quercus rubra - Acer saccharum / Viburnum acerifolium - Lindera benzoin* Forest** [Northern Red Oak - Sugar Maple / Mapleleaf Viburnum - Northern Spicebush Forest] []
  G4? (2014-12-02) CT, MA, NH, NJ, NY, ON, PA, RI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A3302 Eastern Hemlock - Sweet Birch - Yellow Birch Forest Alliance

[ ]

Tsuga canadensis - Betula lenta - Betula alleghaniensis Forest Alliance

Central Appalachian-Northeast Hemlock - Northern Hardwood Forest

IVC Scientific Name: *Tsuga canadensis - Betula lenta - Betula alleghaniensis* Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This mixed conifer-hardwood forested alliance is dominated by *Tsuga canadensis*, alone or in combination with *Pinus strobus*, and a variety of mesic hardwoods such as *Acer rubrum, Acer saccharum*, and *Fagus grandifolia*. Other common and sometimes dominant trees include *Betula alleghaniensis, Betula lenta, Liriodendron tulipifera, Prunus serotina*, and *Quercus* spp. (most commonly *Quercus rubra*). It occurs in the northeastern U.S., ranging from central New England west to the Lake Erie-Lake Ontario ecoregion in Ontario and south to the higher elevations of Virginia and West Virginia. Stands are often found in ravines or low cool sites, on a variety of primarily mesic soils.

IVC Dynamics:

IVC Environment: This mixed conifer-hardwood forested alliance of the northeastern U.S. ranges from lower elevations in central New England west to the Lake Erie-Lake Ontario ecoregion in Ontario and south to higher elevations in Virginia and West Virginia. Stands are often found in ravines or low cool sites, on a variety of primarily mesic soils.

DISTRIBUTION

IVC Geographic Range: This mixed conifer-hardwood forest alliance of the northeastern U.S. ranges from Lower New England west to the Lake Erie-Lake Ontario ecoregion in Ontario and south to the higher elevations of Virginia and West Virginia.

IVC Nations: CA,US

IVC States/Provinces: CT, MA, MD, ME, NH, NJ, NY, OH, ON, PA, QC?, RI, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006639 *Tsuga canadensis - Acer saccharum - Fagus grandifolia / Dryopteris intermedia* Forest** [Eastern Hemlock - Sugar Maple - American Beech / Intermediate Woodfern Forest] []
  G3G4 (2014-12-03) CT, MA, MD, NJ, NY, ON, PA, RI, VA, WV
- **CEGL006328 *Pinus strobus - Tsuga canadensis* Lower New England-Northern Piedmont Forest** [Eastern White Pine - Eastern Hemlock Lower New England-Northern Piedmont Forest] []
  G5 (1999-03-22) CT, MA, ME, NH, NJ, NY, PA, QC?, RI, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

G650 Central Appalachian-Northeast Oak Forest & Woodland

[ ]

IVC Colloquial Name: Central Appalachian-Northeast Oak Forest & Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is found throughout the northeastern United States, south to Georgia. It is distinguished from other forested groups within the region by a dry-mesic to dry edaphic condition that is transitional between dry barrens and mesic hardwood forests. Forest cover can range from a dense to moderately open canopy of deciduous broadleaf trees (conifers never exceed 25%), and there is commonly a dense shrub layer. In most examples, this vegetation is overwhelmingly deciduous, and characterized by *Quercus alba, Quercus falcata, Quercus montana, Quercus rubra, Quercus velutina, Fagus grandifolia, Carya glabra, Carya ovata, Carya cordiformis, Carya tomentosa, Fraxinus americana*, and in the southern part of the range, *Liriodendron tulipifera*. One alliance of this group encompasses coastal plain oak-hickory forests of ancient inland dune ridges that are the remnants of former river terraces; these forests are dry, oak-dominated, and characterized by *Carya pallida*. Pines such as *Pinus rigida, Pinus echinata, Pinus virginiana* can contribute significant canopy cover in these settings.

IVC Dynamics: Fire combined with drought was an important natural process in this group, often occurring as surface fires. Fire suppression may account for the more closed oak forest examples with the more mesic understory. It likely has allowed for other associates, such as *Acer saccharum, Acer rubrum, Celtis occidentalis, Liriodendron tulipifera, Ostrya virginiana, Fraxinus americana*, and *Juglans nigra*, to become more prevalent, especially in upland areas along floodplains. With a long history of human habitation, many of the forests are early- to mid-successional, where *Pinus strobus, Pinus virginiana*, or *Liriodendron tulipifera* may be dominant or codominant.

IVC Environment: This type is found on dry-mesic to dry edaphic condition that is transitional between dry barrens and mesic hardwood forests.

DISTRIBUTION

IVC Geographic Range: This group is found throughout the glaciated regions of the Northeast to southern Ontario, central and southern New York and south through Pennsylvania to Virginia. It does not extend to southernmost part of Virginia, except in the Ridge and Valley. The coastal plain variant ranges from sandy glacial and outwash deposits of Massachusetts and Long Island, New York, south to the coastal plain portions of Maryland and Virginia, south to about the James River, with historic occurrences (and possibly some extant remnants) in eastern Pennsylvania.

IVC Nations: CA,US

IVC States/Provinces: CT, DC, DE, GA, KY, MA, MD, ME, NC, NH, NJ, NY, OH, ON, PA, QC, RI, SC, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G3 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate to high, long-term decline moderate, and threats moderate to high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4437 *Quercus alba* - *Carya glabra* - *Carya ovata* Northeast Forest Alliance** [White Oak - Pignut Hickory - Shagbark Hickory Northeast Forest Alliance] []
  These dry, relatively rich forests and open woodlands occur on dry upper slopes or ridgetops in the northeastern United States and southern Canada and are dominated by *Quercus* and *Carya* species, including *Quercus alba, Quercus rubra, Quercus velutina, Carya ovalis,* and *Carya glabra*.
- **A4466 *Quercus rubra* - *Quercus montana* - *Betula lenta* Talus Woodland** [Northern Red Oak - Chestnut Oak - Sweet Birch Talus Woodland] []
  This sweet birch - oak talus woodland occurs on steep talus slopes in the Central Appalachians and lower England; examples are typically open woodlands dominated by *Betula lenta, Quercus montana, Quercus rubra,* and *Nyssa sylvatica*.

- **A4393 *Quercus velutina* - *Quercus alba* - *Pinus* spp. Northeast Forest Alliance** [Black Oak - White Oak - Pine species Northeast Forest Alliance] []
  This alliance contains oak and oak-pine forests and woodlands found in the Allegheny Plateau, Lake Ontario plain and lower New England of the United States. Stands typically occur on mostly dry-mesic sites within glaciated and unglaciated landscapes and are dominated by *Quercus alba, Quercus rubra, Quercus velutina*, and *Acer rubrum,* often with *Pinus strobus* mixed in. A heath shrub layer can be prominent.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2012)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2013-10-09
IVC Acknowledgments:

A4437 White Oak - Pignut Hickory - Shagbark Hickory Northeast Forest Alliance

[ ]
Quercus alba - Carya glabra - Carya ovata Northeast Forest Alliance
Northeast Dry-mesic Oak - Hickory Forest

IVC Scientific Name: *Quercus alba - Carya glabra - Carya ovata* Northeast Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These dry, relatively rich forests and open woodlands occur on dry upper slopes or ridgetops in the northeastern United States and southern Canada. Stands are dominated by *Quercus* and *Carya* species, including *Quercus alba, Quercus rubra, Quercus velutina, Carya ovalis,* and *Carya glabra. Fraxinus americana*, although not always present, is generally characteristic of these forests. *Ostrya virginiana* is a common understory tree. The shrub layer is usually sparse to absent. When present, it includes *Viburnum rafinesqueanum* and *Cercis canadensis* (at the southern edge of the range). Although ericaceous species may be present and occasionally locally abundant, they are not characteristic. The herbaceous layer is characterized by forbs and may be quite diverse. Common graminoid species include *Carex pensylvanica, Carex lucorum* (at the northern range limit), *Muhlenbergia sobolifera, Elymus hystrix*, and *Danthonia spicata*. Other forbs found in these communities include *Asplenium platyneuron, Solidago caesia, Amphicarpaea bracteata, Woodsia obtusa, Selaginella rupestris, Galium circaezans*, and *Arabis laevigata*. The relatively open canopy, sparse shrub layer, and dense herbaceous layer impart a park-like appearance to many of these forests. Soils are usually fertile, but often very rocky, on well-drained loams or sandy loams, predominantly on southern or eastern exposures.
IVC Dynamics: These forests are relatively long-lived.
IVC Environment: These forests and open woodlands occur on dry upper slopes or ridgetops. Soils are usually fertile, but often very rocky, on well-drained loams or sandy loams, predominantly on southern or eastern exposures.

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout the northeastern United States and southern Canada, from central New England south to New Jersey and central Pennsylvania.
IVC Nations: CA?,US
IVC States/Provinces: CT, DE, MA, MD, ME, NH, NJ, NY, PA, QC?, RI, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments: L. Sneddon, M. Anderson, K. Metzler, J. Teague

A4466 Northern Red Oak - Chestnut Oak - Sweet Birch Talus Woodland

[ ]
Quercus rubra - Quercus montana - Betula lenta Talus Woodland
Northeast Acidic Talus Woodland

IVC Scientific Name: *Quercus rubra - Quercus montana - Betula lenta* Talus Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This talus or rocky slope woodland community occurs in the central Appalachian Mountains and extends west to the Western Allegheny Plateau in Pennsylvania and parts of southern New England. Sites are usually steeply sloping, but the type also sometimes occurs on gentler benches and ridge crests. Soils, where present, are shallow, organic, acidic, and infertile. The canopy is of variable cover but generally open with gnarled, widely spaced trees. Characteristic trees are birches, primarily *Betula lenta and Betula populifolia*, as well as *Quercus montana, Quercus alba, Quercus rubra, Quercus velutina*, or *Quercus coccinea*. Typical shrubs include *Acer spicatum, Acer pensylvanicum, Amelanchier arborea, Castanea dentata, Kalmia latifolia, Hamamelis virginiana, Menziesia pilosa, Ribes rotundifolium, Vaccinium angustifolium, Vitis* spp., *Toxicodendron radicans, Smilax rotundifolia*, and *Parthenocissus quinquefolia*. Ferns characterize the herb layer and may include *Dryopteris marginalis, Polypodium virginianum, Woodsia obtusa*, or *Asplenium platyneuron*. The forbs *Aralia nudicaulis, Carex pensylvanica,* and *Deschampsia flexuosa*, are also well-adapted to the bouldery habitats.
IVC Dynamics: Steep slopes and thin soils contribute to the natural maintenance of this alliance; fire is also suspected to play a role in maintaining the open character of the vegetation.
IVC Environment: Sites are usually steeply sloping, but the type also sometimes occurs on gentler benches and ridge crests. Soils, where present, are shallow, organic, acidic, and infertile.

DISTRIBUTION

IVC Geographic Range: This talus or rocky slope woodland community occurs in the central Appalachian Mountains and extends west to the Western Allegheny Plateau in Pennsylvania and parts of southern New England.
IVC Nations: CA?,US
IVC States/Provinces: CT, MA, MD, NH, NJ, NY, ON?, PA, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments: L. Sneddon

A4393 Black Oak - White Oak - Pine species Northeast Forest Alliance

[ ]

Quercus velutina - Quercus alba - Pinus spp. Northeast Forest Alliance
Northeast Black Oak - White Oak - Pine Forest

IVC Scientific Name: *Quercus velutina - Quercus alba - Pinus* spp. Northeast Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance contains oak and oak-pine forests and woodlands found in the Allegheny Plateau, Lake Ontario plain and lower New England of the United States. Stands typically occur on mostly dry-mesic sites within a largely glaciated landscape and are dominated by *Quercus alba, Quercus rubra, Quercus velutina*, and *Acer rubrum,* often with *Pinus strobus* mixed in. Rarely, *Pinus resinosa* or *Pinus rigida* may co-occur. A heath shrub layer can be prominent. The shrub layer is usually strongly dominated by ericaceous species, including *Gaylussacia baccata, Kalmia latifolia, Rhododendron calendulaceum, Rhododendron periclymenoides, Vaccinium angustifolium, Vaccinium pallidum*, and occasionally including *Hamamelis virginiana* and *Viburnum acerifolium*. The herbaceous composition is variable. Some common herbs include *Antennaria plantaginifolia, Carex blanda, Carex pensylvanica, Conopholis americana, Cypripedium acaule, Danthonia spicata, Prenanthes altissima,* and *Schizachyrium scoparium.*
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance contains oak and oak-pine forests and woodlands found in the Allegheny Plateau, Lake Ontario plain and lower New England of the United States, with outlier occurrences in Ontario and possibly Quebec.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, MD, NH, NJ, NY, ON, PA, QC?, RI, VT, WV?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005063 *Pinus strobus - Quercus alba - Quercus rubra* Basic Rock Woodland** [Eastern White Pine - White Oak - Northern Red Oak Basic Rock Woodland] []
  GNR. ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Hoagland and Faber-Langendoen (2021)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments: L.A. Sneddon, A.S. Weakley

G906 Central Appalachian - Northeast Pine - Oak Rocky Woodland

[ ]

IVC Colloquial Name: Central Appalachian - Northeast Pine - Oak Rocky Woodland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This type encompasses predominantly pine-oak woodlands and forests on exposed, convex, often rocky south- and west-facing slopes, ridge spurs, crests, and clifftops in the Central Appalachians and Northeastern United States, extending to New York and lower New England. It also contains the distinctive Central Appalachian shale barrens of low to mid elevations. Most examples are dominated by *Pinus rigida* and/or *Pinus virginiana*. The canopy is usually patchy to open, but areas of closed canopy may be present. The shrub and vine layer may be well-developed, with *Quercus ilicifolia, Smilax rotundifolia and* other acid-tolerant species most characteristic. Herbs are usually sparse but graminoids include *Schizachyrium scoparium, Deschampsia flexuosa*, and *Danthona spicata.* Fire is a very important ecological process in this group. Frequent, low-intensity fires coupled with periodic severe fires is one factor that determines the occurrence of this vegetation rather than hardwood forests under natural conditions. The pines may be able to maintain dominance due to edaphic conditions, such as very shallow soil or extreme exposure in some areas, which can produce sustained drought conditions, but most sites appear eventually to succeed to oak dominance in the absence of fire. Fire can influence vegetation structure, producing a more open woodland canopy structure and more herbaceous ground cover. Stands typically occur at moderate to upper elevations (450-1200 m [1500-4000 feet]), but some examples may be found at lower elevations. The underlying rock is acidic and sedimentary or metasedimentary (e.g., quartzites, sandstones and shales). The soils are very infertile, shallow and droughty. A thick, poorly decomposed duff layer, along with dead wood and highly volatile ericaceous shrubs, creates a strongly fire-prone habitat.

In floristically distinctive shale barrens examples, the exposed aspects, parent material with high levels of toxic metals, and lack of soil create extreme conditions for plant growth. Vegetation is mostly of a woodland physiognomy, but may include large open areas of sparse vegetation. The dominant trees are primarily *Quercus montana* and *Pinus virginiana*. Shale barrens endemics are diagnostic in the herb layer. The substrate includes areas of solid rock as well as unstable areas of shale scree, usually steeply sloped. The fully exposed areas are extremely dry. These barrens are high in endemic species.

IVC Dynamics: Pines may be able to maintain dominance due to shallow soils and extreme exposure in some areas, but most sites appear eventually to succeed to oak dominance in the absence of fire. Fire is also presumably a strong influence on vegetation structure, producing a more open woodland canopy structure and more herbaceous ground cover. Occurrence in highly exposed sites may make this vegetation more prone to ignition, but most fires probably spread from adjacent oak forests. Fires could be expected to show more extreme behavior than in oak forests under similar conditions, due to the flammability of the vegetation and the frequently dry, windy conditions and steep location. Both intense catastrophic fires and lower-intensity fires probably occurred naturally. Natural occurrences probably include both even-aged and uneven-aged canopies.

Outbreaks of southern pine beetle (*Dendroctonus frontalis*) are an important factor, at least under present conditions. Beetle outbreaks can kill the pines without creating the conditions for them to regenerate. Air pollutant stressors such as ozone and acid deposition are continuing to change the conditions that these stands respond to (O. Loucks pers. comm. 2013). If the pines are lost, the distinction between this vegetation and related oak-dominated forests and woodlands becomes blurred.

IVC Environment: This type encompasses predominantly pine-oak woodlands and forests occupying very exposed, convex, often rocky south- and west-facing slopes, ridge spurs, crests, and clifftops in the Central Appalachians and Northeast, as well as distinctive shale barrens of the Central Appalachians at low to mid elevations. They typically occur at moderate to upper elevations (450-1200 m [1500-4000 feet]). The underlying rock is acidic and sedimentary or metasedimentary (e.g., quartzites, sandstones and shales). The soils are very infertile, shallow and droughty. A thick, poorly decomposed duff layer, along with dead wood and highly volatile ericaceous shrubs, creates a strongly fire-prone habitat.

In floristically distinctive shale barrens examples, the exposed aspects with very strong insolation, parent material with high levels of toxic metals, and lack of soil create extreme conditions for plant growth. The substrate includes areas of solid rock as well as unstable areas of shale scree, usually steeply sloped. The fully exposed areas are extremely dry. These barrens are high in endemic species.

DISTRIBUTION

IVC Geographic Range: This type is centered in the Central Appalachians with minor extensions northward to Pennsylvania and New York and lower New England.

IVC Nations: CA,US

IVC States/Provinces: CT, MA, MD, ME, NH, NJ, NY, PA, QC?, RI, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G4 rank that was calculated from closely related ecological system global ranks. A rank of G3G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered

by the expert reviewers include: range moderately extensive, area of occupancy moderately low, long-term decline moderate, and threats moderate to high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4372 *Pinus rigida* Rocky Woodland Alliance** [Pitch Pine Rocky Woodland Alliance] []
  This alliance includes pitch pine woodlands of well-drained, acidic rocky outcrops and summits ranging from southern Canada to Long Island, New York, west to the Pocono Plateau of Pennsylvania.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: M. Pyne and D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

A4372 Pitch Pine Rocky Woodland Alliance

[ ]
Pinus rigida Rocky Woodland Alliance
Northern Pitch Pine Rocky Barrens

IVC Scientific Name: *Pinus rigida* Rocky Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is dominated by *Pinus rigida*, usually characterized by a well-developed shrub layer dominated by a low heath layer comprising *Vaccinium angustifolium, Vaccinium pallidum*, and *Gaylussacia baccata. Quercus ilicifolia* can be dominant in some stands. The herbaceous layer is usually patchy, but is better developed where the shrub layer is less dense. Characteristic herbs include *Carex pensylvanica, Cypripedium acaule, Danthonia spicata, Gaultheria procumbens, Melampyrum lineare*, and *Pteridium aquilinum*. This alliance occurs on rock outcrops, summits, and exposed slopes..
IVC Dynamics: Fire is an important ecological process in both habitats, but on the most extreme sites, this vegetation is maintained by topo-edaphic conditions.
IVC Environment: This alliance includes evergreen woodlands of well-drained, nutrient-poor rock outcrops and summits. More mesic conditions occur in portions of the Pocono Plateau on Illinoian-aged glacial till (Latham et al. 1996), and on a bedrock plateau in the Shawungunk Mountains of New York.

DISTRIBUTION

IVC Geographic Range: This alliance occurs from southern Canada, through New England, south to Pennsylvania. One association may be disjunct in Maryland.
IVC Nations: CA?,US
IVC States/Provinces: CT, MA, MD, ME, NH, NJ, NY, PA, QC?, RI, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006116 *Pinus rigida / (Quercus ilicifolia) / Aronia melanocarpa / Deschampsia flexuosa* Woodland** [Pitch Pine / (Bear Oak) / Black Chokeberry / Wavy Hairgrass Woodland] []
  G4 (2011-05-20) CT, MA, MD, ME, NH, NJ, NY, PA, RI, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D.S. Schweitzer and T.J. Rawinski (1988); M. Anderson and L. Sneddon (1994)
IVC Description Author: D. Faber-Langendoen and L.A. Sneddon
IVC Description Date: 2014-09-26
IVC Acknowledgments:

G016 Appalachian-Northeast Chinquapin Oak - Red-cedar Alkaline Forest & Woodland

[ ]

IVC Colloquial Name: Appalachian-Northeast Chinquapin Oak - Red-cedar Alkaline Forest & Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group encompasses relatively dry calcareous forests and woodlands of temperate eastern North America, in which *Quercus muehlenbergii* is associated with a variety of hardwoods and/or *Juniperus virginiana*. Examples can occur on a variety of topographic and landscape positions, including ridgetops and upper and midslopes. It also includes relatively dry, rich woodlands of traprock habitats in the Northeast. Droughts and fires are factors determining the relative mixture of deciduous hardwood versus evergreen trees. In the Southern Ridge and Valley region, the Central Basin of Tennessee and other related areas, these forests may cover large areas; elsewhere, they occur as relatively small inclusions within a forest matrix of other oak and pine species.
IVC Dynamics: Droughts and fires are factors determining the relative mixture of deciduous hardwood versus evergreen trees.
IVC Environment: *Climate:* This group is found in the temperate portions of the eastern United States. It tends to occur on portions of the landscape with warmer exposures. *Soil/substrate/hydrology:* These forests are associated with dry calcareous substrates such as limestone and dolomite or on traprock. They occur on a variety of topographic and landscape positions, including ridgetops and upper and midslopes. The soil moisture regime is dry to dry-mesic.

DISTRIBUTION

IVC Geographic Range: This group occurs across north-temperate eastern North America, from southern New England and New York west to Michigan, south to Georgia, and across to the central Midwest, but typically north of the Interior Low Plateau and Ozarks. This group may also occur in Canada.
IVC Nations: CA,US
IVC States/Provinces: AL?, CT, DC, DE?, GA, KY, MA, MD, NC, NH, NJ, NY, OH, ON, PA, QC, RI, SC?, TN, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G2 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately restricted, number of occurrences in good condition modest, long-term decline moderate, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3107 *Juniperus virginiana - Fraxinus americana - Carya* spp. Woodland Alliance** [Eastern Red-cedar - White Ash - Hickory species Woodland Alliance] []
  This alliance comprises circumneutral to calcareous woodlands of the northeastern U.S., possibly reaching southeastern Canada, characterized by *Carya glabra, Fraxinus americana, Juniperus virginiana, Ostrya virginiana*, and *Quercus rubra*. They are known locally as traprock ridges, rocky ridge balds, rocky summits, or calcareous shale barrens.
- **A2047 *Quercus muehlenbergii - Acer saccharum - Tilia americana* Forest Alliance** [Chinquapin Oak - Sugar Maple - American Basswood Forest Alliance] []
  This alliance includes a variety of dry and dry-mesic forests characterized by *Quercus muehlenbergii* and *Acer saccharum*, occurring on upper slopes and summits on limestone, dolomite, or marble substrates, ranging from Ontario, Canada, into the eastern United States.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen and S. Menard (2006)
IVC Description Author: S.C. Gawler, D. Faber-Langendoen, L.A. Sneddon
IVC Description Date: 2015-05-06
IVC Acknowledgments: J. Vanderhorst and R. McCoy

A3107 Eastern Red-cedar - White Ash - Hickory species Woodland Alliance

[ ]
Juniperus virginiana - Fraxinus americana - Carya spp. Woodland Alliance
Red-cedar Calcareous Woodland

IVC Scientific Name: *Juniperus virginiana - Fraxinus americana - Carya* spp. Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance comprises woodlands of the northeastern U.S., possibly reaching southeastern Canada, characterized by *Carya glabra, Fraxinus americana, Juniperus virginiana, Ostrya virginiana*, and *Quercus rubra*. They are known locally as traprock ridges, rocky ridge balds, rocky summits, or barrens. Physiognomy is generally patchy and open to very open canopy, with abundant forbs and grasses.
IVC Dynamics: This vegetation is affected by drought stress (Bartgis 1993).
IVC Environment: This alliance occurs on circumneutral or calcareous basalt or diorite, igneous or conglomerates with minimal soil development. It occupies upper slopes, that are often steep with southeast- or southwest-facing slopes. Moisture regime is dry to xeric.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from Ontario, Canada, south to Virginia.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, MD, NH, NJ, NY, ON, PA, RI, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006180 *Juniperus virginiana - Ostrya virginiana / Carex eburnea* Woodland** [Eastern Red-cedar - Hophornbeam / Bristleleaf Sedge Woodland] []
  G2G3 (1997-11-15) CT, MA, NY, ON, RI, VT

- **CEGL006002 *Juniperus virginiana - Fraxinus americana / Danthonia spicata* Woodland** [Eastern Red-cedar - White Ash / Poverty Oatgrass Woodland] []
  This traprock ridge open woodland is known from mountainous sites in New England, New Jersey, and Pennsylvania, and may occur in southeastern New York. G3 (2011-05-20) CT, MA, NH, NJ, NY, ON, PA, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: T.F. Breden (1989); R.L. Bartgis (1993)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A2047 Chinquapin Oak - Sugar Maple - American Basswood Forest Alliance

[ ]
Quercus muehlenbergii - Acer saccharum - Tilia americana Forest Alliance
Chinquapin Oak - Maple Dry Calcareous Forest

IVC Scientific Name: *Quercus muehlenbergii - Acer saccharum - Tilia americana* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance includes a variety of dry and dry-mesic forests characterized by *Quercus muehlenbergii* and *Acer saccharum*, with associates including *Carya ovalis, Carya ovata, Fraxinus americana, Juglans nigra, Quercus alba*, and *Tilia americana*. Common subcanopy trees include *Cercis canadensis, Cornus florida*, and *Ostrya virginiana*. The shrub layer is often sparse and may contain *Cornus alternifolia, Hamamelis virginiana, Staphylea trifolia, Viburnum prunifolium, Viburnum rafinesqueanum*, and *Zanthoxylum americanum*. The herbaceous layer may contain *Arabis laevigata, Asclepias quadrifolia, Clematis occidentalis, Packera obovata, Phryma leptostachya, Saxifraga virginiensis*, and *Triosteum aurantiacum*. This vegetation occurs on upper slopes and summits on limestone, dolomite, or marble substrates. The alliance ranges from Ontario, Canada, into the eastern United States from the Great Lakes and Northern Appalachians south along the Allegheny Plateau and Appalachian Mountains, east to the Piedmont, and west to the North Central Tillplain and Interior Low Plateau.
IVC Dynamics:
IVC Environment: Forests of this alliance occur on upper slopes and summits on limestone, dolomite, or marble substrates. Soils are often thin and rocky, and slopes are gentle to steep. In the Coastal Plain of Virginia, this alliance is represented by somewhat open canopy "shell barren" forests. In the Northeast, the habitat is characterized as upper slopes or summits of limestone or marble ridges with dry soil-moisture regimes. Limestone outcrops or boulders may be present, as well as Karst collapse features. In the Southeast, mesic to dry limestone-derived soils may occur as well on flatter landforms, as in the Nashville Basin of Tennessee.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from Ontario, Canada, into the eastern United States from the Great Lakes and Northern Appalachians south along the Allegheny Plateau and Appalachian Mountains, east to the Piedmont, and west to the North Central Tillplain and Interior Low Plateau.
IVC Nations: CA,US
IVC States/Provinces: AL?, CT, DC, GA, KY, MA, MD, NC, NJ, NY, OH, ON, PA, QC, SC?, TN, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005059** ***Acer saccharum - Ostrya virginiana - Carya ovata - Quercus rubra*** **Limestone Woodland** [Sugar Maple - Hophornbeam - Shagbark Hickory - Northern Red Oak Limestone Woodland] []
  G3G4 (2002-10-24) NY, ON, QC
- **CEGL005010** ***Acer saccharum - Quercus muehlenbergii*** **Forest** [Sugar Maple - Chinquapin Oak Forest] []
  GNR. NY, OH, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D.J. Allard, D. Faber-Langendoen, J. Teague, L. Sneddon, in Faber-Langendoen et al. (2013)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-09-26
IVC Acknowledgments:

M882 Central Midwest Mesic Forest

[ ]

IVC Colloquial Name: Central Midwest Mesic Forest
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup comprises forests characterized by a mostly closed canopy dominated a mixture of *Acer saccharum, Fagus grandifolia, Quercus rubra*, and *Tilia americana* (or in some cases *Acer floridanum* or *Acer nigrum*). Other common species include *Aesculus glabra, Carya cordiformis, Carya ovata, Celtis* spp., *Fraxinus americana, Juglans nigra, Quercus alba, Quercus muehlenbergii*, and *Ulmus rubra*. It occurs in the central hardwood region of the Midwest from western Ohio to the eastern Great Plains, and south into the Ozarks and Ouachitas on mesic, rich soils formed from glacial till or loess parent material. Examples in the Ozark region are often from base-rich substrates such as limestones and dolomites. Small-gap development and replacement due to wind or tree death are the most common natural dynamics. However, conversion to agriculture, logging, browsing, and grazing have greatly impacted this macrogroup. Once common in many areas, very few large stands remain intact across its range.

IVC Geographic Range: This macrogroup ranges across the north temperate region of eastern North America from western Ohio to Minnesota and the Great Lakes south through the Ozarks and Ouachitas of Missouri, Arkansas and Oklahoma, and eastern Kansas and Nebraska.

IVC Nations: CA,US

IVC States/Provinces: AR, IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, OK, ON, SD, WI

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G021 North-Central Beech - Maple - Basswood Forest []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: S.E. Menard

IVC Description Date: 2015-05-04

IVC Acknowledgments:

G021 North-Central Beech - Maple - Basswood Forest

[ ]

IVC Colloquial Name: North-Central Beech - Maple - Basswood Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group covers forests with dense canopies primarily dominated by *Acer saccharum. Fagus grandifolia* and *Tilia americana* often can codominate to dominate the canopy. *Quercus rubra* and *Ostrya virginiana* are common associates. Understories are rich with diverse herbaceous and shrub species. This group typically occurs on mesic, rich loam soils formed from glacial till or loess parent material. Examples of this group are found throughout the Midwest ranging from eastern Kansas to northern Minnesota and east to central Ohio. The primary natural dynamic affecting this group includes small gap development and replacement due to wind or tree death. However, the greatest impacts on this group are due to conversion to agriculture, logging, browsing, and grazing. Once common in many areas, very few large stands of this group remain intact across its range.

IVC Dynamics: Wind and fire can impact this group over long return intervals. Small-gap development and replacement due to tree death is more frequent than more catastrophic fire or wind. The greatest impacts on this group are due to conversion to agriculture, logging, browsing, and grazing.

IVC Environment: Mesic-moist to dry-mesic sites in various landscape settings, often on rolling uplands, valley slopes, and bottoms. These forests tend to occur north of the glacial boundary. Stands typically occur on high-nutrient, rich loam soils formed from glacial till or loess. Soils are generally well-drained with a mesic-moist to dry-mesic moisture regime. Thick layers of humus and leaf litter can occur.

DISTRIBUTION

IVC Geographic Range: Across the north temperate region of eastern North America from Minnesota and the Great Lakes south through central Missouri and eastern Kansas and Nebraska and east to central Ohio.
IVC Nations: CA,US
IVC States/Provinces: IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, ON, SD, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G2 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline high from development, and threats high from invasive species.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3226 *Acer saccharum - Fagus grandifolia* Forest Alliance** [Sugar Maple - American Beech Forest Alliance] []
  This alliance contains forests dominated by *Acer saccharum* and *Fagus grandifolia* within the glaciated regions of the southern Great Lakes in the United States and Canada. Stands occur on flat to rolling topography with soils ranging from sands to loams.
- **A0220 *Acer saccharum - Tilia americana - Quercus rubra* Forest Alliance** [Sugar Maple - American Basswood - Northern Red Oak Forest Alliance] []
  This alliance, found in the midwestern United States, forms the westernmost portion of the mesic deciduous forests that occupy much of the eastern United States. Stands of this alliance are found on well-drained, nutrient-rich loamy soils and have a moderately dense to dense tree canopy dominated by some combination of *Acer saccharum, Quercus rubra*, and *Tilia americana*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: E.L. Braun (1950)
IVC Description Author: S. Menard
IVC Description Date: 2015-05-04
IVC Acknowledgments: S. Franklin

A3226 Sugar Maple - American Beech Forest Alliance

[ ]
Acer saccharum - Fagus grandifolia Forest Alliance
Sugar Maple - American Beech Forest

IVC Scientific Name: *Acer saccharum - Fagus grandifolia* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance contains forests dominated by *Acer saccharum* and *Fagus grandifolia* within the glaciated regions of the southern Great Lakes in the United States. Stands occur on flat to rolling topography in the north and steeper slopes in the south with soils ranging from sands to loams. The alliance is characterized by a dense to moderately dense canopy of deciduous trees dominated by of *Acer saccharum* and *Fagus grandifolia. Liriodendron tulipifera* is sometimes codominant. Other tree species occurring in the canopy or subcanopy may include *Carpinus caroliniana, Fraxinus americana, Ostrya virginiana, Quercus*

rubra, Tilia americana, and *Ulmus americana*. The shrub layer, if present, typically contains *Diervilla lonicera, Euonymus obovatus, Lonicera canadensis, Sambucus racemosa var. racemosa*, and *Viburnum* spp. The herbaceous layer is moderately to well-developed and diverse, typically including spring ephemerals. Common species include *Arisaema triphyllum, Dryopteris intermedia, Maianthemum canadense* (in northern stands), *Maianthemum racemosum, Osmorhiza claytonii, Podophyllum peltatum, Polygonatum biflorum, Trillium grandiflorum*, and *Viola* spp. Gap replacement typically occurs within these forests. Beech bark disease is impacting many of these stands in portions of its range. Logging and conversion to agriculture have impacted this alliance. Large white-tailed deer populations in portions of the range of this alliance can also impact regeneration of some tree and herbaceous species.

IVC Dynamics: Gap replacement typically occurs within these forests. Wind disturbance leads to low intensity, often forming single or small, multiple-tree gaps. Beech bark disease is impacting many of these stands in portions of its range. Logging and conversion to agriculture within the region has impacted these forests as well. Large white-tailed deer populations in portions of the range of this alliance can also impact regeneration of some tree and herbaceous species in remaining stands.

IVC Environment: This alliance is found on flat to rolling topography (Braun 1950, Pell and Mack 1977). In the southern parts of its range, it is more likely to be found on steeper slopes than in the northern portion (Braun 1950). The soils are predominantly silt loam, loam, or sandy loam and develop over glacial till of Wisconsin age (Braun 1950, Dodge and Harman 1985). This community was found to develop on sites with till 0.4-4.0 m thick in southern Michigan (Dodge and Harman 1985).

DISTRIBUTION

IVC Geographic Range: This alliance is located in the southern Great Lakes area of the United States and possibly Canada, ranging from Illinois, Indiana, and Michigan, east to northeastern Ohio and possibly southwestern Ontario.

IVC Nations: CA,US

IVC States/Provinces: IL, IN, MI, OH, ON, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005013 *Fagus grandifolia - Acer saccharum* Glaciated Midwest Forest** [American Beech - Sugar Maple Glaciated Midwest Forest] []
  G2G3 (2006-11-13) IL, IN, MI, OH, ON, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: E.L. Braun (1950)

IVC Description Author: S. Menard and D. Faber-Langendoen

IVC Description Date: 2017-07-20

IVC Acknowledgments:

A0220 Sugar Maple - American Basswood - Northern Red Oak Forest Alliance

[ ]

Acer saccharum - Tilia americana - Quercus rubra Forest Alliance

Sugar Maple - American Basswood - Northern Red Oak Forest

IVC Scientific Name: *Acer saccharum - Tilia americana - Quercus rubra* Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance, found in the midwestern United States, forms the westernmost portion of the mesic deciduous forests that occupy much of the eastern United States. Stands of this alliance are found on well-drained, nutrient-rich loamy soils to dry-mesic fine sandy loams and loamy sands and have a moderately dense to dense tree canopy dominated by some combination of *Acer saccharum, Quercus rubra*, and *Tilia americana*. Other common canopy species include *Acer rubrum, Carya*

spp., *Celtis occidentalis, Fraxinus pennsylvanica, Quercus alba*, and *Ulmus* spp. *Carpinus caroliniana* (in the southern half of this alliance's range) and *Ostrya virginiana* are characteristic subcanopy trees. The dense canopy tends to inhibit the formation of a significant shrub layer. Scattered shrubs of *Acer spicatum* (in the north), *Corylus americana, Hamamelis virginiana, Ribes* spp., *Sambucus* spp., *Viburnum acerifolium* (in the north), and *Zanthoxylum americanum* may be found in stands of this alliance. Spring ephemerals are a distinctive part of the herbaceous layer, especially in the southern part of this alliance's range. Common herbaceous species include *Anemone quinquefolia, Carex pensylvanica, Claytonia* spp., *Dicentra cucullaria, Erythronium* spp., *Eurybia macrophylla* (in the north), *Hepatica nobilis var. acuta, Laportea canadensis, Polygonatum pubescens, Sanicula odorata, Trillium grandiflorum*, and *Uvularia grandiflora*. This alliance tends to be more intolerant of fire than forests on more droughty soils to the south and west. Along the western edge of its range, stands are found on sites protected from fire. The most common disturbance is a single-tree or small-group gap dynamic. Larger windthrow events or fire can occur but typically on a 500- to 1000-year cycle. Those stands with *Quercus rubra* as the predominant canopy species may result from a combination of natural disturbances, such as slightly more frequent fire, and human-caused disturbances. Conversion to agriculture, logging, and urban development have impacted this alliance across its range. Large white-tailed deer populations in portions of the range of this alliance can also impact regeneration of some tree and herbaceous species.

IVC Dynamics: This alliance is very intolerant of fire (Daubenmire 1936, Grimm 1984). Thus, along the western edge of its range, stands are found on sites protected from fire, such as the lee side of waterbodies or where topographic features inhibit the spread of fire. Wind is the primarily disturbance leading to low intensity, often forming single or small, multiple-tree gaps. Current *Quercus rubra*-dominated stands in parts of this alliance's range may result from a combination of natural disturbances, such as slightly more frequent fires, and human-caused disturbances (Nowacki et al. 1990). Conversion to agriculture, logging, and urban development have impacted this alliance across its range. Large white-tailed deer populations in portions of the range of this alliance can also impact regeneration of some tree and herbaceous species.

IVC Environment: Stands of this alliance are found on well-drained, nutrient-rich, loamy soils, often on northern and eastern midslopes and coves. In the southern part of the alliance's range, stands are often found on ravine slopes where the microclimate is more mesic than the surrounding uplands (Eyre 1980). Some stands occur on dry-mesic fine sandy loams and loamy sands (Nowacki et al. 1990). This alliance is typically very intolerant of fire (Daubenmire 1936, Grimm 1984). Thus, along the western edge of its range, stands are found mostly on sites protected from fire, such as the lee side of waterbodies or where topographic features inhibit the spread of fire.

DISTRIBUTION

IVC Geographic Range: This maple - basswood forest is found in the northern and central midwestern United States, possible extending to southwestern Ontario, Canada.

IVC Nations: CA,US

IVC States/Provinces: IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, ON, SD, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005017 *Quercus rubra - (Acer saccharum, Quercus alba)* Forest** [Northern Red Oak - (Sugar Maple, White Oak) Forest] [] G4? (2009-08-14) IA, IL, IN, MI, MN, OH, ON, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: R.F. Daubenmire (1936)

IVC Description Author: S. Menard

IVC Description Date: 2014-09-26

IVC Acknowledgments:

M012 Central Midwest Oak Forest, Woodland & Savanna

[ ]

IVC Colloquial Name: Central Midwest Oak Forest, Woodland & Savanna

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: The vegetation structure of this macrogroup ranges from open savanna or barrens, with at least 10% tree cover, to closed forest. Typical dominant oak species include *Quercus alba, Quercus ellipsoidalis, Quercus macrocarpa, Quercus rubra*, and/or *Quercus velutina*. In forest and woodland stands, hickories such as *Carya tomentosa, Carya cordiformis, Carya glabra*, and *Carya ovata* are characteristic associates. Forested stands can have a dense shrub understory. Most barrens and savanna examples have understories dominated by prairie graminoids such as *Andropogon gerardii, Hesperostipa spartea, Schizachyrium scoparium, Sorghastrum nutans*, and *Sporobolus heterolepis*, and can have a rich forb component. This fire-dependent type is transitional between dry prairies and mesic hardwood forests. This macrogroup is found throughout the glaciated regions of the Midwest, most typically in the tallgrass prairie border-central lowlands region. It can occur on glacial landscape features such as moraines, kettle-kame topography, and outwash plains. Soils are well-drained to excessively drained, with a loamy to sandy texture. Fire suppression leads to more closed-canopy forests and woodlands, and a more mesic understory, and eventually replacement of oak canopy with mesic hardwoods, such as *Acer saccharum* and *Acer rubrum*. Periodic strong winds and browsing also impact this type. Many of the stands have been cleared and converted to agriculture.

IVC Geographic Range: This macrogroup is found throughout the glaciated regions of the Midwest to southern Ontario and western New York.

IVC Nations: CA,US

IVC States/Provinces: IA, IL, IN, KS, MB, MI, MN, MO, ND, NE, NY, OH, OK, ON, PA, QC, SD, WI

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G181 Central Midwest Oak Openings & Barrens []**
- **G649 North-Central Oak - Hickory Forest & Woodland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J.T. Curtis (1959); F.H. Eyre (1980)

IVC Description Author: S.E. Menard and D. Faber-Langendoen

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G181 Central Midwest Oak Openings & Barrens

[ ]

IVC Colloquial Name: Central Midwest Oak Openings & Barrens

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The deep-soil oak savanna occurs in the northern, central and southern tallgrass prairie regions of the central United States, with extensions into southern Ontario and southeastern Manitoba, Canada. It was historically dominant in the northern glaciated regions of the Midwest with the largest concentration in the prairie-forest border ecoregion. It is typically found on rolling outwash plains, hills and ridges. Soils are typically moderately well- to well-drained deep loams. This savanna is typified by scattered trees, varying from 10 to 30% cover over a more-or-less continuous tallgrass prairie layer. *Quercus macrocarpa* is a common tree throughout the range. Other associates include *Populus tremuloides* (northern portion of the range), *Quercus alba, Quercus bicolor*, and *Quercus stellata*. The dominant herbaceous species are the graminoids *Andropogon gerardii, Schizachyrium scoparium, Sorghastrum nutans, Sporobolus heterolepis*, and *Hesperostipa spartea*. A rich forb component includes *Amorpha canescens, Antennaria* spp., *Calamagrostis canadensis* (in moist stands), *Carex* spp., *Lespedeza capitata,*

Ratibida pinnata, Silphium laciniatum, and *Zizia aurea*, among many species. The shrub layer can be absent to prominent. Where shrubs are present, *Corylus* spp. tend to be dominant, accompanied by species such as *Cornus foemina, Rosa* spp., *Rubus allegheniensis*, and *Symphoricarpos occidentalis* (in the west). Historically, frequent fires maintained this savanna within its range and would have restricted tree canopies to 10-30% cover. Fire suppression in the region has allowed trees to establish more dense canopies. Periodic, strong wind disturbances and browsing also impact this type. Much of this type has also been converted to agriculture, or succeeded to forests because of the lack of fire, greatly reducing its area and range.

The sandy oak barrens occur on well-drained, coarse-textured sandy soils derived from glacial outwash, end moraine formations, or lakeplain dune systems in the north-central U.S. and parts of southern Ontario, Canada. Soils range from almost pure sand, to loamy sand, to sandy loam. The soils have low fertility, organic matter, and moisture-retention capacity. Factors which affect seasonal soil moisture are strongly related to variation in this type. The oak barrens is a scrubby, open-treed system dominated by graminoids and shrubs. Canopy structure varies from a dominant herbaceous ground layer with sparse, scattered "savanna" canopy (5-25%), through oak-dominated scrub, to a more closed woodland canopy (25-60%). The canopy layer is dominated by *Quercus velutina*, with some *Quercus ellipsoidalis, Quercus macrocarpa*, and *Quercus alba* (the latter more common eastward and in woodland conditions). Occasional *Pinus banksiana* can occur in the northern parts of the range. Species found in the herb layer include *Ambrosia psilostachya, Amphicarpaea bracteata, Artemisia ludoviciana, Andropogon gerardii, Calamovilfa longifolia, Carex pensylvanica, Carex* spp., *Comandra umbellata, Sorghastrum nutans, Hesperostipa spartea*, and *Schizachyrium scoparium*. Fire was an important factor in maintaining this community. Oak wilt and droughts also reduce tree cover.

IVC Dynamics: Oak savanna: Historically, frequent fires maintained this savanna within its range and would have restricted tree canopies to 10-30% cover. Fire suppression in the region has allowed trees to establish more dense canopies. Periodic, strong wind disturbances and browsing also impact this type. Much of this type has also been converted to agriculture, or succeeded to forests because of the lack of fire, greatly reducing its area and range. Oak barrens: Fire was an important factor in maintaining this community. Oak wilt and droughts also reduce tree cover (Curtis 1959, Will-Wolf and Stearns 1999).

IVC Environment: Oak savannas are typically found on rolling outwash plains, hills and ridges. Soils are typically moderately well- to well-drained deep loams. Oak barrens occur on well-drained, coarse-textured sandy soils derived from glacial outwash, end moraine formations, or lakeplain dune systems. Soils range from almost pure sand, to loamy sand, to sandy loam. The soils have low fertility, organic matter, and moisture-retention capacity. Factors which affect seasonal soil moisture are strongly related to variation in this type.

DISTRIBUTION

IVC Geographic Range: The oak savanna is found throughout the northern glaciated regions of the Midwest. Its main concentration, where it was likely the matrix type, is within the prairie-forest border of Minnesota, Wisconsin, Iowa, and Illinois. Conversion to agriculture and fire suppression have significantly impacted its range. The oak barrens are found in the north-central U.S. from North Dakota to western New York and westernmost Pennsylvania (mostly historic there) and into Ontario, Canada.

IVC Nations: CA,US

IVC States/Provinces: IA, IL, IN, MB, MI, MN, MO, ND, NE, NY, OH, ON, PA, QC, SD, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G2 rank that was calculated from component association global ranks, and a G1 rank that was calculated from closely related ecological system global ranks. A rank of G1 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately restricted, long-term decline high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3256 *Quercus macrocarpa - Quercus alba* Wooded Grassland Alliance** [Bur Oak - White Oak Wooded Grassland Alliance] [] This fire-dependent, open woodland (or savanna) type is found in the midwestern United States and southern Canada, and is characterized by a dry-mesic and mesic tallgrass prairie understory and open oak canopy dominated by *Quercus macrocarpa*, sometimes with *Populus tremuloides, Quercus alba, Quercus bicolor*, and *Quercus stellata*. It is typically found on rolling outwash plains, hills, and ridges, as well as lakeplains near the Great Lakes.
- **A1492 *Quercus velutina - Quercus ellipsoidalis* Wooded Grassland Alliance** [Black Oak - Northern Pin Oak Wooded Grassland Alliance] []

This fire-dependent oak barrens alliance is found on drier substrates in the Great Lakes region and northeastern Great Plains. Trees are scattered to clumped within a grassy matrix and dominated by *Quercus macrocarpa* and *Quercus ellipsoidalis*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J.T. Curtis (1959)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2015-05-05
IVC Acknowledgments: R. Anderson

A3256 Bur Oak - White Oak Wooded Grassland Alliance

[ ]
Quercus macrocarpa - Quercus alba Wooded Grassland Alliance
Tallgrass Bur Oak Openings

IVC Scientific Name: *Quercus macrocarpa - Quercus alba* Wooded Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This open woodland (or savanna) type is found in the midwestern United States and southern Canada, and is characterized by a dry-mesic and mesic tallgrass prairie understory and open oak canopy. Canopy cover typically varies from 10-25%. *Quercus macrocarpa* is a common tree throughout the range of this alliance. *Populus tremuloides* (in the northern portion of this alliance's range), *Quercus alba, Quercus bicolor*, and *Quercus stellata* can be found in some stands. The total tree canopy cover may exceed 30%. The dominant herbaceous species are graminoids *Andropogon gerardii, Hesperostipa spartea, Schizachyrium scoparium, Sorghastrum nutans*, and *Sporobolus heterolepis*. Other typical species include *Amorpha canescens, Antennaria* spp., *Calamagrostis canadensis* (in moist stands), *Carex* spp., *Lespedeza capitata, Ratibida pinnata, Silphium laciniatum*, and *Zizia aurea*. The shrub layer can be absent to prominent. Where shrubs are present, *Corylus* spp. tend to be dominant, accompanied by species such as *Cornus foemina, Rosa* spp., *Rubus allegheniensis*, and *Symphoricarpos occidentalis* (in the west). This type is typically found on rolling outwash plains, hills, and ridges, as well as lakeplains near the Great Lakes. Most soils are sandy to loamy. Some, especially near the Great Lakes, can be on clay loam. Stands typically require periodic fire.
IVC Dynamics: The fire dynamics for this alliance are described in the group description.
IVC Environment: This alliance is found on a variety of sites. It occurs on lakeplains near the Great Lakes, but more commonly on rolling outwash plains, hills, and ridges (Curtis 1959, MNNHP 1993). Most soils are sandy to loamy. Some, especially near the Great Lakes, can be on clay loam. This alliance is maintained by periodic fire.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the midwestern United States and southern Canada.
IVC Nations: CA,US
IVC States/Provinces: IA, IL, IN, MB, MI, MN, MO, ND, NE, NY, OH, ON, PA?, QC, SD, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005054** ***Quercus alba - Quercus velutina - Quercus palustris / Carex pensylvanica*** **Woodland** [White Oak - Black Oak - Pin Oak / Pennsylvania Sedge Woodland] []
  G2 (1998-06-22) MI, ON
- **CEGL005120** ***Quercus macrocarpa - Quercus palustris - Quercus bicolor / Calamagrostis canadensis*** **Wooded Grassland** [Bur Oak - Pin Oak - Swamp White Oak / Bluejoint Open Woodland] []
  G1 (2007-02-06) MI, ON

- **CEGL002158 *Quercus macrocarpa* Northern Tallgrass Wooded Grassland** [Bur Oak Northern Tallgrass Wooded Grassland] []
  G1G2 (2007-02-06) IA, MB, MN, ND, NE, ON, SD
- **CEGL005121 *Quercus alba - Quercus macrocarpa / Andropogon gerardii* Wooded Grassland** [White Oak - Bur Oak / Big Bluestem Open Woodland] []
  G1 (2000-04-12) MI, NY, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J.T. Curtis (1959)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A1492 Black Oak - Northern Pin Oak Wooded Grassland Alliance

[ ]
Quercus velutina - Quercus ellipsoidalis Wooded Grassland Alliance
Black Oak - Northern Pin Oak Barrens

IVC Scientific Name: *Quercus velutina - Quercus ellipsoidalis* Wooded Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This fire-dependent oak barrens alliance is found in the Great Lakes region and northeastern Great Plains. Herbaceous species dominate this alliance, but trees and shrubs are common and can be abundant in the prolonged absence of fire. Trees and shrubs may be scattered across the landscape or clumped. The most abundant trees are *Quercus macrocarpa* and *Quercus ellipsoidalis*, which have a height of 5-15 m and an open canopy (10-60%). Cover in the tall-shrub and low-shrub layers varies from 0-40%. Short-shrub species include *Amorpha canescens, Corylus americana, Rhus glabra*, and *Toxicodendron radicans*. *Symphoricarpos occidentalis* can be common on heavier soils. The herb layer is dominated by graminoids, with forbs more prominent in shaded areas. Herbaceous species include *Ambrosia psilostachya, Amphicarpaea bracteata, Andropogon gerardii, Artemisia ludoviciana, Calamovilfa longifolia, Carex pensylvanica, Carex* spp., *Comandra umbellata, Hesperostipa spartea, Parthenocissus quinquefolia, Schizachyrium scoparium*, and *Sorghastrum nutans*. Stands of this alliance are found on well-drained, coarse-textured sandy soils derived from glacial outwash or end moraine formations. Soils range from almost pure sand, to loamy sand, to sandy loam. The soils have low fertility, organic matter, and moisture-retention capacity. Factors which affect seasonal soil moisture are strongly related to variation in this type; slope, aspect, topographic position, elevation, depth to water table, and presence or absence of less permeable soil layers are among these factors. The conditions were also favorable to periodic fires, necessary to maintain the open structure and floristic composition.
IVC Dynamics: The fire dynamics for this alliance are described in the group description.
IVC Environment: Stands of this alliance are found on well-drained, coarse-textured sandy soils derived from glacial outwash or end moraine formations. Soils range from almost pure sand, to loamy sand, to sandy loam. The soils have low fertility, organic matter, and moisture-retention capacity. Factors which affect seasonal soil moisture are strongly related to variation in this type; slope, aspect, topographic position, elevation, depth to water table, and presence or absence of less permeable soil layers are among these factors. Periodic fires are essential for maintaining the open structure and floristic composition (MNNHP 1993).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Great Lakes region and northeastern Great Plains. It can be found in Canada in southern Ontario.
IVC Nations: CA,US
IVC States/Provinces: IA, IL, IN, MI, MN, ND, OH, ON, PA, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005029 *Quercus velutina - (Quercus ellipsoidalis) - Quercus alba / Deschampsia flexuosa* Woodland** [Black Oak - (Northern Pin Oak) - White Oak / Wavy Hairgrass Woodland] []
  GNR. IN, MI, ON
- **CEGL002492 *Quercus velutina - Quercus ellipsoidalis - (Quercus alba) / Schizachyrium scoparium - Lupinus perennis* Wooded Grassland** [Black Oak - Northern Pin Oak - (White Oak) / Little Bluestem - Sundial Lupine Open Woodland] []
  G3 (1998-06-22) IA, IL, IN, MI, MN, OH, ON, PA, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J.T. Curtis (1959)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G649 North-Central Oak - Hickory Forest & Woodland

[ ]

IVC Colloquial Name: North-Central Oak - Hickory Forest & Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is found throughout the glaciated regions of the Midwest, typically in gently rolling landscapes. Historically, this type was quite extensive in the Midwest and parts of the Northeast. It is distinguished from other forested groups within the region by a dry-mesic to dry edaphic condition that is transitional between dry prairies, oak barrens, or savannas and mesic hardwood forests, such as maple-basswood forests. Forest cover can range from a dense to moderately open canopy of deciduous broadleaf trees (conifers do not exceed 25% cover except in one variant in the Driftless Area), and there is commonly a dense shrub layer. Fire-resistant oak species, in particular *Quercus alba, Quercus rubra*, and/or *Quercus velutina*, dominate the overstory. Hickories such as *Carya glabra, Carya ovata, Carya cordiformis*, and *Carya tomentosa* are characteristic associates. *Quercus macrocarpa* and *Quercus ellipsoidalis* may be common in some stands. Fire suppression may account for the more closed oak forest examples with the more mesic understory. It has allowed for other associates, such as *Acer saccharum, Acer rubrum, Celtis occidentalis, Ostrya virginiana*, and *Fraxinus americana*, to become more prevalent, especially in upland areas along floodplains. It can occur on uplands within the prairie matrix and near floodplains, or on rolling glacial moraines, among kettle-kame topography, and outwash plains. Soils are typically well-drained to excessively drained Mollisols or Alfisols that range from loamy to sandy in texture. Local areas of calcareous bedrock, or colluvial pockets, may support forests typical of richer soils.

IVC Dynamics: Fire combined with drought was an important natural process in this group, often occurring as surface fires. Fire suppression may account for the more closed oak forest examples with the more mesic understory. It has allowed for other associates, such as *Acer saccharum, Acer rubrum, Celtis occidentalis, Ostrya virginiana*, and *Fraxinus americana*, to become more prevalent, especially in upland areas along floodplains. A lack of fire, especially in more open-canopied examples of this group, allows the proliferation of invasive understory species. The exotic shrubs *Rhamnus cathartica* and *Lonicera* spp. can be abundant in this group, particularly stands that have or had moderately open tree canopies.

IVC Environment: This group is found in glaciated regions of the Midwest, typically in gently rolling landscapes. It can occur on uplands within a tallgrass prairie matrix and near floodplains, or on rolling glacial moraines, among kettle-kame topography, and outwash plains. Soils are typically well-drained to excessively drained Mollisols or Alfisols that range from loamy to sandy in texture. A variant of this group, confined to the Driftless Area of southeastern Minnesota, southwestern Wisconsin, northeastern Iowa, and northwestern Illinois, occurs in an area not covered by the Wisconsin-age glaciers and sites there are often on steep slopes, sometimes with thin soil over bedrock. Local areas of calcareous bedrock or colluvial pockets may support forests typical of richer soils. Historically, this type was quite extensive in the Midwest. It is distinguished from other forested groups within the region by a dry-mesic to dry edaphic condition that is transitional between dry prairies, oak barrens, or savannas and mesic hardwood forests, such as maple-basswood forests.

DISTRIBUTION

IVC Geographic Range: This group is found throughout the glaciated regions of the Midwest to southern Ontario, eastern Ohio, and possibly western West Virginia, and west into eastern Nebraska and northeast Kansas. It does not extend to the Ozarks.
IVC Nations: CA,US
IVC States/Provinces: IA, IL, IN, KS, MB?, MI, MN, MO, ND, NE, NY, OH, OK, ON, PA, QC, SD, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G3 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline high from development, and threats high from invasive species.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3324 *Quercus alba* - *Quercus macrocarpa* - *Quercus bicolor* Woodland Alliance** [White Oak - Bur Oak - Swamp White Oak Woodland Alliance] []
  This alliance, found primarily in the central midwestern United States and southwestern Ontario, Canada, includes oak woodlands of dry to moist soils dominated by *Quercus alba, Quercus macrocarpa*, or less commonly *Quercus bicolor*. *Carya ovata, Quercus ellipsoidalis, Quercus palustris, Quercus velutina*, and *Acer rubrum* are occasional canopy associates.
- **A3323 *Quercus alba* - *Quercus rubra* - *Carya* spp. North-Central Forest Alliance** [White Oak - Northern Red Oak - Hickory species North-Central Forest Alliance] []
  This dry-mesic oak forest alliance is found throughout the central Midwest region of the United States. Stands occur primarily on glaciated, rolling topography on dry-mesic soils. *Quercus alba* and *Quercus rubra* are the typical dominants, but *Carya ovata* can also be codominant.
- **A0620 *Quercus macrocarpa* Central Tallgrass Woodland Alliance** [Bur Oak Central Tallgrass Woodland Alliance] []
  This alliance is widespread in the central tallgrass region on mesic or dry-mesic sites with an open to moderately closed tree canopy dominated by *Quercus macrocarpa*.
- **A3326 *Quercus velutina* - *Quercus alba* North-Central Forest Alliance** [Black Oak - White Oak North-Central Forest Alliance] []
  This dry oak forest alliance is found throughout the central midwestern United States and southwestern Ontario, Canada. Examples occur on dry to dry-mesic sandy or rocky soils. The tree canopy is moderately closed, occasionally scrubby, and with typically 50-100% cover, with *Quercus velutina* as the dominant tree species, and *Quercus alba* and *Carya* spp. as common associates.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: F. H. Eyre (1980)
IVC Description Author: S.E. Menard and J. Drake
IVC Description Date: 2015-05-05
IVC Acknowledgments:

A3324 White Oak - Bur Oak - Swamp White Oak Woodland Alliance

[ ]
Quercus alba - Quercus macrocarpa - Quercus bicolor Woodland Alliance
White Oak - Bur Oak - Swamp White Oak Woodland

IVC Scientific Name: *Quercus alba - Quercus macrocarpa - Quercus bicolor* Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance, found primarily in the central midwestern United States and southwestern Ontario, Canada, includes oak woodlands of dry to moist well-drained soils dominated by *Quercus alba, Quercus macrocarpa*, or less commonly *Quercus bicolor*. The trees are generally shorter in stature than those occurring in a forested situation, and older trees typically exhibit spreading lower branches. *Carya ovata, Quercus ellipsoidalis, Quercus palustris, Quercus stellata* (in central Illinois and Missouri), *Quercus velutina*, and *Acer rubrum* are occasional canopy associates. Shrubs are usually sparse, sometimes scattered ericaceous species, but more typically *Ceanothus americanus* or *Corylus americana*. The herbaceous flora is usually dominated by grasses and forbs such as *Schizachyrium scoparium, Sorghastrum nutans, Lupinus perennis, Helianthus* spp., *Asclepias tuberosa, Desmodium* spp., and *Lespedeza* spp. (*Lespedeza capitata, Lespedeza violacea, Lespedeza virginica*), or *Carex pensylvanica*. On the lakeplain in southern Michigan and southwest Ontario, a variety of oaks (*Quercus alba, Quercus macrocarpa, Quercus palustris*, and *Quercus velutina*) dominate the canopy, while the ground layer is dominated by *Amphicarpaea bracteata, Andropogon gerardii, Apios americana, Calamagrostis canadensis, Carex pensylvanica, Galium boreale*, and *Pteridium aquilinum*. Soils of this alliance are dry to moist and typically well-drained. In the Midwest, stands are typically found on sand or loamy sands. In southwestern Ontario and Michigan, stands occur on undisturbed sand ridges and raised areas in poorly drained glacial lakeplains, sometimes on silty loams. The pH is typically 5.0-7.2. *Quercus bicolor* or *Quercus macrocarpa* woodlands may also be found on floodplain terraces or depressional settings. Stands are fire-dependent, and in its absence can form dense oak forests with an increasing component of mesic fire-intolerant hardwood tree species.

IVC Dynamics: Stands are fire-dependent, and in its absence can form dense oak forests with an increasing component of mesic fire-intolerant hardwood tree species.

IVC Environment: Soils of this alliance are dry to well-drained. In the Midwest, stands are typically found on sand or loamy sands. In southwestern Ontario and Michigan, stands occur on undisturbed sand ridges and raised areas in poorly drained glacial lakeplains, sometimes on silty loams. The pH is typically 5.0-7.2. This type can occur in rolling sandy topography leading to complexes that can vary over short distances from dry-mesic to wet-mesic. *Quercus bicolor* or *Quercus macrocarpa* woodlands may also be found on floodplain terraces or depressional settings. Fire tends to over-ride some of the role of moisture on overall composition.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the central midwestern United States and southwestern Ontario, Canada.
IVC Nations: CA,US
IVC States/Provinces: IA, IL, IN, MI, MN, MO, ND, ON, SD, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3323 White Oak - Northern Red Oak - Hickory species North-Central Forest Alliance

[ ]

Quercus alba - Quercus rubra - Carya spp. North-Central Forest Alliance

North-Central White Oak - Hickory Forest

IVC Scientific Name: *Quercus alba - Quercus rubra - Carya* spp. North-Central Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This dry-mesic oak forest alliance is widely distributed in the central Midwest region of the United States and possibly in southwest Ontario, Canada. Stands are 15-25 m tall, with a closed, deciduous canopy. The shrub and herbaceous strata are typically well-developed. *Quercus alba* usually dominates, either alone or in combination with *Quercus rubra* (especially on moister sites) and sometimes *Quercus velutina* and *Quercus falcata* (especially on drier sites). *Carya* species (particularly *Carya tomentosa, Carya glabra*, or *Carya ovata*) are typically common either in the canopy or subcanopy. Other associates include *Fraxinus americana, Ulmus americana, Tilia americana, Acer saccharum, Acer rubrum*, and more locally, *Quercus macrocarpa* and *Quercus ellipsoidalis*. Stands are found on gentle to moderately steep lower to upper slopes on uplands and on steep valley sides. The soils are moderately deep to deep and vary from silts to clays and loams. The parent material ranges from glaciated till to unglaciated soils over limestone, shale, sandstone and other bedrock types. Stands are fire-dependent, and in its absence, many stands are succeeding to types dominated by *Acer saccharum, Tilia americana, Acer rubrum*, and other mesic tree associates.

IVC Dynamics: Stands are fire-dependent, and in its absence, many stands are succeeding to types dominated by *Acer saccharum, Tilia americana, Acer rubrum*, and other mesic tree associates.

IVC Environment: Stands are found on gentle to moderately steep lower to upper slopes on uplands and on steep valley sides. The soils are moderately deep to deep and vary from silts to clays and loams. The parent material ranges from glaciated till to unglaciated soils over limestone, shale, sandstone and other bedrock types.

DISTRIBUTION

IVC Geographic Range: This dry-mesic oak forest alliance is widely distributed in the central Midwest region of the United States and possibly in southwest Ontario, Canada. It ranges from western Ohio and possibly southwest Ontario, west to eastern Minnesota and south to northern Missouri, eastern Nebraska and Kansas.

IVC Nations: CA,US

IVC States/Provinces: IA, IL, IN, KS, MI, MN, MO, NE, OH, OK, ON, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002068 *Quercus alba* - *Quercus rubra* - *Carya ovata* Midwest Forest** [White Oak - Northern Red Oak - Shagbark Hickory Midwest Forest] []
  G4? (1996-10-03) IA, IL, IN, MI, MN, MO, OH, ON, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A0620 Bur Oak Central Tallgrass Woodland Alliance

[ ]

Quercus macrocarpa Central Tallgrass Woodland Alliance

Great Plains Bur Oak Woodland

IVC Scientific Name: *Quercus macrocarpa* Central Tallgrass Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The canopy of this alliance is open to moderately closed and usually dominated by *Quercus macrocarpa*. Common associates in the canopy are *Quercus muehlenbergii* in the southeast portion, *Fraxinus pennsylvanica, Tilia americana*, and *Populus tremuloides* in the northern half, and *Carya* spp. and *Ulmus* spp. in the eastern part of the alliance's range. A shrub layer 1-2 m tall is often present, especially in the northern half of the range of this alliance. Dominant shrubs include *Amelanchier alnifolia, Corylus americana, Corylus cornuta, Prunus virginiana*, and *Symphoricarpos occidentalis*. The herbaceous layer is dominated by graminoids. These can range from tall grasses, such as *Andropogon gerardii, Panicum virgatum*, and *Sorghastrum nutans*, to mid grasses, such as *Schizachyrium scoparium* and *Hesperostipa spartea*, to short graminoids, such as *Carex inops ssp. heliophila*. This alliance is found in a landscape dominated by tallgrass prairie communitiesThese topographic positions provided some protection from the fires that regularly occurred on the surrounding prairies in pre-European times. However, some fire was necessary to prevent the woodland physiognomy from closing and becoming a forest.. In Nebraska, the soils are fertile, moderately well-drained to well-drained, and deep. All of its associations are found in the midwestern United States west of the Mississippi River.

IVC Dynamics: The topographic positions where this alliance occurs provide some protection from the fires that regularly occurred on the surrounding prairies in pre-European times. However, some fire was necessary to prevent the woodland physiognomy from closing and becoming a forest (Abrams 1985, MNNHP 1993).

n similar prairie woodlands, cattle and bison use them for forage, shelter and shade. Damage to trees and undergrowth from rubbing and trampling occurs. Grazing can also cause changes in floristic composition.

IVC Environment: This woodland alliance is found in a landscape dominated by tallgrass prairie communities. It occurs in topographic positions that provided some protection from the fires that regularly occurred on the surrounding prairies in pre-European times. However, some fire was necessary to prevent the woodland physiognomy from closing and becoming a forest (Abrams 1985, MNNHP 1993). In Nebraska, the soils are fertile, moderately well-drained to well-drained, and deep (Rolfsmeier and Steinauer 2010).

DISTRIBUTION

IVC Geographic Range: This alliance occurs across the central tallgrass prairie region from Nebraska and Kansas to western Iowa, western Missouri, and eastern Oklahoma. It may extend into northern Oklahoma.

IVC Nations: CA,US

IVC States/Provinces: IA, KS, MB?, MO, NE, OK, SD

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M.S. Reid, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake

IVC Description Date: 2014-01-08

IVC Acknowledgments:

A3326 Black Oak - White Oak North-Central Forest Alliance

[ ]

Quercus velutina - Quercus alba North-Central Forest Alliance

North-Central Black Oak - White Oak Forest

IVC Scientific Name: *Quercus velutina - Quercus alba* North-Central Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This dry oak forest alliance is found throughout the central midwestern United States and southwestern Ontario, Canada. The tree canopy is moderately closed, occasionally scrubby, and with typically 60-100% cover. *Quercus velutina* is the dominant tree species with *Quercus alba* and *Carya* spp. as common associates. Typical shrubs and small trees include *Cornus florida, Corylus americana, Ostrya virginiana, Sassafras albidum, Vaccinium* spp., *Viburnum acerifolium*, and *Hamamelis virginiana*. Some common herbs (but this list is incomplete) include *Amphicarpaea bracteata, Danthonia spicata, Antennaria plantaginifolia, Desmodium nudiflorum*, and *Prenanthes altissima*. Stands can be found on mid to upper slopes and terraces where dry or dry-mesic conditions persist and where soils are more sandy and/or rocky. Many stands are found on coarser-textured soils. These forests require a combination of drought and fire to persist.

IVC Dynamics: These forests require a combination of drought and fire to persist.

IVC Environment: Stands can be found on mid to upper slopes and terraces where dry or dry-mesic conditions persist and where soils are more sandy and/or rocky. Many stands are found on coarser-textured soils.

DISTRIBUTION

IVC Geographic Range: This dry oak forest alliance is found throughout the central midwestern United States and southwestern Ontario, Canada.

IVC Nations: CA,US

IVC States/Provinces: IA, IL, IN, MI, MN, MO, OH, ON, PA?, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002076** ***Quercus velutina - Quercus alba - Carya (glabra, ovata)*** **Forest** [Black Oak - White Oak - (Pignut Hickory, Shagbark Hickory) Forest] []
  G4? (1996-10-03) IA, IL, IN, MI, MO, OH, ON, WI
- **CEGL005030** ***Quercus velutina - Quercus alba / Vaccinium (angustifolium, pallidum) / Carex pensylvanica*** **Forest** [Black Oak - White Oak / (Lowbush Blueberry, Blue Ridge Blueberry) / Pennsylvania Sedge Forest] []
  G4? (1996-10-03) IL, IN, MI, OH, ON

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

CM014-2 Eastern North American Temperate Hardwood-Conifer Forest - Mesic

Forêts mixtes de la zone tempérée de l'Est de l'Amérique du Nord - mésiques

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: The provisional split of CM014 into dry and mesic types is not yet reflected in this description, which was written for the full CM014 concept. CM014 describes the upland temperate forests of southeastern Manitoba, the upper Great Lakes region of Ontario, the southern Precambrian Shield areas of west-central Quebec and the Appalachian region of eastern Quebec. Forest canopies are primarily a mixture of cold-deciduous broad-leaved and evergreen coniferous species. Anthropogenic disturbance is a dominant factor in determining current forest composition and dynamics. Windthrow, ice loading and insect infestations are the most widespread forms of natural disturbance; fire is a factor in the western portion of the range. Dominant tree species include balsam fir (*Abies balsamea*), red maple (*Acer rubrum*), paper birch (*Betula papyrifera*), yellow birch (*B. alleghaniensis*), sugar maple (*A. saccharum*) and white spruce (*Picea glauca*). Eastern white cedar (*Thuja occidentalis*) is a common companion species throughout the range. Eastern white pine (*Pinus strobus*), red pine (*P. resinosa*) and northern red oak (*Quercus rubra*) are common canopy associates in the Great Lakes and western Quebec portions of the range; red spruce (*Picea rubens*) is an important secondary canopy constituent in the eastern part of the range. American beech (*Fagus grandifolia*) and eastern hemlock (*Tsuga canadensis*) are occasional in the southern part of the range east of the Great Lakes. Depending on overstory and site conditions, understory shrub and herb layers vary from dense to sparse. In addition to regenerating balsam fir, understories are generally rich in cold-deciduous broad-leaved shrubs, perennial herbs and, east of the Great Lakes, regenerating maples and yellow birch. Mountain maple (*Acer spicatum*), beaked hazelnut (*Corylus cornuta*), Canada fly-honeysuckle (*Lonicera canadensis*) and northern bush-honeysuckle (*Diervilla lonicera*) are common throughout the range. Typical herb/dwarf shrub species include bunchberry (*Cornus canadensis*), wild lily-of-the-valley (*Maianthemum canadense*), northern starflower (*Lysimachia borealis*), yellow clintonia (*Clintonia borealis*), wild sarsaparilla (*Aralia nudicaulis*) and rose twisted-stalk (*Streptopus lanceolatus*). Vernal ephemeral forbs like Carolina spring beauty (*Claytonia caroliniana*) and yellow trout lily (*Erythronium americanum*) are characteristic of maple-dominated stands east of the Great Lakes.

CM014 occurs at the northern extent of the mostly humid, continental cool temperate climate of eastern Canada, which is characterized by cool snowy winters and warm humid summers. Mean annual temperatures vary from 1°C to >5°C. Mean annual precipitation increases from (approximately) 600 mm near the Manitoba border to >1100 mm in some areas of eastern Ontario and Quebec. Rainfall significantly exceeds snowfall. Regional geologic and topographic features of the Shield and Appalachian physiographic regions produce an array of local site conditions. All parts of the range experienced late Pleistocene glaciation; soils are mostly Podzols, Brunisols and Luvisols developed in glacial surficial materials.

Three subtypes distinguish regional variation within this Macrogroup. Subtype CM014a [Subhumid Eastern Temperate Hardwood - Conifer Forest] describes temperate forests west of Lake Superior that occur in a generally drier climate with little or no presence of sugar maple, yellow birch or eastern hemlock. CM014b [Humid Eastern Temperate Hardwood - Conifer Forest] describes maple - yellow birch - balsam fir dominated forests east of the Great Lakes that contain significant presence of eastern white pine, red pine and northern red oak. CM014c [Very Humid Eastern Temperate Hardwood - Conifer Forest] describes maple - yellow birch - balsam fir dominated forests in the maritime-influenced climate of the eastern portion of the range, containing greater abundance of balsam fir and significant red spruce content.

IVC Geographic Range:

IVC Nations: CA

IVC States/Provinces:

ADDITIONAL INFORMATION

CNVC Status: Provisional

Related IVC Macrogroups:

Elcode	Name	Rel to CNVC	Note
M102	Laurentian Mesic Mixed Forest	>	

CNVC Classification Comments: The provisional split of CM014 into dry and mesic types is not yet reflected in this description, which was written for the full CM014 concept. Also, we are currently unable to assign the three CM014 subtypes (CM014a Subhumid Eastern Temperate Hardwood - Conifer Forest, CM014b Humid Eastern Temperate Hardwood - Conifer Forest, CM014c Very Humid Eastern Temperate Hardwood - Conifer Forest) to the two new macrogroups because the subtypes aren't described and don't have groups assigned.

CM014 describes the northernmost upland cool temperate forests of east-central Canada, characterized by a hardwood - conifer mixedwood composition with general presence of *Abies balsamea* in combination with *Betula papyrifera, B. alleghaniensis, Acer rubrum* and/or *A. saccharum. Pinus strobus, P. resinosa, Picea glauca* and *Tsuga canadensis* are important

constituents of these forests, although much diminished on the contemporary landscape. Upland boreal forests in eastern Canada, described by M495 [Eastern North American Boreal Forest], are distinguished by general presence of *Picea mariana* and the absence of temperate species like *B. alleghaniensis, A. rubrum, A. saccharum, P. strobus, P. resinosa, Picea rubens* and *T. canadensis*. Understories in CM014 also include species with more southerly distributions (e.g., *Acer pensylvanicum*). South of the range of CM014, CM742 [Eastern Canadian Temperate Deciduous Forest] describes temperate hardwood forests with little conifer content and greater representation of thermophilic tree species like *Carya* spp., *Fraxinus americana, Fagus grandifolia, Quercus* spp. and *Tilia americana*. CM744 [Acadian Temperate Forest] describes temperate forests in maritime-influenced climates to the east of the range of CM014, characterized by high abundance of *A. balsamea* and *P. rubens* in combination with temperate hardwood species.

Groups in Canada:

- **G919 Laurentian Hemlock - White Pine - Hardwood Forest []**
- **G048 Laurentian Subboreal Mesic Balsam Fir - Spruce - Hardwood Forest []**

CNVC Concept Author: K. Baldwin, S. Basquill, K. Chapman, M. Major, J-P. Saucier, P. Uhlig
CNVC Concept Date: 2016-11-01
CNVC Description Author: K. Baldwin, J-P. Saucier, P. Uhlig
CNVC Description Date: 2019-04-01
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G919 Laurentian Hemlock - White Pine - Hardwood Forest

[ ]

IVC Colloquial Name: Laurentian Hemlock - White Pine - Hardwood Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: MI, MN, ON, QC, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G4* rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4450 *Thuja occidentalis* Laurentian Forest Alliance** [Northern White-cedar Laurentian Forest Alliance] []
  This mesic cedar forest occurs in the Laurentian-Great Lakes region, characterized by *Thuja occidentalis*.
- **A4452 *Tsuga canadensis* - *Betula alleghaniensis* - *Acer saccharum* Laurentian Forest Alliance** [Eastern Hemlock - Yellow Birch - Sugar Maple Laurentian Forest Alliance] []
  This alliance is composed of cool, mesic hemlock - northern hardwood forests of the Laurentian-Great Lakes region.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4450 Northern White-cedar Laurentian Forest Alliance

[ ]
Thuja occidentalis Laurentian Forest Alliance
Laurentian White Cedar Forest

IVC Scientific Name: *Thuja occidentalis* Laurentian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This mesic cedar forest occurs in the Laurentian-Great Lakes region. *Thuja occidentalis* is the leading dominant. Various conifer associates include *Abies balsamea, Pinus strobus*, and in eastern parts of the range, *Tsuga canadensis*. Hardwood associates include *Acer rubrum, Acer saccharum,* and in eastern parts of the range, *Betula alleghaniensis*. The herb layer may contain *Maianthemum canadense, Linnaea borealis*, club-mosses (*Lycopodium* spp., *Huperzia* spp, etc.), and others. More information is needed on this community type.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This mesic cedar forest occurs in the Laurentian-Great Lakes region from northwest Ontario and northwest Minnesota to central Ontario and Michigan, possibly into western Quebec.
IVC Nations: CA,US
IVC States/Provinces: MI, MN, ON, QC?, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002450 *Thuja occidentalis - Betula alleghaniensis* Forest** [Northern White-cedar - Yellow Birch Forest] []
  G2Q (1998-06-22) MI, MN, ON, QC?, WI
- **CEGL002595 *Thuja occidentalis - (Betula alleghaniensis, Tsuga canadensis)* Forest** [Northern White-cedar - (Yellow Birch, Eastern Hemlock) Forest] []
  G3? (2002-10-24) MI, ON, QC?, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen and R. O'Connor.
IVC Description Date:
IVC Acknowledgments:

A4452 Eastern Hemlock - Yellow Birch - Sugar Maple Laurentian Forest Alliance

[ ]

Tsuga canadensis - Betula alleghaniensis - Acer saccharum Laurentian Forest Alliance

Laurentian Hemlock - Northern Hardwood Forest

IVC Scientific Name: *Tsuga canadensis - Betula alleghaniensis - Acer saccharum* Laurentian Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This hemlock-hardwood forest occurs in the Laurentian-Great Lakes region from northwest Wisconsin and west-central Ontario to Michigan, eastern Ontario, and western Quebec. *Tsuga canadensis* and some combination of *Acer saccharum, Betula alleghaniensis,* and *Fagus grandifolia* (eastward) are the typical dominant trees. Associated trees include *Acer rubrum, Betula papyrifera, Pinus strobus*, and *Prunus serotina*. The shade from the canopy and dense saplings and seedlings inhibits the growth of many other species. These stands often have a depauperate ground layer. Where the shade is not as complete, shrubs such as *Corylus cornuta, Diervilla lonicera, Hamamelis virginiana,* and *Sambucus racemosa* var. *racemosa* are common. The herbaceous layer consists of species such as *Anemone quinquefolia, Cornus canadensis, Dryopteris carthusiana, Maianthemum canadense, Medeola virginiana, Mitchella repens, Oxalis montana, Trientalis borealis, Trillium grandiflorum*, and *Viola* spp. Stands of this alliance tend to be on dry-mesic to mesic loamy and sandy soils. The soil is typically acidic with parent material of glacial till in the north. Stands can be on flat to moderately steep slopes of any aspect.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range: This hemlock-hardwood forest occurs in the Laurentian-Great Lakes region from northwest Wisconsin and west-central Ontario to Michigan and eastern Ontario into western Quebec.

IVC Nations: CA,US

IVC States/Provinces: MI, MN, ON, QC, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005042** ***Tsuga canadensis - Fagus grandifolia - (Acer saccharum)*** **Great Lakes Forest** [Eastern Hemlock - American Beech - (Sugar Maple) Great Lakes Forest] []
  G4G5 (1998-06-22) MI, ON, WI
- **CEGL002590** ***Pinus strobus - Tsuga canadensis*** **Great Lakes Forest** [Eastern White Pine - Eastern Hemlock Great Lakes Forest] []
  G3 (2002-10-24) MI, ON, WI
- **CEGL002598** ***Tsuga canadensis - (Betula alleghaniensis)*** **Forest** [Eastern Hemlock - (Yellow Birch) Forest] []
  G3? (2012-04-06) MI, ON, WI
- **CEGL005044** ***Tsuga canadensis - Acer saccharum - Betula alleghaniensis*** **Forest** [Eastern Hemlock - Sugar Maple - Yellow Birch Forest] []
  G4? (1996-10-03) MI, ON, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author:

IVC Description Date:

IVC Acknowledgments:

G048 Laurentian Subboreal Mesic Balsam Fir - Spruce - Hardwood Forest

[ ]

IVC Colloquial Name: Laurentian Subboreal Mesic Balsam Fir - Spruce - Hardwood Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group represents the mesic eastern subboreal forest, ranging from northwestern Ontario to eastern Canada's Atlantic provinces and extending into the U.S. in northeastern Minnesota, Isle Royale, and near-coastal areas of Lake Superior shores in northern Wisconsin and Michigan. The low- to moderate-elevation forests are dominated by *Picea glauca* and/or *Abies balsamea*. *Picea mariana* may be present, along with occasional *Pinus banksiana*. Codominant boreal hardwoods include *Populus tremuloides* and *Betula papyrifera*. Northern hardwoods, such as *Acer saccharum* and *Tilia americana* are relatively minor. The shrub and herb layers are variable, decreasing as the percent conifer cover increases. Common shrub species include *Acer spicatum, Alnus viridis, Corylus cornuta, Diervilla lonicera*, and *Lonicera canadensis*. The moss layer ranges from discontinuous to continuous. These upland forests typically occur on loamy soils over bedrock in scoured bedrock uplands and loamy, rocky, or sandy soils on glacial moraines, till plains and outwash plains, and moisture conditions range from well-drained to somewhat poorly drained. Wetter sites may contain *Alnus incana ssp. rugosa, Calamagrostis canadensis*, and *Equisetum* spp. This is the matrix forest type in many parts of its range. This group may include earlier-successional patches, in which *Populus* spp. and *Betula* spp. are dominant or mixed with *Picea* and *Abies*, which will develop into spruce-fir forests. Blowdown with subsequent gap regeneration is the most frequent form of natural disturbance, with large-scale fires important at longer return intervals. Insect infestations, in particular by *Choristoneura fumiferana* (spruce budworm), also can impact this group. In Quebec and in northern New Brunswick, the vegetation type is usually a mixedwood forest with *Abies balsamea* and *Betula alleghaniensis* or *Acer rubrum*. It also occupies the lower shoulders of the boreal plateau in Cape Breton, Nova Scotia.

IVC Dynamics: These forests are affected by windthrow, insect defoliation, and infrequent fires. Forests closer to the Great Lakes shorelines occur on shallower soils and are more likely to experience more serious windthrow and snap-off of larger trees. Mammalian herbivory also can impact forest stands. Selective herbivory by white-tailed deer and moose (*Alces americanus*) can alter the composition and structure and favor browse-tolerant species such as *Picea glauca*. These forests typically regenerate from gap-phase dynamics.

IVC Environment: These upland forests typically occur on loamy soils over bedrock in scoured bedrock uplands and loamy, rocky, or sandy soils on glacial moraines, till plains and outwash plains (Minnesota DNR 2003). Moisture conditions range from well-drained to somewhat poorly drained. Climate typically is characterized by cool, even temperatures, shorter growing season, and deep and sometimes severe winter snowfall. In the southern part of their range in the Great Lakes states, they occur along northern Great Lakes shorelines and on islands in Lake Superior. *Climate:* Cold temperate to boreal. *Soil/substrate/hydrology:* Soils are typically neutral to acidic, shallow sandy, sandy-loam, or loamy-sand. Some examples occur on heavier, mesic silty or clay loams that are more alkaline in nature. Along Great Lakes shorelines, these soils overlay limestone or volcanic bedrock.

DISTRIBUTION

IVC Geographic Range: This group ranges in Canada from northwestern Ontario (possibly eastern Manitoba) to eastern Canada's Atlantic provinces and extending into the U.S. in northeastern Minnesota, Isle Royale, and near-coastal areas of Lake Superior shores in northern Wisconsin and Michigan. Its range westward is marked by a shift towards greater *Picea glauca* dominance and lower *Abies balsamea* dominance.

IVC Nations: CA,US

IVC States/Provinces: LB, MB, MI, MN, NB?, NF, NS, ON, QC, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3267 *Abies balsamea - Betula alleghaniensis - Populus tremuloides* Subboreal Forest Alliance** [Balsam Fir - Yellow Birch - Quaking Aspen Subboreal Forest Alliance] []
  Stands are dominated by *Picea glauca* and *Abies balsamea* with an abundance of northern hardwoods, such as *Acer rubrum, Acer saccharum, Betula alleghaniensis, Populus grandidentata, Prunus serotina*, and *Tilia americana*, along with the boreal hardwoods *Populus tremuloides* and *Betula papyrifera*. These subboreal conifer - northern hardwood forests are found in the eastern cool temperate forest region, ranging from north-central Minnesota, Wisconsin and Michigan through central Ontario to eastern Canada.
- **A3844 *Populus tremuloides - Betula papyrifera* Subboreal Forest Alliance** [Quaking Aspen - Paper Birch Subboreal Forest Alliance] []
  This alliance is found in the subboreal regions of the midwestern United States and eastern Canada, and is dominated by *Betula papyrifera* and *Populus tremuloides*, with low abundance of boreal conifers *Picea glauca* and *Abies balsamea* (<25%), and very minor representation of northern hardwood species.
- **A3845 *Thuja occidentalis - Abies balsamea* Subboreal Forest Alliance** [Northern White-cedar - Balsam Fir Subboreal Forest Alliance] []
  This subboreal alliance is found primarily in the northern Great Lakes region of Minnesota and Ontario, possibly ranging east into New England. Stands are dominated by *Thuja occidentalis* with *Abies balsamea* or *Picea glauca* often present, and occur on wet-mesic to well-drained slopes.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: F.H. Eyre (1980)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2015-05-21
IVC Acknowledgments: Ken Baldwin, Peter Uhlig, Claude Morneau, Sean Basquill, Mélanie Major

A3267 Balsam Fir - Yellow Birch - Quaking Aspen Subboreal Forest Alliance

[ ]
Abies balsamea - Betula alleghaniensis - Populus tremuloides Subboreal Forest Alliance
Subboreal Mesic Fir - Yellow Birch - Hardwood Forest

IVC Scientific Name: *Abies balsamea - Betula alleghaniensis - Populus tremuloides* Subboreal Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Stands are dominated by *Picea glauca* and *Abies balsamea* with an abundance of northern hardwoods, such as *Acer rubrum, Acer saccharum, Betula alleghaniensis, Populus grandidentata, Prunus serotina*, and *Tilia americana*, along with the boreal hardwoods *Populus tremuloides* and *Betula papyrifera*. Other conifers include *Pinus strobus, Thuja occidentalis* and, less commonly, *Tsuga canadensis*. The shrub and herb layers are variable, decreasing as the percent conifer cover increases. Common shrub species include *Acer spicatum, Amelanchier* spp., *Corylus cornuta, Diervilla lonicera, Lonicera canadensis*, and *Prunus virginiana*. The herbaceous layer is often quite poor and includes species such as *Anemone quinquefolia, Aralia nudicaulis, Cornus canadensis, Clintonia borealis, Eurybia macrophylla, Maianthemum canadense, Mitella nuda*, and *Trientalis borealis*. The moss layer ranges from discontinuous to continuous. These subboreal conifer - northern hardwood forests are found in the eastern cool temperate forest region, ranging from north-central Minnesota, Wisconsin and Michigan through central Ontario to eastern Canada. These upland forests typically occur on mesic to wet-mesic (moist) sites, most commonly level, clayey sites, and sites with high local water tables on glacial lake deposits, stagnation moraines and till plains. Wetter sites may contain *Alnus incana ssp. rugosa, Calamagrostis canadensis*, and *Equisetum* spp.
IVC Dynamics: These forests are affected by windthrow, insect defoliation, and infrequent fires. Mammalian herbivory also can impact forest stands. Selective herbivory by white-tailed deer can alter the composition and structure and favor browse-tolerant species such as *Picea glauca*. These forests typically regenerate from gap-phase dynamics.
IVC Environment: *Climate:* Climate is characterized by cool, even temperatures, shorter growing season than other temperate types, and deep and sometimes severe winter snowfall. In the southern part of their range in the Great Lakes states, these forests occur along northern Great Lakes shorelines and on islands in Lake Superior. *Soil/substrate/hydrology:* These upland forests

typically occur on mesic to wet-mesic (moist) sites, most commonly level, clayey sites, and sites with high local water tables on glacial lake deposits, stagnation moraines and tillplains (Minnesota DNR 2003).

DISTRIBUTION

IVC Geographic Range: This alliance represents the sub-boreal conifer - northern hardwoods of the eastern cool temperate forests ranging from north-central Minnesota, Wisconsin and Michigan through central Ontario to eastern Canada. It does not occur in northern New England, where red spruce types predominate. Distribution in the Canadian Maritimes needs to be more fully explored.

IVC Nations: CA,US

IVC States/Provinces: MB, MI, MN, NB?, NS?, ON, QC, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00345** ***Abies balsamea* / *Alnus incana* / *Rubus pubescens*** [Balsam Fir / Gray Alder / Dwarf Red Blackberry] [Sapin baumier / Aulne rugueux / Ronce pubescente]
  GNR.
- **CEGL005052** ***Betula papyrifera*** **Cliff Rim Woodland** [Paper Birch Cliff Rim Woodland] []
  GNR. ON
- **CEGL002446** ***Picea glauca - Abies balsamea / Acer spicatum / Rubus pubescens*** **Forest** [White Spruce - Balsam Fir / Mountain Maple / Dwarf Red Blackberry Forest] []
  G4G5 (1996-10-03) MB, MI, MN, ON, QC?, WI
- **CEGL005238** ***Populus tremuloides - Abies balsamea*** **Wet-Mesic Forest** [Quaking Aspen - Balsam Fir Wet-Mesic Forest] []
  GNR. MN
- **CEGL005224** ***Pinus strobus - Picea glauca - Betula papyrifera*** **Subboreal Forest** [Eastern White Pine - White Spruce - Paper Birch Subboreal Forest] []
  This type represents the subboreal conifer - northern hardwoods of the eastern cool temperate forests ranging from the north-central Great Lakes states through central Ontario to eastern Canada and dominated by *Pinus strobus* and *Picea glauca* or with a mix of northern hardwoods, such as *Acer rubrum, Acer saccharum, Populus grandidentata*, and *Prunus serotina*. GNR. MI, MN, NB?, NS?, ON, QC?, WI
- **CEGL002476** ***Picea glauca - Abies balsamea - Populus tremuloides / Pleurozium schreberi*** **Forest** [White Spruce - Balsam Fir - Quaking Aspen / Schreber's Big Red-stem Moss Forest] []
  GNR. MB, ON
- **CEGL002475** ***Picea glauca - Abies balsamea - Populus tremuloides*** **/ Mixed Herbs Forest** [White Spruce - Balsam Fir - Quaking Aspen / Mixed Herbs Forest] []
  G5 (1996-10-03) MB, MI, MN, ON, QC?, WI
- **CEGL002509** ***Picea glauca - Abies balsamea / Pleurozium schreberi*** **Forest** [White Spruce - Balsam Fir / Schreber's Big Red-stem Moss Forest] []
  GNR. MB, MI, ON

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A3844 Quaking Aspen - Paper Birch Subboreal Forest Alliance

[ ]

Populus tremuloides - Betula papyrifera Subboreal Forest Alliance
Subboreal Quaking Aspen - Paper Birch Forest

IVC Scientific Name: *Populus tremuloides - Betula papyrifera* Subboreal Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found in the subboreal regions of the midwestern United States and in eastern Canada. This community is dominated by *Betula papyrifera* and *Populus tremuloides*, with a low cover (<25%) of the conifers *Abies balsamea* and *Picea glauca* in the canopy, though they may be common in the subcanopy or the sapling layer. Common shrubs species include *Acer spicatum, Corylus cornuta, Diervilla lonicera*, and *Rosa acicularis*. The herbaceous stratum can include a diversity of forbs, including *Actaea rubra, Aralia nudicaulis, Clintonia borealis, Eurybia macrophylla, Maianthemum canadense*, and *Trientalis borealis*. Stands of this alliance are typically early-successional and become established on a variety of landscape positions. The soils are deep, well-drained to rapidly drained mineral soils. Soil textures are usually clay loamy but can be silt or fine sand.
IVC Dynamics: Stands of this alliance are typically early-successional, arising from disturbances to spruce-fir stands in the sub-boreal region.
IVC Environment: Stands of this alliance are typically early-successional and become established on a variety of landscape positions. They have been found on moderately well-drained to very well-drained clay, loam, and sand soils (Sakai et al. 1985, Sims et al. 1989, Alban et al. 1991). Stands can be found on ridgetops, upper, mid, and lower slopes with gentle to moderate slopes and on flat plains (Ohmann and Ream 1971, Sakai et al. 1985).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the upper Great Lakes region of Michigan, northern Wisconsin, and northern Minnesota, and in Canada in central Ontario, and eastward into Quebec.
IVC Nations: CA,US
IVC States/Provinces: MB, MI, MN, ON, QC, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002466 *Populus tremuloides - Betula papyrifera / (Abies balsamea, Picea glauca)* Forest** [Quaking Aspen - Paper Birch / (Balsam Fir, White Spruce) Forest] []
  G5 (1996-10-03) MB, MI, MN, ON, QC?, WI
- **CEGL002463 *Betula papyrifera / Diervilla lonicera - (Abies balsamea)* Forest** [Paper Birch / Northern Bush-honeysuckle - (Balsam Fir) Forest] []
  G4? (1996-10-03) MB, MI, MN, ON, QC?, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen and S. Menard
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3845 Northern White-cedar - Balsam Fir Subboreal Forest Alliance

[ ]
Thuja occidentalis - Abies balsamea Subboreal Forest Alliance
Subboreal Northern White-cedar - Balsam Fir Forest

IVC Scientific Name: *Thuja occidentalis - Abies balsamea* Subboreal Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This subboreal alliance is found primarily in the northern Great Lakes region of Minnesota and Ontario, possibly ranging east into New England. *Thuja occidentalis* dominates the canopy and can occur in pure stands. Other associates include *Abies balsamea, Acer rubrum, Betula papyrifera, Picea glauca, Picea mariana, Populus tremuloides*, and *Pinus strobus*. Absent are northern hardwood trees. The tall-shrub/sapling layer contains species such as saplings of *Thuja occidentalis* and *Abies balsamea* and shrubs *Acer spicatum, Corylus cornuta, Lonicera canadensis, Rubus pubescens*, and *Sorbus decora*. The ground layer is diverse on mesic stands and less so on steep, drier stands. Typical species include *Aralia nudicaulis, Clintonia borealis, Cornus canadensis, Eurybia macrophylla, Galium triflorum, Maianthemum canadense, Mitella nuda*, and *Trientalis borealis*. This type typically occurs on wet-mesic to well-drained slopes. Soils are fine to moderately coarse-textured, usually calcareous, moderately deep to deep, and often contain boulders at the surface.

IVC Dynamics:

IVC Environment: This type typically occurs on gentle wet-mesic slopes to very steep well-drained slopes (MNNHP 1993). The predominant aspect is north to northeast. Soils are fine-textured, calcareous, moderately deep to deep (50-100 cm), and often contain boulders at the surface (Ohmann and Ream 1971, Sims et al. 1989).

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the northern Great Lakes region of the United States and Canada in Minnesota and Ontario, and possibly east to northern New England.

IVC Nations: CA,US

IVC States/Provinces: MI?, MN, ON, QC?, WI?

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002449 *Thuja occidentalis / Abies balsamea - Acer spicatum* Forest** [Northern White-cedar / Balsam Fir - Mountain Maple Forest] []
  G4 (1996-10-03) MN, ON, QC?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: S. Menard, in Faber-Langendoen et al. (2013)

IVC Description Author: S. Menard

IVC Description Date: 2014-12-18

IVC Acknowledgments:

CM742b Cool Eastern Canadian Temperate Deciduous Forest

[ ]

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: The provisional split of CM742 into its warm and cool submacrogroups is not yet reflected in this description, which was written for the full CM742 concept. CM742 describes the upland temperate forests of southern Ontario as well as the southwestern portion of Quebec. Forest canopies are primarily composed of cold-deciduous broad-leaved species. Anthropogenic disturbance is the dominant factor in determining forest composition, dynamics and distribution. Windthrow, ice loading and insect infestations are the most widespread forms of natural disturbance; fire is generally not a natural disturbance factor. Dominant tree species include sugar maple (*Acer saccharum*), red maple (*A. rubrum*), white ash (*Fraxinus americana*), American basswood (*Tilia americana*) and American beech (*Fagus grandifolia*). Eastern hop-hornbeam (*Ostrya virginiana*), black cherry (*Prunus serotina*) and northern red oak (*Quercus rubra*) are common canopy associates throughout the range; eastern white pine (*Pinus strobus*) is occasional. Balsam fir (*Abies balsamifera*), yellow birch (*Betula alleghanensis*), eastern hemlock (*Tsuga canadensis*), eastern white cedar (*Thuja occidentalis*) and white spruce (*Picea glauca*) are companion species on cooler sites, especially in the northern portion of the range. Hickories (*Carya* spp.), white oak (*Quercus alba*) and blue-beech (*Carpinus caroliniana*) are more common on warmer sites and in southern parts of the range. Depending on overstory and site conditions, understory shrub and herb layers vary from dense to sparse. Shrub layers are typically rich in regenerating maples and/or other broad-leaved tree species, together with cold-deciduous broad-leaved shrubs and vines such as alternate-leaved dogwood (*Cornus alternifolia*), eastern prickly gooseberry (*Ribes cynosbati*), Canada fly-honeysuckle (*Lonicera canadensis*) and poison ivy (*Toxicodendron radicans*). Typical herb/dwarf shrub species include trilliums (*Trillium* spp.), hairy Solomon's seal (*Polygonatum pubescens*), large false Solomon's seal (*Maianthemum racemosum*), wild lily-of-the-valley (*M. canadense*), Jack-in-the-pulpit (*Arisaema triphyllum*) and partridgeberry (*Mitchella repens*). Vernal ephemeral forbs like Carolina spring beauty (*Claytonia caroliniana*), yellow trout lily (*Erythronium americanum*) and wild leek (*Allium tricoccum*) are characteristic of these forests. Numerous native plant species, such as eastern flowering dogwood (*Cornus florida*), black oak (*Quercus velutina*), tulip tree (*Liriodendron tulipifera*) and American ginseng (*Panax quinquefolius*) reach their northern range limits in the southern portion of the CM742 range.

CM742 occurs in the humid, continental cool temperate climate of eastern Canada, generally characterized by cool winters and moist, warm to hot summers. Mean annual temperatures vary from 5°C to >9°C. Mean annual precipitation is >900 mm throughout the range; rainfall significantly exceeds snowfall. Regional geologic and topographic features of the St. Lawrence Lowlands physiographic region produce a mostly subdued topography with low relief, except in the west-central part of the range where the cliffs of the Niagara Escarpment overlook the plains. All parts of the region experienced late Pleistocene glaciation; soils are mostly calcareous Luvisols and Brunisols developed in glacial surficial materials. Two subtypes distinguish regional variation within this Macrogroup. Subtype CM742a [Warm Eastern Canadian Temperate Deciduous Forest] describes forests of warmer sites, mostly near Lake Erie, that are dominated by sugar maple with a floristic assemblage that reflects deciduous forests south of the Great Lakes. CM742b [Cool Eastern Canadian Temperate Deciduous Forest] describes maple-beech-basswood dominated forests that have greater conifer content and occur from Lake Huron eastward into the St. Lawrence valley of southwestern Quebec.

IVC Geographic Range:

IVC Nations: CA

IVC States/Provinces:

ADDITIONAL INFORMATION

CNVC Status: Provisional

Related IVC Macrogroups:

Elcode	Name	Rel to CNVC	Note
M102	Laurentian Mesic Mixed Forest	><	M102 is mesic part of CM742b but is also related to CM014-2.
M159	Laurentian Pine - Hardwood Forest & Woodland	?	The dry part of CM742b might be related to M159, but that's unclear

CNVC Classification Comments: CM742 has provisionally been split into its 2 submacrogroups (warm (CM742a) and cool (CM742b)) to better relate to the USNVC. The submacrogroups are now provisionally considered to be macrogroups. The split is not yet reflected in this description, which was written for the full CM742 concept. CM742 describes temperate, hardwood forests with little conifer content that constitute the northern edge of the eastern North American deciduous forest region, which extends south to the Gulf of Mexico. CM014 [Eastern North American Temperate Hardwood - Conifer Forest] describes the upland cool

temperate forests of eastern Canada that are characterized by a conifer - hardwood mixedwood composition with general presence of *Abies balsamea* in combination with *Betula papyrifera, B. alleghaniensis, Acer rubrum* or *A. saccharum. Pinus strobus, P. resinosa, Picea rubens* and *Tsuga canadensis* are important constituents of CM014 forests and understories contain species with more northern affinities. CM744 [Acadian Temperate Forest] describes temperate forests in maritime-influenced climates of Atlantic Canada, characterized by high abundance of *A. balsamea* and *Picea rubens* in combination with temperate hardwood species.

Many forest and woodland Associations of CM742, and numerous constituent species, occur primarily south of the Great Lakes; Canadian occurrences are restricted to the southern portion of the CM742 range. The combination of natural rarity and intense anthropogenic disturbance has resulted in many ecosystems and species that are considered to be at high risk of extinction in Canada.

Groups in Canada:

- **G921 Laurentian Hardwood Forest []**

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author: K. Baldwin, P. Uhlig, M. Wester
CNVC Description Date: 2019-04-01
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G921 Laurentian Hardwood Forest

[ ]

IVC Colloquial Name: Laurentian Hardwood Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: MI, MN, ON, QC, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.:

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4446 *Acer saccharum* - *Tilia americana* Laurentian Forest Alliance** [Sugar Maple - American Basswood Laurentian Forest Alliance] []
  This alliance is composed of rich mesic forests in the Laurentian-Great Lakes region where *Acer saccharum* is dominant in the overstory and sapling layer in association with other hardwoods.
- **A4448 *Acer saccharum* - *Tilia americana* Rich Laurentian Forest Alliance** [Sugar Maple - American Basswood Rich Laurentian Forest Alliance] []

These rich northern hardwood forests of the Laurentian-Great Lakes region contain a diverse tree canopy and understory, with *Acer saccharum* and *Tilia americana* as typical components.

- **A4444 *Betula papyrifera* - *Populus tremuloides* Laurentian Forest Alliance** [Paper Birch - Quaking Aspen Laurentian Forest Alliance] []
  This successional forest alliance is characterized by a mixture of *Acer rubrum, Betula papyrifera*, and/or *Populus tremuloides* and is found in the Laurentian-Great Lakes region of the United States and Canada.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4446 Sugar Maple - American Basswood Laurentian Forest Alliance

[ ]
Acer saccharum - Tilia americana Laurentian Forest Alliance
Laurentian Mesic Hardwood Forest

IVC Scientific Name: *Acer saccharum - Tilia americana* Laurentian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is composed of rich mesic forests. Stands typically have a closed canopy of deciduous trees, but conifers are often scattered throughout the stands. *Acer saccharum* is dominant in the overstory and sapling layer. *Betula alleghaniensis* (eastward), *Fagus grandifolia* (eastward), *Quercus rubra*, and *Tilia americana* may be codominants. Other common trees include *Abies balsamea, Acer rubrum, Fraxinus americana, Ostrya virginiana, Picea glauca, Pinus strobus,* and *Tsuga canadensis* (eastward). Typical shrubs include *Acer pensylvanicum* (in the East), *Corylus cornuta, Hamamelis virginiana, Lonicera canadensis, Taxus canadensis*, and *Viburnum acerifolium*. Many of the common herbaceous species are typical of cool temperate and subboreal conditions. These include *Aralia nudicaulis, Chimaphila maculata, Clintonia borealis, Lycopodium* spp., *Maianthemum canadense, Osmorhiza claytonii, Oxalis montana, Pteridium aquilinum*, and *Streptopus lanceolatus* var. *longipes*. Stands of this alliance are found on moderate to deep (60-150 cm) sandy loam, clay loam, or loamy sand soils that are typically slightly acidic to circumneutral, mesic to wet-mesic and nutrient-rich. Most stands develop on flat to moderate slopes over glacial till. A relatively thick layer of fallen leaves covers the forest floor. Sites that support this alliance are on flat to moderately sloping terrain on glacial features, such as till or moraines, or on calcareous rocks, sandstone, or shale outside the glaciated region.
IVC Dynamics:
IVC Environment: Sites occur on flat to moderately sloping terrain on glacial features, such as till or moraines, or on calcareous rocks, sandstone, or shale outside the glaciated region. Soils are moderate to deep (60-150 cm) sandy loam, clay loam, or loamy sand (Coffman and Willis 1977, Pregitzer and Barnes 1984). They are typically slightly acidic to circumneutral, mesic to wet-mesic and nutrient-rich (Kotar and Burger 1989). A relatively thick layer of fallen leaves covers the forest floor (Kotar and Burger 1989).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Laurentian-Great Lakes region, from northwestern Ontario and northeast Minnesota to Michigan, Ontario, and western Quebec.
IVC Nations: CA,US
IVC States/Provinces: MI, MN, ON, QC, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002457 *Acer saccharum - Betula alleghaniensis - Tilia americana* Forest** [Sugar Maple - Yellow Birch - American Basswood Forest] []
  G3G4 (1998-06-22) MI, MN, ON, WI
- **CEGL005004 *Acer saccharum - Fagus grandifolia - Betula* spp. / *Maianthemum canadense* Forest** [Sugar Maple - American Beech - Birch species / Canada Mayflower Forest] []
  G4G5 (1996-10-03) MI, ON, WI
- **CEGL005245 *Betula alleghaniensis - (Acer saccharum, Picea glauca)* Forest** [Yellow Birch - (Sugar Maple, White Spruce) Forest] []
  GNR. MI, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments: M.E. Hall

A4448 Sugar Maple - American Basswood Rich Laurentian Forest Alliance

[ ]

Acer saccharum - Tilia americana Rich Laurentian Forest Alliance

Laurentian Rich Mesic Hardwood Forest

IVC Scientific Name: *Acer saccharum - Tilia americana* Rich Laurentian Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These rich northern hardwood forests are found in the Laurentian-Great Lakes region and contain a diverse tree canopy and understory. The tree canopy of these forests is variable, but *Acer saccharum, Populus tremuloides* and *Tilia americana* are almost always present. Associated canopy trees often include *Acer spicatum*, (eastward only), *Ostrya virginiana*, and *Prunus serotina* var. *serotina. Fagus grandifolia* and *Fraxinus americana* are lesss common or absent moving westward. The shrub layer is variable in cover depending on site characteristics and canopy density. Common species include *Cornus alternifolia, Corylus americana, Dirca palustris, Hamamelis virginiana, Lonicera canadensis, Sambucus racemosa, Viburnum acerifolium*, and *Viburnum lantanoides* (eastward only). Typical herbs include *Adiantum pedatum, Arisaema triphyllum, Asarum canadense, Cardamine* spp., *Carex platyphylla, Caulophyllum thalictroides, Osmorhiza* spp., *Sanguinaria canadensis, Solidago flexicaulis, Trillium grandiflorum*, and *Viola* spp. Stands occur in a variety of settings, including gentle to steep slopes, boulder talus, or in valleys adjacent to floodplains. Soils are usually deep, moderately to well-drained sands, loams, silt loams, moderately acidic to moderately alkaline, and of high fertility, often derived from calcareous parent materials. Soil moisture-holding and cation-exchange capabilities are high.

IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: These rich northern hardwood forests are found in the Laurentian-Great Lakes region from northwest Ontario and northeast Minnesota to Michigan, Ontario, and western Quebec.
IVC Nations: CA,US
IVC States/Provinces: MI, MN, ON, QC, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002461** ***Quercus rubra - Acer saccharum - (Betula alleghaniensis)*** **Forest** [Northern Red Oak - Sugar Maple - (Yellow Birch) Forest] []
  G4G5 (2009-08-14) MI, MN, ON, WI
- **CEGL002458** ***Acer saccharum - Tilia americana / Ostrya virginiana / Lonicera canadensis*** **Forest** [Sugar Maple - American Basswood / Hophornbeam / American Fly-honeysuckle Forest] []
  G3? (1998-06-22) MN, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4444 Paper Birch - Quaking Aspen Laurentian Forest Alliance

[ ]
Betula papyrifera - Populus tremuloides Laurentian Forest Alliance
Laurentian Aspen-Birch-Hardwood Forest

IVC Scientific Name: *Betula papyrifera - Populus tremuloides* Laurentian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This successional forest alliance is found in the Laurentian-Great Lakes region of the United States and Canada. Stands have a moderately open to closed canopy characterized by a mixture of *Betula papyrifera* and/or *Populus tremuloides*. Canopy associates are typically composed of a tree-reproduction layer and are dominated by later-successional deciduous trees, *Acer rubrum* being the most common. Other species may include *Abies balsamea, Acer saccharum, Betula alleghaniensis, Fagus grandifolia, Pinus resinosa, Pinus strobus, Picea glauca*, and *Quercus rubra*. Short trees such as *Acer spicatum, Acer pensylvanicum*, and *Amelanchier* spp. are common. The density of the shrub layer varies inversely with the density of the canopy and subcanopy trees. Dry-mesic stands tend to have higher shrub cover. Most common shrubs are 1-2 m tall. Typical shrubs include *Corylus cornuta, Diervilla lonicera, Rosa acicularis*, and *Rubus pubescens. Taxus canadensis* may be present at some sites. Typical herbaceous species include *Aralia nudicaulis, Clintonia borealis, Cornus canadensis, Maianthemum canadense, Dryopteris intermedia, Eurybia macrophylla, Oryzopsis asperifolia*, and *Trientalis borealis*. Stands are typically early-successional, caused by windstorms and other natural disturbances, as well as by logging. They can become established on a variety of landscape positions. They have been found on moderately well-drained to very well-drained clay, loam, and sand soils. Stands can be found on ridgetops, upper, mid, and lower slopes with gentle to moderate slopes and on flat plains.
IVC Dynamics: Stands are typically early successional, caused by windstorms and other natural disturbances, as well as by logging. They can become established on a variety of landscape positions.
IVC Environment: Stands have been found on moderately well-drained to very well-drained clay, loam, and sand soils (Sakai et al. 1985, Sims et al. 1989, Alban et al. 1991). Stands can be found on ridgetops, upper, mid, and lower slopes with gentle to moderate slopes and on flat plains (Ohmann and Ream 1971, Sakai et al. 1985).

DISTRIBUTION

IVC Geographic Range: This successional forest alliance is found in the Laurentian-Great Lakes region of the United States Canada, from northwest Ontario and northeast Minnesota to eastern Michigan, Ontario, and western Quebec.
IVC Nations: CA,US
IVC States/Provinces: MI, MN, ON, QC, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002467** ***Populus tremuloides - Betula papyrifera - (Acer rubrum, Fraxinus nigra)*** **Forest** [Quaking Aspen - Paper Birch - (Red Maple, Black Ash) Forest] []
  G5 (1996-10-03) MI, MN, ON, QC?, WI
- **CEGL002468** ***Populus tremuloides - Betula papyrifera - Acer saccharum*** **- Mixed Hardwoods Forest** [Quaking Aspen - Paper Birch - Sugar Maple - Mixed Hardwoods Forest] []
  G5 (1996-10-03) MI, MN, ON, WI
- **CEGL002464** ***Betula papyrifera - Acer saccharum*** **/ Mixed Hardwoods Forest** [Paper Birch - Sugar Maple / Mixed Hardwoods Forest] []
  G4? (1996-10-03) MN, ON, WI?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments: L. Sneddon, M.E. Hall

CM014-1 Eastern North American Temperate Hardwood-Conifer Forest - Dry

Forêts mixtes de la zone tempérée de l'Est de l'Amérique du Nord - sèches

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: The provisional split of CM014 into dry and mesic types is not yet reflected in this description, which was written for the full CM014 concept. CM014 describes the upland temperate forests of southeastern Manitoba, the upper Great Lakes region of Ontario, the southern Precambrian Shield areas of west-central Quebec and the Appalachian region of eastern Quebec. Forest canopies are primarily a mixture of cold-deciduous broad-leaved and evergreen coniferous species. Anthropogenic disturbance is a dominant factor in determining current forest composition and dynamics. Windthrow, ice loading and insect infestations are the most widespread forms of natural disturbance; fire is a factor in the western portion of the range. Dominant tree species include balsam fir (*Abies balsamea*), red maple (*Acer rubrum*), paper birch (*Betula papyrifera*), yellow birch (*B. alleghaniensis*), sugar maple (*A. saccharum*) and white spruce (*Picea glauca*). Eastern white cedar (*Thuja occidentalis*) is a common companion species throughout the range. Eastern white pine (*Pinus strobus*), red pine (*P. resinosa*) and northern red oak (*Quercus rubra*) are common canopy associates in the Great Lakes and western Quebec portions of the range; red spruce (*Picea rubens*) is an important secondary canopy constituent in the eastern part of the range. American beech (*Fagus grandifolia*) and eastern hemlock (*Tsuga canadensis*) are occasional in the southern part of the range east of the Great Lakes. Depending on overstory and site conditions, understory shrub and herb layers vary from dense to sparse. In addition to regenerating balsam fir, understories are generally rich in cold-deciduous broad-leaved shrubs, perennial herbs and, east of the Great Lakes, regenerating maples and yellow birch. Mountain maple (*Acer spicatum*), beaked hazelnut (*Corylus cornuta*), Canada fly-honeysuckle (*Lonicera canadensis*) and northern bush-honeysuckle (*Diervilla lonicera*) are common throughout the range. Typical herb/dwarf shrub species include bunchberry (*Cornus canadensis*), wild lily-of-the-valley (*Maianthemum canadense*), northern starflower (*Lysimachia borealis*), yellow clintonia (*Clintonia borealis*), wild sarsaparilla (*Aralia nudicaulis*) and rose twisted-stalk (*Streptopus lanceolatus*). Vernal ephemeral forbs like Carolina spring beauty (*Claytonia caroliniana*) and yellow trout lily (*Erythronium americanum*) are characteristic of maple-dominated stands east of the Great Lakes.

CM014 occurs at the northern extent of the mostly humid, continental cool temperate climate of eastern Canada, which is characterized by cool snowy winters and warm humid summers. Mean annual temperatures vary from 1°C to >5°C. Mean annual precipitation increases from (approximately) 600 mm near the Manitoba border to >1100 mm in some areas of eastern Ontario and Quebec. Rainfall significantly exceeds snowfall. Regional geologic and topographic features of the Shield and Appalachian physiographic regions produce an array of local site conditions. All parts of the range experienced late Pleistocene glaciation; soils are mostly Podzols, Brunisols and Luvisols developed in glacial surficial materials.

Three subtypes distinguish regional variation within this Macrogroup. Subtype CM014a [Subhumid Eastern Temperate Hardwood - Conifer Forest] describes temperate forests west of Lake Superior that occur in a generally drier climate with little or no presence of sugar maple, yellow birch or eastern hemlock. CM014b [Humid Eastern Temperate Hardwood - Conifer Forest] describes maple - yellow birch - balsam fir dominated forests east of the Great Lakes that contain significant presence of eastern white pine, red pine and northern red oak. CM014c [Very Humid Eastern Temperate Hardwood - Conifer Forest] describes maple - yellow birch - balsam fir dominated forests in the maritime-influenced climate of the eastern portion of the range, containing greater abundance of balsam fir and significant red spruce content.

IVC Geographic Range:

IVC Nations: CA

IVC States/Provinces:

ADDITIONAL INFORMATION

CNVC Status: Provisional

Related IVC Macrogroups:

Elcode	Name	Rel to CNVC	Note
M159	Laurentian Pine - Hardwood Forest & Woodland	=	

CNVC Classification Comments: The provisional split of CM014 into dry and mesic types is not yet reflected in this description, which was written for the full CM014 concept. Also, we are currently unable to assign the three CM014 subtypes (CM014a Subhumid Eastern Temperate Hardwood - Conifer Forest, CM014b Humid Eastern Temperate Hardwood - Conifer Forest, CM014c Very Humid Eastern Temperate Hardwood - Conifer Forest) to the two new macrogroups because the subtypes aren't described and don't have groups assigned.

CM014 describes the northernmost upland cool temperate forests of east-central Canada, characterized by a hardwood - conifer mixedwood composition with general presence of *Abies balsamea* in combination with *Betula papyrifera, B. alleghaniensis, Acer rubrum* and/or *A. saccharum. Pinus strobus, P. resinosa, Picea glauca* and *Tsuga canadensis* are important

constituents of these forests, although much diminished on the contemporary landscape. Upland boreal forests in eastern Canada, described by M495 [Eastern North American Boreal Forest], are distinguished by general presence of *Picea mariana* and the absence of temperate species like *B. alleghaniensis, A. rubrum, A. saccharum, P. strobus, P. resinosa, Picea rubens* and *T. canadensis*. Understories in CM014 also include species with more southerly distributions (e.g., *Acer pensylvanicum*). South of the range of CM014, CM742 [Eastern Canadian Temperate Deciduous Forest] describes temperate hardwood forests with little conifer content and greater representation of thermophilic tree species like *Carya* spp., *Fraxinus americana, Fagus grandifolia, Quercus* spp. and *Tilia americana*. CM744 [Acadian Temperate Forest] describes temperate forests in maritime-influenced climates to the east of the range of CM014, characterized by high abundance of *A. balsamea* and *P. rubens* in combination with temperate hardwood species.

Groups in Canada:

- **G907 Laurentian Pine - Oak Forest & Woodland []**
- **G160 Laurentian Pine Barrens []**
- **G655 Laurentian-Great Lakes Limestone Woodland []**
- **G999 Laurentian Subboreal Dry Pine - Black Spruce Woodland []**

CNVC Concept Author: K. Baldwin, S. Basquill, K. Chapman, M. Major, J-P. Saucier, P. Uhlig
CNVC Concept Date: 2016-11-01
CNVC Description Author: K. Baldwin, J-P. Saucier, P. Uhlig
CNVC Description Date: 2019-04-01
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G907 Laurentian Pine - Oak Forest & Woodland

[ ]

IVC Colloquial Name: Laurentian Pine - Oak Forest & Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: IL, IN, ME, MI, MN, NB, NH, NS?, NY, ON, PE?, QC, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G3* rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3238 *Pinus banksiana - Pinus resinosa - Quercus ellipsoidalis* Forest & Woodland Alliance** [Jack Pine - Red Pine - Northern Pin Oak Forest & Woodland Alliance] []
  This forest and woodland alliances occurs on dry or shallow soils over bedrock in the northern Midwest, New England, and eastern temperate Canada. It is dominated by *Pinus banksiana*, often associated with *Pinus resinosa* and/or *Quercus ellipsoidalis*.

- **A4127 *Pinus strobus - Pinus resinosa - Quercus rubra* Forest & Woodland Alliance** [Eastern White Pine - Red Pine - Northern Red Oak Forest & Woodland Alliance] []
  This alliance contains pine-dominated and mixed pine - oak forests and woodlands found in the upper Midwest and New England of the United States, and in eastern temperate Canada on mostly mesic and dry-mesic sites within glaciated landscapes.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3238 Jack Pine - Red Pine - Northern Pin Oak Forest & Woodland Alliance

[ ]
Pinus banksiana - Pinus resinosa - Quercus ellipsoidalis Forest & Woodland Alliance
Laurentian Jack Pine - Red Pine - Oak Forest & Woodland

IVC Scientific Name: *Pinus banksiana - Pinus resinosa - Quercus ellipsoidalis* Forest & Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance, found in New England and the Great Lakes region in the United States, as well as eastern temperate Canada, contains rocky or sandy pine barrens and woodlands on dry or shallow soils over bedrock or sandy outwash plains. It is typified by forests and woodlands dominated by *Pinus banksiana, Pinus resinosa*, and/or *Quercus ellipsoidalis*. Understory composition varies from heath-dominated to a mixture of graminoids, open rocky areas with lichens, and scrub oak. Stands are often fire-maintained.
IVC Dynamics: Fire is important in most examples and helps maintain the open structure of the woodland examples.
IVC Environment: Stands are found on flat to rolling topography, such as glaciofluvial and lacustrine deposits, eskers, moraines, and other glacial features, and sporadically on dry rocky summits, ridges, outcrops and lakeshores. The soils are shallow to deep sandy loams, fine sands, and loamy sands, with low organic content.

DISTRIBUTION

IVC Geographic Range: This community is found in the northern midwestern United States, New England, and eastern temperate Canada.
IVC Nations: CA,US
IVC States/Provinces: IL, IN, ME, MI, MN, NB, NH, NS?, NY, ON, PE?, QC, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002589 *Pinus banksiana - Pinus resinosa - Pinus strobus* Dune Forest** [Jack Pine - Red Pine - Eastern White Pine Dune Forest] []
  G3Q (2002-10-24) IL, IN, MI, ON, WI
- **CEGL002478 *Pinus banksiana - (Pinus resinosa) - Quercus ellipsoidalis / Carex pensylvanica* Forest** [Jack Pine - (Red Pine) - Northern Pin Oak / Pennsylvania Sedge Forest] []
  G4G5 (1996-10-03) MI, MN, ON, WI
- **CEGL002441 *Pinus banksiana / Vaccinium* spp. / *Pleurozium schreberi* Woodland** [Jack Pine / Blueberry species / Schreber's Big Red-stem Moss Woodland] []
  G4G5 (1996-10-03) MI, MN, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard after J.T. Curtis (1959)
IVC Description Author: S. Menard
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A4127 Eastern White Pine - Red Pine - Northern Red Oak Forest & Woodland Alliance

[ ]
Pinus strobus - Pinus resinosa - Quercus rubra Forest & Woodland Alliance
Laurentian White Pine - Red Pine - Oak Forest & Woodland

IVC Scientific Name: *Pinus strobus - Pinus resinosa - Quercus rubra* Forest & Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance contains pine-dominated and mixed pine-oak forests and woodlands found in the upper Midwest and New England of the United States, and in eastern temperate Canada. Most examples are dominated by *Pinus strobus* or *Pinus resinosa*. Hardwood species such as *Quercus alba, Quercus rubra*, or *Populus tremuloides* are common associates and may be locally dominant in some areas. The shrub and understory layers vary from sparse to moderately dense. Some typical shrubs include *Acer spicatum, Cornus* spp., *Corylus cornuta, Kalmia latifolia*, and *Vaccinium* spp. Common herbaceous species include *Aralia nudicaulis, Eurybia macrophylla, Gaultheria procumbens*, and *Maianthemum canadense*. Stands typically occur on mostly mesic and dry-mesic sites within glaciated landscapes. Soils are typically acidic and range from shallow to moderately deep. Fire and logging can heavily impact examples of this alliance.
IVC Dynamics: Stands of this alliance are impacted by fire and logging practices.
IVC Environment: Stands of this alliance are found on acidic, relatively nutrient-poor loamy sand, sandy loam, loam, and clay loam soils which are typically somewhat shallow to moderately deep. Stands occur on a variety of topographic positions, in particular glacial till or outwash plains. They can occur on hummocky terrain or, in northeastern Minnesota, near lakes and on lower slopes.

DISTRIBUTION

IVC Geographic Range: These forests are found within the Great Lakes region of the Midwest, New England and eastern temperate Canada.
IVC Nations: CA,US
IVC States/Provinces: MI, MN, ON, QC, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002462** ***Quercus rubra - Quercus alba - (Quercus velutina, Acer rubrum) / Viburnum acerifolium*** **Forest** [Northern Red Oak - White Oak - (Black Oak, Red Maple) / Mapleleaf Viburnum Forest] []
  GNR. MI, MN, ON, WI
- **CEGL005399** ***Pinus resinosa - Pinus strobus - (Quercus rubra) / Corylus cornuta*** **Forest** [Red Pine - White Pine - (Red Oak) / Beaked Hazelnut Forest] []
  G3 (2013-06-23) MI, MN, ON, QC?, WI
- **CEGL002480** ***Pinus strobus - (Pinus resinosa) - Quercus rubra*** **Forest** [Eastern White Pine - (Red Pine) - Northern Red Oak Forest] []
  G4 (2006-11-13) MI, MN, ON, QC?, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard and D. Faber-Langendoen, in Faber-Langendoen et al. (2014)
IVC Description Author: S. Menard
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G160 Laurentian Pine Barrens

[ ]

IVC Colloquial Name: Laurentian Pine Barrens
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These pine-oak barrens occur in the northern and western Great Lakes region. They occur primarily on sandplains/outwash habitats, with dry, frequent fires (every 10-50 years) and occasionally on Great Lakes dunes. Overstory is very open and savanna-like, with trees scattered or clumped. *Pinus banksiana* typically dominates the canopy, but *Pinus resinosa, Quercus ellipsoidalis*, and *Pinus strobus* also are common overstory dominants. The understory is often quite low in diversity and open. Prairie species are often present; *Schizachyrium scoparium* and *Andropogon gerardii* are common throughout much of the range of the group. Other common ground layer species include *Carex pensylvanica* and *Apocynum androsaemifolium*, species that are also common in forest edge or open woodlands. Typical dune species such as *Ammophila breviligulata* and *Juniperus horizontalis* are common on dune examples. Common shrub species include *Vaccinium angustifolium* and *Corylus americana*. Oak grubs may be common under frequent burning. Past logging practices in some areas also decreased the number of pines and created areas dominated by oak sprouts and scrubs.
IVC Dynamics: Catastrophic burns may create open bracken grasslands, though these may originate more typically from clearing of forests and subsequent fires on morainal substrates (Curtis 1959).
IVC Environment: This group occurs on flat or gently glaciated landscapes such as outwash plains, glacial lakeplains, and sandy river terraces. Soils are typically dry sands, but some stands can occur on rocky soils (Curtis 1959).

DISTRIBUTION

IVC Geographic Range: Occurs throughout the northern and western Great Lakes region, from Minnesota to Michigan and Ontario.
IVC Nations: CA,US
IVC States/Provinces: MB, MI, MN, ON, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G2G3 rank that was calculated from closely related ecological system global ranks. A rank of G2G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1499 *Pinus banksiana* - *Pinus* spp. - *Quercus* spp. Barrens Woodland Alliance** [Jack Pine - Pine species - Oak species Barrens Woodland Alliance] []
  This alliance is found only in the Great Lakes region on dry, sandy sites and is typically dominated by *Pinus banksiana*, with some examples codominated by *Quercus ellipsoidalis* and with graminoids dominating the herbaceous stratum.
- **A4402 *Pinus banksiana* - *Pinus strobus* / *Juniperus horizontalis* Wooded Grassland Alliance** [Jack Pine - Eastern White Pine / Creeping Juniper Wooded Grassland Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J.T. Curtis (1959)
IVC Description Author: S. Menard and D. Faber-Langendoen
IVC Description Date: 2013-10-04
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by O. Loucks.

A1499 Jack Pine - Pine species - Oak species Barrens Woodland Alliance

[ ]
Pinus banksiana - Pinus spp. - *Quercus* spp. Barrens Woodland Alliance
Laurentian Pine-Oak Barrens

IVC Scientific Name: *Pinus banksiana - Pinus* spp. - *Quercus* spp. Barrens Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found only in the Great Lakes region, and occurs on dry, sandy sites. Stands have widely spaced individual or clumps of trees with a canopy generally less than 25% but some examples can be more closed (>60%). In the interior of lower Michigan the average tree height is 8 m. The herbaceous layer is dense to moderate. Shrubs are rare to abundant. Graminoids dominate the herbaceous stratum. *Schizachyrium scoparium* and *Carex* spp. are widespread in stands of this alliance. *Pinus banksiana* is the most common tree species, but this alliance includes stands that are dominated to codominated by *Quercus ellipsoidalis*. Other trees that can be abundant include *Pinus resinosa, Pinus strobus, Populus grandidentata, Populus tremuloides*, and *Quercus macrocarpa*. The topography of stands of this alliance is flat to rolling with sandy, acidic, droughty and infertile soils. They occur predominantly on glacial outwash or the sandy beds of former lakes. Fire can be important in maintaining the open structure of this alliance. Near the Great Lakes, changes in water table can impact the composition of this alliance.
IVC Dynamics: Near the Great Lakes in lower Michigan, changes in the water table can affect the floristic composition (Zimmerman 1956). Fire is very important in maintaining the open character of some examples of this alliance (Curtis 1959, Vogl 1961). In the prolonged absence of fire, the tree canopy fills in and stands become woodlands or forests.
IVC Environment: The topography of stands of this alliance is flat to rolling. The soils are sandy, acidic, droughty, and infertile (Zimmerman 1956, Vogl 1970). They occur predominantly on glacial outwash or the sandy beds of former lakes. These sands have poor nutrient-retaining capability due to the continuous presence of acidic pine litter during the Holocene, low concentrations of divalent cations in the parent material, and the sandy, well-drained character of the soils (Almendinger 1986). The soils are mostly Entisols; some transient stands may be on Mollisols (Almendinger 1986). The Entisols are usually fine to coarse sands but can be loamy sands.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in Michigan, Wisconsin, and Minnesota, and in Canada in Ontario and Manitoba.
IVC Nations: CA,US
IVC States/Provinces: MB, MI, MN, ON, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002490** ***Pinus banksiana - (Quercus ellipsoidalis) / Schizachyrium scoparium*** **- Prairie Forbs Woodland** [Jack Pine - (Northern Pin Oak) / Little Bluestem - Prairie Forbs Woodland] []
  G2 (1998-06-22) MB, MI, MN, WI
- **CEGL005127** ***Pinus strobus - Quercus alba - (Quercus velutina) / Andropogon gerardii*** **Wooded Grassland** [Eastern White Pine - White Oak - (Black Oak) / Big Bluestem Wooded Grassland] []
  G2? (1998-06-22) MI, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J.T. Curtis (1959)
IVC Description Author: S. Menard
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A4402 Jack Pine - Eastern White Pine / Creeping Juniper Wooded Grassland Alliance

[ ]

Pinus banksiana - Pinus strobus / Juniperus horizontalis Wooded Grassland Alliance

Great Lakes Barrens

IVC Scientific Name: *Pinus banksiana - Pinus strobus / Juniperus horizontalis* Wooded Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: MI, MN, ON, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005125 *Pinus banksiana - (Pinus resinosa) - Pinus strobus / Juniperus horizontalis* Wooded Grassland** [Jack Pine - (Red Pine) - Eastern White Pine / Creeping Juniper Wooded Grassland] []
  G2 (1998-06-22) MI, MN, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021c)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G655 Laurentian-Great Lakes Limestone Woodland

[ ]

IVC Colloquial Name: Laurentian-Great Lakes Limestone Woodland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group comprises forests and woodlands on thin-soil limestone habitats, including pavement (including those associated with alvars) bluffs adjacent to lakes, cliffs, or talus and colluvial slopes, and found in the Laurentian-Great Lakes region of the U.S. and Canada, from Michigan to Ontario, New York, and Vermont.

. Physiognomy in this group varies from evergreen conifers to mainly deciduous hardwoods. The canopy is generally open woodland, but also includes closed forests occurring on limestone bluffs and cliffs. Dominants include the conifers *Thuja occidentalis* and, less commonly, *Juniperus virginiana* and *Pinus banksiana. Acer saccharum* and *Tilia americana* are common species in mesic limestone habitats, along with *Ostrya virginiana, Carya ovata*, and *Quercus rubra*. Drier habitats are characterized by *Quercus macrocarpa*. Other associates may include *Quercus muehlenbergii* and *Fraxinus americana*. Characteristic shrub and herb species need to be described. In savanna conditions, the most abundant trees are *Thuja occidentalis* and *Pinus banksiana*. There may be fairly diverse shrub and herb layers similar to the alvar grasslands and shrublands. Understory plants of this group include *Aquilegia canadensis, Carex eburnea, Cryptogramma stelleri, Cypripedium parviflorum, Cystopteris bulbifera, Dasiphora fruticosa ssp. floribunda, Packera paupercula*, and many others.

IVC Dynamics: Cool temperatures, drought, and fire are important factors maintaining this vegetation as open woodland. Droughts severe enough to kill up to 50% of woody vegetation have occurred in alvars in Ontario repeatedly in the last century (Catling 2014). *Thuja occidentalis* forests have achieved old-growth status on limestone bluffs in Vermont and on the Niagara Escarpment in Ontario. The trees are small and slow-growing, resulting in wood of greater strength than is usually seen in this species (Larson 2001).

IVC Environment: This group occurs on calcareous bedrock occurring as alvar (thin-soiled pavement), cliffs, lake bluffs, talus slopes, and colluvial slopes.

DISTRIBUTION

IVC Geographic Range: This group is composed of forests and woodlands on thin-soil limestone habitats in the Laurentian-Great Lakes mixed forest region, from Michigan to Ontario, New York and Vermont.

IVC Nations: CA,US

IVC States/Provinces: MI, NH, NY, ON, QC?, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G3G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, long-term decline moderate, and threats moderate to high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3299 *Quercus macrocarpa - Carya ovata* Northern Limestone Woodland Alliance** [Bur Oak - Shagbark Hickory Northern Limestone Woodland Alliance] []
  This alliance, found in central Ontario, contains deciduous limestone woodlands characterized or dominated by *Quercus macrocarpa* and *Carya ovata*. *Symphoricarpos albus* is a frequent shrub, and *Danthonia spicata* a common grass.
- **A3298 *Quercus muehlenbergii - Juniperus virginiana* Alvar Woodland Alliance** [Chinquapin Oak - Eastern Red-cedar Alvar Woodland Alliance] []
  This alliance comprises forests and woodland on limestone in southern Ontario, and possibly New York, dominated by *Juniperus virginiana* and *Quercus muehlenbergii*. Substrate includes limestone pavement in association with alvars.
- **A3296 *Thuja occidentalis* Limestone Woodland Alliance** [Northern White-cedar Limestone Woodland Alliance] []
  This alliance, found from northern Wisconsin north to Ontario and east to New York and Vermont, is composed of forests and woodland on limestone, dominated by *Thuja occidentalis*. Substrate includes limestone pavement in association with alvars, as well as limestone bluffs adjacent to lakes, cliffs, or talus.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: P.M. Catling and V.R. Brownell (1995)
IVC Description Author: D. Faber-Langendoen and L.A. Sneddon
IVC Description Date: 2015-05-06
IVC Acknowledgments: Sean Basquill

A3299 Bur Oak - Shagbark Hickory Northern Limestone Woodland Alliance

[ ]
Quercus macrocarpa - Carya ovata Northern Limestone Woodland Alliance
Bur Oak - Hickory Northern Limestone Woodland

IVC Scientific Name: *Quercus macrocarpa - Carya ovata* Northern Limestone Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance, found in central Ontario, contains deciduous limestone woodlands characterized or dominated by *Quercus macrocarpa* or *Carya ovata*. Other associates may include *Carya ovata* and *Fraxinus americana*. *Symphoricarpos albus* is a frequent shrub, and *Danthonia spicata* a common grass.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance occurs in central Ontario, Canada.
IVC Nations: CA
IVC States/Provinces: ON
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005237 *Quercus macrocarpa / Danthonia spicata - (Geum triflorum)* Limestone Open Woodland** [Bur Oak / Poverty Oatgrass - (Prairie-smoke) Limestone Open Woodland] []
  G1? (2002-10-24) ON
- **CEGL005230 *Carya ovata / Zanthoxylum americanum / Panicum philadelphicum - Carex pensylvanica* Open Woodland** [Shagbark Hickory / Common Prickly-ash / Philadelphia Panicgrass - Pennsylvania Sedge Open Woodland] []
  GNR. ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: W. Bakowsky, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3298 Chinquapin Oak - Eastern Red-cedar Alvar Woodland Alliance

[ ]
Quercus muehlenbergii - Juniperus virginiana Alvar Woodland Alliance

Chinquapin Oak - Red-cedar Alvar Woodland

IVC Scientific Name: *Quercus muehlenbergii - Juniperus virginiana* Alvar Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance comprises forests and woodlands on limestone in southern Ontario, and possibly New York, dominated by *Juniperus virginiana* and *Quercus muehlenbergii*. Substrate includes limestone pavement in association with alvars.
IVC Dynamics:
IVC Environment: The substrate includes limestone pavement in association with alvars.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in southern Ontario and possibly New York.
IVC Nations: CA,US
IVC States/Provinces: NY?, ON
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005021 *Quercus muehlenbergii - Celtis occidentalis - Juniperus virginiana* Forest** [Chinquapin Oak - Common Hackberry - Eastern Red-cedar Forest] []
  GNR. ON
- **CEGL005133 *Quercus muehlenbergii / Allium cernuum - Eleocharis compressa / Aulacomnium palustre - Bryum* spp. Wooded Grassland** [Chinquapin Oak / Nodding Onion - Flat-stem Spikerush / Ribbed Bog Moss - Bryum Moss species Wooded Grassland] []
  G1? (1998-05-21) ON
- **CEGL005259 *Quercus muehlenbergii* Carbonate Talus Woodland** [Chinquapin Oak Carbonate Talus Woodland] []
  GNR. ON
- **CEGL005122 *Juniperus virginiana / Ranunculus fascicularis* Woodland** [Eastern Red-cedar / Early Buttercup Woodland] []
  G3? (1998-12-31) NY?, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3296 Northern White-cedar Limestone Woodland Alliance

[ ]
Thuja occidentalis Limestone Woodland Alliance
Laurentian White-cedar Limestone Woodland

IVC Scientific Name: *Thuja occidentalis* Limestone Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance, found from northern Wisconsin and Michigan north to Ontario and east to New York and the Champlain region of Vermont, is composed of forests and woodland on limestone, dominated by *Thuja occidentalis*, occasionally mixed with *Pinus banksiana* and *Picea glauca*. Calcareous ground-layer indicators include *Aquilegia canadensis, Carex eburnea,*

Cystopteris bulbifera, Geranium robertianum, and others. Substrate includes limestone pavement in association with alvars, as well as limestone bluffs adjacent to lakes, cliffs, or talus.

IVC Dynamics:

IVC Environment: Substrate includes limestone pavement in association with alvars, as well as limestone bluffs adjacent to lakes, cliffs, or talus.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from northern Wisconsin and Michigan north to Ontario and east to New York and the Lake Champlain region of Vermont, within the Laurentian-Acadian region.

IVC Nations: CA,US

IVC States/Provinces: MI, NH, NY, ON, QC?, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006021 *Thuja occidentalis / Carex eburnea* Woodland** [Northern White-cedar / Bristleleaf Sedge Woodland] []
  GNR. NY, ON, QC?, VT
- **CEGL005126 *Pinus banksiana - Thuja occidentalis - Picea glauca / Juniperus communis* Woodland** [Jack Pine - Northern White-cedar - White Spruce / Common Juniper Woodland] []
  G2? (1998-12-31) MI, NY, ON
- **CEGL006093 *Thuja occidentalis / Oligoneuron album* Rocky Outcrop** [Northern White-cedar / Prairie Goldenrod Rocky Outcrop] []
  Open calcareous rock vegetation, with scattered *Thuja occidentalis* trees, on ridgetops in the northeastern lakeplains of New Hampshire, New York and Vermont. GNR. NH, NY, QC?, VT
- **CEGL005172 *Thuja occidentalis* Carbonate Talus Woodland** [Northern White-cedar Carbonate Talus Woodland] []
  G3G4 (1998-06-22) MI, ON, VT
- **CEGL005050 *Thuja occidentalis* Limestone Bedrock Woodland** [Northern White-cedar Limestone Bedrock Woodland] []
  G2G4 (2002-10-24) ON, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G.J. Edinger et al. (2002)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

G999 Laurentian Subboreal Dry Pine - Black Spruce Woodland

[ ]

IVC Colloquial Name: Laurentian Subboreal Dry Pine - Black Spruce Woodland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: LB?, MB, ME, MI, MN, ON, QC, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3838 *Pinus banksiana - Picea mariana / Vaccinium* spp. Subboreal Forest Alliance** [Jack Pine - Black Spruce / Blueberry species Subboreal Forest Alliance] []
  This subboreal jack pine - black spruce forest alliance is found in the northwestern Great Lakes region in Canada and the United States along flat to gently sloping areas, level sandy outwash plains, or moderately sloping moraines. The canopy is dominated by *Pinus banksiana* or *Picea mariana*. Other species that can co-occur include *Abies balsamea, Betula papyrifera, Picea glauca*, or *Populus tremuloides*.
- **A3839 *Pinus banksiana - Pinus resinosa - Quercus ellipsoidalis* Subboreal Rocky Woodland Alliance** [Jack Pine - Red Pine - Northern Pin Oak Subboreal Rocky Woodland Alliance] []
  This alliance is found in subboreal regions of the northwestern Great Lakes region in Canada and the United States. Stands typically occur on shallow, well-drained rocky sites. Soils are thin (<50 cm) to absent on bedrock. The tree canopy is scattered, often stunted, and dominated by *Quercus ellipsoidalis, Pinus banksiana, Pinus resinosa*, or *Pinus strobus*.
- **A3840 *Pinus banksiana - Pinus resinosa / Arctostaphylos uva-ursi* Subboreal Sand Woodland Alliance** [Jack Pine - Red Pine / Kinnikinnick Subboreal Sand Woodland Alliance] []
  This dry, fire-dependent conifer subboreal woodland alliance is found on sandy sites in the northwestern upper Great Lakes region of Minnesota, Ontario and southeastern Manitoba. Stands are dominated by *Pinus banksiana*. *Pinus resinosa* and *Populus tremuloides* are common; *Quercus ellipsoidalis* is occasional.
- **A4130 *Pinus resinosa - Pinus strobus* Subboreal Forest Alliance** [Red Pine - White Pine Subboreal Forest Alliance] []
  This alliance, found in the northwestern Great Lakes region of the United States and Canada, contains *Pinus resinosa* and *Pinus strobus* forests on dry-mesic to mesic sites.
- **A3837 *Populus tremuloides - Picea glauca* Subboreal Rocky Woodland Alliance** [Quaking Aspen - White Spruce Subboreal Rocky Woodland Alliance] []
  This alliance is composed of rocky woodlands occurring on high rocky ridgelines within the subboreal regions of the northwestern Great Lakes in Canada and the United States. Sites occur on both dry-mesic sandy soils and shallow, loamy soils over bedrock. Canopy cover ranges from 10-60% and is dominated by *Betula papyrifera* and *Populus tremuloides* or, less commonly, *Picea glauca*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021c)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3838 Jack Pine - Black Spruce / Blueberry species Subboreal Forest Alliance

[ ]
Pinus banksiana - Picea mariana / Vaccinium spp. Subboreal Forest Alliance
Subboreal Jack Pine - Black Spruce Forest

IVC Scientific Name: *Pinus banksiana - Picea mariana / Vaccinium* spp. Subboreal Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This subboreal jack pine - black spruce forest alliance is found in the northwestern Great Lakes region in Canada and the United States along flat to gently sloping areas, level sandy outwash plains, or moderately sloping moraines. Soils are typically moderately deep to deep coarse loams, sandy loams, fine sands or silt. Some stands may occur on clay soils. The canopy is dominated by *Pinus banksiana* or *Picea mariana*. Other species that can co-occur include *Abies balsamea, Betula papyrifera, Picea glauca*, or *Populus tremuloides*. Common shrubs include *Corylus cornuta, Diervilla lonicera, Gaultheria procumbens*, and *Vaccinium* spp. Feathermosses such as *Pleurozium schreberi* can be abundant and cover the majority of the forest floor in some stands.

IVC Dynamics:

IVC Environment: Stands occur on flat to gently sloping areas, level sandy outwash plains, or moderately sloping moraines. Soils are typically moderately deep to deep coarse loams, sandy loams, fine sands or silt. Some stands may occur on clay soils or somewhat moist bedrock sites along lakeshores.

DISTRIBUTION

IVC Geographic Range: This sub-boreal jack pine - black spruce forest alliance is found in the northwestern Great Lakes region in Canada and the United States.

IVC Nations: CA,US

IVC States/Provinces: MB, ME, MN, ON, QC, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002516** ***Picea mariana - Populus tremuloides*** **/ Mixed Herbs Forest** [Black Spruce - Quaking Aspen / Mixed Herbs Forest] []
  G4G5 (1998-06-22) MB?, ON, QC
- **CEGL002447** ***Picea mariana / Pleurozium schreberi*** **Forest** [Black Spruce / Schreber's Big Red-stem Moss Forest] []
  G5 (1996-10-03) MB, MN, ON, QC
- **CEGL002518** ***Pinus banksiana - Populus tremuloides / Diervilla lonicera*** **Forest** [Jack Pine - Quaking Aspen / Northern Bush-honeysuckle Forest] []
  G4G5 (1996-10-01) MB?, MN, ON, QC
- **CEGL002448** ***Pinus banksiana - Picea mariana / Vaccinium*** **spp. /** ***Pleurozium schreberi*** **Forest** [Jack Pine - Black Spruce / Blueberry species / Schreber's Big Red-stem Moss Forest] []
  G5 (1996-10-03) MB, MN, ON, QC
- **CEGL002437** ***Pinus banksiana / Abies balsamea*** **Forest** [Jack Pine / Balsam Fir Forest] []
  G5 (1996-10-03) MN, ON
- **CEGL006421** ***Picea mariana - Picea rubens / Rhododendron canadense / Cladonia*** **spp. Swamp Woodland** [Black Spruce - Red Spruce / Rhodora / Cup Lichen species Swamp Woodland] []
  GNR. ME, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: S. Menard, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A3839 Jack Pine - Red Pine - Northern Pin Oak Subboreal Rocky Woodland Alliance

[ ]

Pinus banksiana - Pinus resinosa - Quercus ellipsoidalis Subboreal Rocky Woodland Alliance
Subboreal Jack Pine - Red Pine - Oak Rocky Woodland

IVC Scientific Name: *Pinus banksiana - Pinus resinosa - Quercus ellipsoidalis* Subboreal Rocky Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found in subboreal regions of the northwestern Great Lakes region of the United States and Canada. Stands typically occur on shallow, well-drained rocky sites. Soils are thin (<50 cm) to absent on bedrock. The tree canopy is scattered, often stunted, and dominated by *Quercus ellipsoidalis, Pinus banksiana, Pinus resinosa*, or *Pinus strobus*. It can vary from pure deciduous to mixed evergreen-deciduous to evergreen. Shrub and herbaceous layers are highly variable, ranging from sparse to up to 80% cover. A nonvascular layer can be present or absent and is typically dominated by *Cladonia* spp.
IVC Dynamics:
IVC Environment: Stands typically occur on shallow, well-drained rocky sites. Soils are thin (<50 cm) to absent on bedrock.

DISTRIBUTION

IVC Geographic Range: This alliance is found in sub-boreal regions of the northwestern Great Lakes region of Canada and the United States, including Manitoba to Ontario, and Minnesota to Michigan.
IVC Nations: CA,US
IVC States/Provinces: MB, MI, MN, ON, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005246** ***Quercus ellipsoidalis - Quercus macrocarpa - (Pinus banksiana)*** **Rocky Woodland** [Northern Pin Oak - Bur Oak - (Jack Pine) Rocky Woodland] []
  GNR. MN, ON
- **CEGL002483** ***Pinus banksiana - (Picea mariana, Pinus strobus) / Vaccinium*** **spp. Rocky Woodland** [Jack Pine - (Black Spruce, Eastern White Pine) / Blueberry species Rocky Woodland] []
  G4? (1996-10-03) MB, MN, ON, QC
- **CEGL005492** ***Pinus resinosa - Pinus strobus / Vaccinium*** **spp. Rocky Woodland** [Red Pine - Eastern White Pine / Blueberry species Rocky Woodland] []
  G4? (2013-06-27) MN, ON?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, after Minnesota DNR (2003)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3840 Jack Pine - Red Pine / Kinnikinnick Subboreal Sand Woodland Alliance

[ ]
Pinus banksiana - Pinus resinosa / Arctostaphylos uva-ursi Subboreal Sand Woodland Alliance
Subboreal Jack Pine - Red Pine Sand Woodland

IVC Scientific Name: *Pinus banksiana - Pinus resinosa / Arctostaphylos uva-ursi* Subboreal Sand Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is found in the upper Great Lakes region of the northern United States and adjacent central Canada, especially northeastern Minnesota and northwestern Ontario. Stands occur on flat to rolling topography with relatively infertile sandy soils. Stands are dominated by conifers. Shrubs may be fairly scattered and the ground layer rather depauperate. Mosses and lichens are common. The vegetation is characterized by moderately dense to dense stands of conifer trees. The morphology and density of the dominant trees often allows enough light through the canopy to support abundant shrubs. The tree canopy is dominated by *Pinus banksiana*. Other conifers that may be present include *Abies balsamea, Pinus resinosa*, and *Picea mariana*. Deciduous trees, such as *Betula papyrifera, Quercus ellipsoidalis*, and *Quercus rubra*, may be present. Shrubs may be absent to abundant. Both tall and short shrubs occur in stands of this alliance. These include *Arctostaphylos uva-ursi, Corylus cornuta, Vaccinium angustifolium*, and *Vaccinium myrtilloides*. The herbaceous layer is often sparse. Mosses and lichens, especially *Pleurozium schreberi* and *Cladonia* spp., are abundant in some stands. Stands may be found on outwash plains and lake dunes, on dry sandy soils that may be shallow to deep and are typically somewhat infertile. Without periodic fires, mesic, fire-intolerant hardwoods may establish.

IVC Dynamics: Stands in this alliance require fire or other disturbance to regenerate because *Pinus banksiana* does not reproduce well in established forests. Without periodic fires, mesic, fire-intolerant hardwoods may establish.

IVC Environment: Stands may be found on outwash plains and lake dunes, on dry sandy soils. The soils are of lacustrine, glaciofluvial, or eolian origin (Sims et al. 1989). They may be shallow to deep and are typically somewhat infertile. Bedrock maybe exposed in some stands (Kurmis et al. 1986).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the upper Great Lakes region, especially in northeastern Minnesota, northwestern Ontario, and southeastern Manitoba.

IVC Nations: CA,US

IVC States/Provinces: MB, MN, ON, QC?

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002438 *Pinus banksiana / Arctostaphylos uva-ursi* Forest** [Jack Pine / Kinnikinnick Forest] []
  G4G5 (1996-10-03) MB, MN, ON

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, after Minnesota DNR (2003)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A4130 Red Pine - White Pine Subboreal Forest Alliance

[ ]

Pinus resinosa - Pinus strobus Subboreal Forest Alliance

Subboreal Red Pine - White Pine Forest

IVC Scientific Name: *Pinus resinosa - Pinus strobus* Subboreal Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance, found in the northwestern Great Lakes region of the United States and Canada, contains *Pinus resinosa* and *Pinus strobus* forests on dry-mesic to mesic sites. Sites occur either on well-drained upper slopes and broad ridgetops, or somewhat moist sandy sites. Occasionally *Picea mariana* or *Picea glauca* are present. In somewhat more mesic conditions, *Abies*

balsamea and *Acer rubrum* are present, especially in the understory. Shrubs include *Acer spicatum, Vaccinium angustifolium*, and *Vaccinium myrtilloides*.

IVC Dynamics:

IVC Environment: Sites occur either on well-drained upper slopes and broad ridgetops, or somewhat moist sandy sites, or moraines and tillplains (Minnesota DNR 2003).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northwestern Great Lakes region of the United States and Canada.
IVC Nations: CA,US
IVC States/Provinces: MB, MN, ON, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002479 *Pinus resinosa - Pinus strobus / Corylus cornuta* Forest** [Red Pine - Eastern White Pine / Beaked Hazelnut Forest] []
  G4? (1996-10-03) MN, ON, QC
- **CEGL002443 *Pinus resinosa - Pinus strobus / Corylus cornuta / Vaccinium angustifolium* Forest** [Red Pine - White Pine / Beaked Hazelnut / Lowbush Blueberry Forest] []
  G3 (2013-06-23) MB, MN, ON
- **CEGL002445 *Pinus strobus / Acer spicatum - Corylus cornuta* Forest** [Eastern White Pine / Mountain Maple - Beaked Hazelnut Forest] []
  G3G4 (1998-06-22) MN, ON, QC?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2014)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3837 Quaking Aspen - White Spruce Subboreal Rocky Woodland Alliance

[ ]

Populus tremuloides - Picea glauca Subboreal Rocky Woodland Alliance

Subboreal Rocky Aspen - Spruce Woodland

IVC Scientific Name: *Populus tremuloides - Picea glauca* Subboreal Rocky Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is composed of dry-mesic rocky woodlands occurring on rocky ridgelines within the subboreal regions of the northwestern Great Lakes in the United States and adjacent Canada. Sites occur on both dry-mesic sandy soils and shallow, loamy soils over bedrock. Crown and surface fires were common historically. Canopy cover ranges from 25-80% and the canopy is dominated by *Betula papyrifera* and *Populus tremuloides* or, less commonly, *Picea glauca*. *Populus grandidentata* may occur in some examples. Shrub and herbaceous layers are variable and range in cover from 5 to 80%. *Corylus cornuta* can be common in the shrub layer. Herbaceous diagnostics include *Achillea millefolium* and *Chamerion angustifolium*. Nonvascular cover ranges from 0-60% cover. Typical lichens include *Cladonia* spp. and foliose lichens; the most abundant moss is *Pleurozium schreberi*.

IVC Dynamics:

IVC Environment: Sites occur on both dry-mesic sandy soils and shallow, loamy soils over bedrock. Crown and surface fires were common historically (Minnesota DNR 2003).

DISTRIBUTION

IVC Geographic Range: This alliance is found within the sub-boreal region of the northwestern Great Lakes region in Canada and the United States
IVC Nations: CA,US
IVC States/Provinces: MB, MI, MN, ON, QC?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002487** ***Populus tremuloides - (Populus grandidentata)*** **Rocky Woodland** [Quaking Aspen - (Bigtooth Aspen) Rocky Woodland] []
  GNR. MB, MI, MN, ON
- **CEGL005196** ***Picea glauca - (Betula papyrifera) / Danthonia spicata*** **Woodland** [White Spruce - (Paper Birch) / Poverty Oatgrass Woodland] []
  GNR. MI, MN, ON?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

CM744 Acadian Temperate Forest

Forêts acadiennes de la zone tempérée

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: CM744 describes the upland temperate forests of New Brunswick, Nova Scotia, Prince Edward Island and a small part of the Gaspé peninsula in Quebec. Forest canopies can be evergreen coniferous, cold-deciduous broad-leaved, or a conifer-broad-leaved mixture. Anthropogenic disturbance is the dominant factor determining contemporary forest composition and dynamics. Windthrow, ice loading and insect infestations are the most widespread forms of natural disturbance; overall, fire is not a significant disturbance factor. Dominant tree species include balsam fir (*Abies balsamea*), red maple (*Acer rubrum*), paper birch (*Betula papyrifera*), yellow birch (*B. alleghaniensis*), red spruce (*Picea rubens*), sugar maple (*Acer saccharum*) and white spruce (*Picea glauca*). Black spruce (*P. mariana*) often dominates stands on nutrient-limited sites. Eastern white pine (*Pinus strobus*), eastern hemlock (*Tsuga canadensis*) and American beech (*Fagus grandifolia*) are common canopy associates or dominants in the southern part of the range and at low elevations in the north. Depending on overstory and site conditions, understory shrub and herb layers vary from dense to sparse. In addition to regenerating tree species, understories are generally rich in cold-deciduous broad-leaved shrubs, perennial forbs and ferns. Striped maple (*Acer pensylvanicum*), velvet-leaved blueberry (*Vaccinium myrtilloides*) and Canada fly-honeysuckle (*Lonicera canadensis*) are common shrubs throughout the range. Typical herb/dwarf shrub species include wild lily-of-the-valley (*Maianthemum canadense*), northern starflower (*Lysimachia borealis*), yellow clintonia (*Clintonia borealis*), bunchberry (*Cornus canadensis*), wild sarsaparilla (*Aralia nudicaulis*) and common wood-sorrel (*Oxalis montana*). Wood ferns *(Dryopteris intermedia, D. carthusiana, D. campyloptera)* are also frequent. The bryophyte layer can be particularly abundant, especially under mature conifer canopies and/or in areas with a very humid climate. The most common bryophyte species include red-stemmed feathermoss (*Pleurozium schreberi),* stairstep moss (*Hylocomium splendens*) and three-lobed whipwort (*Bazzania trilobata*).

CM744 occurs at the eastern extent of humid, cool temperate climatic conditions in Canada. Although the macroclimate is broadly considered continental, the Atlantic Ocean surrounds the CM744 range on three sides generating a pronounced maritime influence. Generally, winters are relatively mild and summers are cool and humid. Mean annual temperatures vary from approximately 3.5°C to 7°C. Mean annual precipitation increases from approximately 1000 mm in central New Brunswick to >1675 mm along the outer Atlantic coast of Nova Scotia. Rainfall significantly exceeds snowfall. Elevation grades from >800 mASL in northern New Brunswick to sea level; much of the range is <200 mASL. Regional geologic and topographic features of the Appalachian physiographic region produce an array of local site conditions. All parts of the range experienced late Pleistocene glaciation; soils are mostly Podzols and Luvisols developed in glacial surficial materials.

Two subtypes characterize regional floristic and ecological variation. Subtype CM744a [Typic Acadian Temperate Forest] describes the typical condition, often including sugar maple, American beech, white pine and eastern hemlock. Subtype CM744b [Cool Acadian Temperate Forest] describes forests of colder climatic conditions that occur at higher elevations and in coastal areas, including greater representation of white spruce, balsam fir, mountain ash and mountain maple.

IVC Geographic Range:

IVC Nations: CA

IVC States/Provinces:

ADDITIONAL INFORMATION

CNVC Status: Standard

Related IVC Macrogroups:

Elcode	Name	Rel to CNVC	Note
M103	Acadian-Northern Appalachian Forest	=	

CNVC Classification Comments: CM744 describes the easternmost upland cool temperate forests of Canada, occurring in a heavily maritime-influenced continental climate. These forests are characterized by general presence of *Abies balsamea* in combination with *Acer rubrum, Betula papyrifera, B. alleghaniensis, Picea rubens, A. saccharum, P. glauca* and/or *P. mariana.* In some areas, *Pinus strobus, Tsuga canadensis* and *Fagus grandifolia* are important constituents of these forests. CM014 [Eastern North American Temperate Hardwood - Conifer Forest] describes mixed upland hardwood - conifer forests in more continental climates to the west of the range of CM744, characterized by higher importance of *A. saccharum, B. alleghaniensis* and *P. glauca,* and general absence of *P. rubens* and *P. mariana*. Upland boreal forests in eastern Canada, described by M495 [Eastern North American Boreal Forest], are distinguished by general absence of temperate species like *B. alleghaniensis, A. rubrum, A. saccharum, P. strobus, P. resinosa, P. rubens* and *T. canadensis*. Understories in CM744 also include species with more southerly distributions (e.g., *Acer pensylvanicum*).

Groups in Canada:
- **G920 Acadian-Appalachian Hemlock - White Pine - Hardwood Forest []**
- **G744 Acadian-Appalachian Red Spruce - Fir - Hardwood Forest []**
- **G922 Acadian-Appalachian Hardwood Forest []**
- **G908 Acadian-Appalachian Pine - Oak Forest & Woodland []**

CNVC Concept Author: K. Baldwin, S. Basquill, K. Chapman, M. Major, J-P. Saucier, P. Uhlig
CNVC Concept Date: 2016-11-01
CNVC Description Author: S. Basquill, K. Baldwin
CNVC Description Date: 2020-01-01
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G920 Acadian-Appalachian Hemlock - White Pine - Hardwood Forest

[ ]

IVC Colloquial Name: Acadian-Appalachian Hemlock - White Pine - Hardwood Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This conifer or mixed conifer-deciduous forest is found in the northern Appalachian and Acadian regions of the northeastern United States and maritime Canada. Canopy dominants include *Pinus strobus, Thuja occidentalis*, and *Tsuga canadensis* (at least 25% cover), often with *Picea rubens* and *Abies balsamea* present, with or without hardwoods, including *Acer saccharum, Fagus grandifolia, Betula alleghaniensis*, and *Quercus rubra. Acer rubrum* is also quite common; *Betula lenta* may be common at the southern periphery of this group's range. *Picea rubens* and *Abies balsamea* are <25%. *Quercus velutina* and *Quercus alba* are largely absent from this group, being more representative southward in the Central Interior-Appalachian region. This is a widespread, matrix forest type. Gap replacement and infrequent fire are the major natural regeneration modes. These mesic forests usually occur on low-nutrient soils at low elevations, mostly less than 610 m (2000 feet).
IVC Dynamics: Stand regeneration is usually a process of small canopy gaps formed by strong winds, ice storms, or disease which allows understory trees to grow into the canopy.
IVC Environment: *Climate:* Cool, moist climate.

Soil/substrate/hydrology: The mesic to dry-mesic forests usually occur on low nutrient soils at low elevations, mostly less than 610 m (2000 feet). Stands may occur on deep soil but shallow soil over bedrock, (often sandy or gravelly) is not uncommon.

DISTRIBUTION

IVC Geographic Range: This conifer or mixed conifer-deciduous forest is found in the northern Appalachian and Acadian regions of the northeastern United States and maritime Canada. Stands in the southern and western edges of this group's range are usually found in ravines or cool, mesic north- or east-facing slopes.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, ME, NB, NH, NS, NY, ON?, PA, PE, QC?, VA, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G3G5 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate, including from hemlock woolly adelgid.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4451 *Thuja occidentalis* Acadian-Appalachian Forest Alliance** [Northern White-cedar Acadian-Appalachian Forest Alliance] []
  This mesic cedar forest alliance occurs in the Acadian-northern Appalachian region, characterized by *Thuja occidentalis.*
- **A4453 *Tsuga canadensis - Betula alleghaniensis - Picea rubens* Forest Alliance** [Eastern Hemlock - Yellow Birch - Red Spruce Forest Alliance] []
  This alliance is composed of cool, mesic hemlock - northern hardwood forests of the Acadian-northern Appalachian region.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: S.C. Gawler, D. Faber-Langendoen, J. Drake
IVC Description Date:
IVC Acknowledgments: Sean Basquill

A4451 Northern White-cedar Acadian-Appalachian Forest Alliance

[ ]
Thuja occidentalis Acadian-Appalachian Forest Alliance
Acadian-Appalachian White Cedar Woodland

IVC Scientific Name: *Thuja occidentalis* Acadian-Appalachian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This mesic cedar forest occurs in the Acadian-northern Appalachian region; *Thuja occidentalis* is the leading dominant. Conifer associates include *Picea rubens, Tsuga canadensis*, and *Abies balsamea.* Hardwood associates include *Acer rubrum, Acer saccharum,* and *Betula alleghaniensis*. The herb layer may contain *Maianthemum canadense, Linnaea borealis*, club-mosses (*Lycopodium* spp., *Huperzia* spp, etc.), and others. More information is needed on this community type.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This mesic cedar forest type is found in the Acadian-northern Appalachian region, from central and northern New York to New England and the maritime provinces of Canada.
IVC Nations: CA,US
IVC States/Provinces: ME, NB, NH, NY, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006411 *Thuja occidentalis / Gaylussacia baccata - Vaccinium angustifolium* Woodland** [Northern White-cedar / Black Huckleberry - Lowbush Blueberry Woodland] []
  GNR. ME, NB, NY, VT
- **CEGL006508 *Thuja occidentalis - Fraxinus pennsylvanica / Acer pensylvanicum* Woodland** [Northern White-cedar - Green Ash / Striped Maple Woodland] []
  GNR. ME, NB, NH, NY, VT?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

A4453 Eastern Hemlock - Yellow Birch - Red Spruce Forest Alliance

[ ]
Tsuga canadensis - Betula alleghaniensis - Picea rubens Forest Alliance
Acadian-Appalachian Hemlock - Red Spruce - Hardwood Forest

IVC Scientific Name: *Tsuga canadensis - Betula alleghaniensis - Picea rubens* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is composed of cool, mesic hemlock - northern hardwood forests of the Acadian-northern Appalachian region. *Tsuga canadensis* and some combination of *Acer saccharum, Betula alleghaniensis, Fagus grandifolia,* and *Picea rubens* are typically the dominant trees. Associated trees include *Acer rubrum, Betula papyrifera, Pinus strobus*, and *Prunus serotina*. The shade from the canopy and dense saplings and seedlings can create a depauperate ground layer. Where the shade is not as complete, shrubs such as *Corylus cornuta, Diervilla lonicera, Hamamelis virginiana, Sambucus racemosa* var. *racemosa*, and *Viburnum lantanoides* are common. The herbaceous layer consists of species such as *Anemone quinquefolia, Cornus canadensis, Dryopteris carthusiana, Maianthemum canadense, Medeola virginiana, Mitchella repens, Oxalis montana, Trientalis borealis, Trillium grandiflorum*, and *Trilium undulatum*. Stands of this alliance tend to be on dry-mesic to mesic loamy and sandy soils. The soil is typically acidic with parent material of glacial till in the north. Stands can be on flat to moderately steep slopes of any aspect.
IVC Dynamics:
IVC Environment: Stands of this alliance tend to be on dry-mesic to mesic loamy and sandy soils. The soil is typically acidic with parent material of glacial till in the north. Stands can be on flat to moderately steep slopes of any aspect.

DISTRIBUTION

IVC Geographic Range: This alliance is composed of cool, mesic hemlock - northern hardwood forests of the Acadian-northern Appalachian region, ranging from central and northern New York and New England to the Maritime provinces of Canada.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, ME, NB, NH, NS, NY, ON?, PA, QC?, VA, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006129 *Tsuga canadensis - (Betula alleghaniensis) - Picea rubens / Cornus canadensis* Forest** [Eastern Hemlock - (Yellow Birch) - Red Spruce / Bunchberry Dogwood Forest] []
  GNR. MA, ME, NB, NH, NS, NY, ON?, VT
- **CEGL006324 *Pinus strobus - Tsuga canadensis - Picea rubens* Forest** [Eastern White Pine - Eastern Hemlock - Red Spruce Forest] []
  GNR. MA, ME, NB, NH, NY, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:

IVC Acknowledgments: M. E. Hall

G744 Acadian-Appalachian Red Spruce - Fir - Hardwood Forest

[ ]

IVC Colloquial Name: Acadian-Appalachian Red Spruce - Fir - Hardwood Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The vegetation comprises spruce-fir-hardwood forests and woodlands of northeastern North America within the range of *Picea rubens*, from the Acadian forests of southeastern Canada across northern New England and the Adirondacks and adjacent areas of New York. Sites of this group occur in cool, mostly mesic settings on various glaciated landforms. Substrate geology also varies, although soils are generally acidic. They form the forest matrix in the coolest parts of this region, and they occur from sea level to treeline (below about 1370 m [4500 feet]). *Picea rubens* is generally present and often dominant. Following heavy disturbance from fire or timber harvesting, the canopy may be dominated by *Abies balsamea, Betula papyrifera*, or *Populus* spp. Typical canopy associates include *Betula alleghaniensis, Betula papyrifera, Thuja occidentalis*, and *Acer rubrum*. On less exposed sites in the southern part of this group's range, *Tsuga canadensis* may be an important canopy associate. Characteristic shrubs include *Vaccinium angustifolium* and/or *Vaccinium myrtilloides, Viburnum lantanoides*, and *Viburnum nudum var. cassinoides*. Characteristic herbs include *Clintonia borealis, Cornus canadensis, Mitchella repens, Oxalis montana, Trientalis borealis*, and *Trillium undulatum*. Ferns include *Dryopteris campyloptera, Dryopteris carthusiana*, and *Dryopteris intermedia*, among others. The bryophyte layer is generally very well-developed, characterized by *Bazzania trilobata, Pleurozium schreberi, Dicranum* spp., and many others. Moist sites may support *Sphagnum* spp. Mosses and liverworts grow densely on fallen logs, tree trunks, and the forest floor, giving these forests a distinctive carpeted appearance.

IVC Dynamics: These forests are affected by wind disturbance, debris avalanches, ice loading, insect outbreaks, and lightning-ignited fire. Periodic outbreaks of spruce budworm (*Choristoneura fumiferana*), which preferentially feeds on *Abies balsamea*, can convert large patches (hundreds to thousands of acres) into early-successional stands dominated by mixed conifers. Where soils are shallow, as they typically are, these forests are susceptible to large blowdowns. Across the range of the group, gap replacement is the most common pattern for canopy regeneration.

IVC Environment: Sites present a mesic character due to soil conditions, a landscape setting that leads to a cool, moist microclimate (cold-air drainage accumulation, frequent fog, etc.), or both. Sites occur across the spectrum from the immediate coastline to over 1000 m in elevation. *Climate:* Cool-temperate to sub-boreal. *Soil/substrate/hydrology:* Soils are generally shallow and rocky, with well-developed humus and A horizons. They are low in base saturation, relatively high in organic matter, and are acidic in reaction (pH 3-5). Spodosols and Inceptisols.

DISTRIBUTION

IVC Geographic Range: The red spruce-fir-hardwood forests and woodlands are found in the Acadian region (Maritime provinces and eastern Maine), and across the northern Appalachian regions of New England and New York, reaching their western limit in southwest Québec, and extreme eastern Ontario.

IVC Nations: CA,US

IVC States/Provinces: MA, ME, NB, NH, NS, NY, ON, PA, PE?, QC, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4443 *Picea rubens* - *Abies balsamea* - *Betula alleghaniensis* Forest Alliance** [Red Spruce - Balsam Fir - Yellow Birch Forest Alliance] []
  This alliance contains montane red spruce - balsam fir forest types found in the northern Appalachian regions of northern New England and New York and into higher hills in the Maritime region of Canada.

- **A4442 *Picea rubens* - *Betula alleghaniensis* - *Acer saccharum* Forest Alliance** [Red Spruce - Yellow Birch - Sugar Maple Forest Alliance] []
  This red spruce - fir alliance occurs at lower elevations and flats of the Acadian and northern Appalachian regions of southeastern Canada and northeastern U.S.
- **A3314 *Picea rubens* / *Vaccinium angustifolium* Rocky Woodland Alliance** [Red Spruce / Lowbush Blueberry Rocky Woodland Alliance] []
  These conifer woodlands, which occur in the Northern Appalachian and Acadian regions of the northeastern U.S. and Atlantic Canada, are dominated by *Picea rubens* or *Picea mariana* on steep, seepy boulderfields, ridges, rock outcrops and headlands.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: H.J. Oosting and W.D. Billings (1951)
IVC Description Author: S.C. Gawler and D. Faber-Langendoen
IVC Description Date: 2015-05-05
IVC Acknowledgments: Andy Cutko and Sean Basquill

A4443 Red Spruce - Balsam Fir - Yellow Birch Forest Alliance

[ ]
Picea rubens - Abies balsamea - Betula alleghaniensis Forest Alliance
Montane Red Spruce - Fir - Yellow Birch Forest

IVC Scientific Name: *Picea rubens - Abies balsamea - Betula alleghaniensis* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This forest occurs in the montane spruce-fir region of the northern Appalachian Mountains, extending east through the Canadian Maritimes. It occurs mostly upwards of 500 m (1600 feet) elevation and is restricted to progressively higher elevations southward. The canopy may be dominated by *Picea rubens, Abies balsamea*, or codominated by both species, with or without northern hardwood species such as *Betula alleghaniensis*. Typical canopy associates include *Betula alleghaniensis* and *Betula papyrifera*, with an understory of *Sorbus americana, Acer spicatum*, and *Acer pensylvanicum*. Common herbs of this alliance include *Clintonia borealis, Coptis trifolia, Cornus canadensis, Huperzia lucidula, Maianthemum canadense, Oclemena acuminata, Oxalis montana*, and *Trientalis borealis*. The bryophyte layer is generally very well-developed, characterized by *Bazzania trilobata, Brotherella recurvans, Pleurozium schreberi*, and many others. Stands occur on moist sites, primarily on acidic till derived from granites or from sandstone. Gaps formed by wind, snow, ice, and harvesting are the major replacement agents; fires may be important but only over a long return interval.
IVC Dynamics: Gaps formed by wind, snow, ice, and harvesting are the major replacement agents; fires may be important but only over a very long return interval (many hundreds of years).
IVC Environment: Stands occur mostly upwards of 500 m (1600 feet) elevation and are restricted to progressively higher elevations southward, such as in the Catskills. Stands have moist site conditions and are primarily on acidic till derived from granites or from sandstone.

DISTRIBUTION

IVC Geographic Range: This montane spruce-fir type is found at higher elevations of northern New England and the Adirondacks, extending north along the mountains and higher hills into Canada and occurring southward in the Catskills.
IVC Nations: CA,US
IVC States/Provinces: MA, ME, NB, NH, NS, NY, QC?, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006112 *Abies balsamea - (Betula papyrifera var. cordifolia)* Forest** [Balsam Fir - (Mountain Paper Birch) Forest] []
  GNR. MA, ME, NB, NH, NY, VT
- **CEGL006128 *Picea rubens - Abies balsamea / Sorbus americana* Forest** [Red Spruce - Balsam Fir / American Mountain-ash Forest] []
  G3G5 (1997-12-01) MA, ME, NB, NH, NY, VT
- **CEGL008721 *Betula alleghaniensis - Picea rubens / Dryopteris campyloptera* Montane Forest** [Yellow Birch - Red Spruce / Mountain Woodfern Montane Forest] []
  This lower montane yellow-birch - red spruce forest is common in the Acadian-Appalachian region of New York and New England, transitional between lowland red spruce-northern hardwood forests and montane spruce-fir forests. It occurs between 600 and 900 m and is dominated by *Betula alleghaniensis* and *Picea rubens*. G4G5 (2021-09-30) ME, NH, NY, QC?, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: S. Gawler and D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments: L. Sneddon.

A4442 Red Spruce - Yellow Birch - Sugar Maple Forest Alliance

[ ]
Picea rubens - Betula alleghaniensis - Acer saccharum Forest Alliance
Low-Elevation Red Spruce-Fir-Hardwoods Forest

IVC Scientific Name: *Picea rubens - Betula alleghaniensis - Acer saccharum* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This red spruce - fir alliance occurs at lower elevations and flats of the Acadian and northern Appalachian regions of southeastern Canada and northeastern U.S. The low- to mid-elevation forests are dominated by *Picea rubens* and *Abies balsamea. Picea mariana* and *Picea glauca* may be present northward in the boreal transition. *Betula alleghaniensis* is the most common codominant, and *Acer rubrum, Acer saccharum*, and *Fagus grandifolia* are sometimes present. The upland soils are acidic and usually rocky, mostly well- to moderately well-drained but with some somewhat poorly drained patches at the slope bottoms. This type may include earlier successional patches in which *Populus* spp. and *Betula* spp. are dominant or mixed with *Picea* and *Abies* that will develop into spruce-fir forests. Blowdowns with subsequent gap regeneration are the most frequent form of natural disturbance, with large-scale fires important at longer return intervals.
IVC Dynamics: This type may include earlier successional patches in which *Populus* spp. and *Betula* spp. are dominant or mixed with *Picea* and *Abies* that will develop into spruce-fir forests. Blowdowns with subsequent gap regeneration are the most frequent form of natural disturbance, with large-scale fires important at longer return intervals (Lorimer 1977).
IVC Environment: Stands occur primarily on acidic till derived from granites or from sandstone, at elevations from near sea level up to 500 m (1600 feet). The upland soils are acidic and usually rocky, mostly well- to moderately well-drained but with some somewhat poorly drained patches at the slope bottoms.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the U.S. in northern New England and New York, and ranges into Canada to Nova Scotia, New Brunswick, and Quebec.
IVC Nations: CA,US
IVC States/Provinces: MA, ME, NB, NH, NS, NY, ON, QC?, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006273** ***Picea rubens - Abies balsamea - Betula papyrifera*** **Forest** [Red Spruce - Balsam Fir - Paper Birch Forest] []
  GNR. MA, ME, NB, NH, NY, VT
- **CEGL006151** ***Picea rubens - Picea glauca*** **Forest** [Red Spruce - White Spruce Forest] []
  G4G5 (1998-06-22) ME, NB, NS?
- **CEGL006361** ***Picea mariana - Picea rubens / Pleurozium schreberi*** **Forest** [Black Spruce - Red Spruce / Schreber's Big Red-stem Moss Forest] []
  GNR. ME, NB, NH, NY, ON, VT
- **CEGL006267** ***Picea rubens - Fagus grandifolia - Betula alleghaniensis / Viburnum lantanoides*** **Forest** [Red Spruce - American Beech - Yellow Birch / Hobblebush Forest] []
  GNR. MA, ME, NB, NH, NS, NY, QC?, VT
- **CEGL006505** ***Picea rubens - Abies balsamea - Betula*** **spp.** **-** ***Acer rubrum*** **Forest** [Red Spruce - Balsam Fir - Birch species - Red Maple Forest] []
  GNR. ME, NB, NH, NY, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: L. Sneddon, S. Gawler, D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

A3314 Red Spruce / Lowbush Blueberry Rocky Woodland Alliance

[ ]
Picea rubens / *Vaccinium angustifolium* Rocky Woodland Alliance
Northern Appalachian Red Spruce Rocky Woodland

IVC Scientific Name: *Picea rubens* / *Vaccinium angustifolium* Rocky Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These are evergreen woodlands dominated by *Picea rubens* that occur in the Northern Appalachian and Acadian regions of the northeastern U.S. and Atlantic Canada on acidic bedrock or talus at high elevations. *Picea mariana* may occasionally be the dominant instead of *Picea rubens*. In the northern part of the range, associated canopy trees include *Abies balsamea, Betula papyrifera var. papyrifera*, and *Betula papyrifera var. cordifolia*. Shrubs include *Acer spicatum, Gaylussacia baccata, Ribes glandulosum, Sorbus americana, Vaccinium angustifolium*, and *Vaccinium myrtilloides*; typical herbs are *Clintonia borealis, Juncus trifidus, Piptatheropsis pungens, Sibbaldiopsis tridentata*, and *Solidago simplex var. randii*. These woodlands are often stunted and grade into montane shrublands. Stands occur either on steep, seepy boulderfields, on ridges and steep slopes with northeast to southwest exposures, above 1370 m (4500 feet) elevation, or at lower elevations on cold, clayey or rocky soils. Soils are shallow, often only a thin layer of duff overlying bedrock.
IVC Dynamics:
IVC Environment: This alliance occurs on steep, seepy boulderfields or talus, and on ridges and steep slopes with northeast to southwest exposures, typically above 1370 m (4500 feet) elevation. Soils are shallow, often only a thin layer of duff overlying bedrock.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the Northern Appalachians and Acadian regions of the northeastern U.S. and Atlantic Canada, with a single stand in northeast Pennsylvania.
IVC Nations: CA,US
IVC States/Provinces: MA, ME, NB, NH, NS?, NY, PA, PE?, QC, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006292** ***Picea mariana / Kalmia angustifolia*** **Woodland** [Black Spruce / Sheep Laurel Woodland] []
  G4? (1997-12-01) ME, NB, NS?, PE?, QC
- **CEGL006268** ***Picea mariana / Ledum groenlandicum - Empetrum nigrum / Cladonia*** **spp. Talus Scrub** [Black Spruce / Bog Labrador-Tea - Black Crowberry / Cup Lichen species Talus Scrub] []
  G3G5 (1997-12-01) ME, NB?, NH, NS?, NY, QC?, VT
- **CEGL006053** ***Picea rubens / Vaccinium angustifolium / Sibbaldiopsis tridentata*** **Woodland** [Red Spruce / Lowbush Blueberry / Shrubby Fivefingers Woodland] []
  G4 (2010-03-01) MA?, ME, NB, NH, NS?, NY, PA, VT
- **CEGL006250** ***Picea rubens / Ribes glandulosum*** **Woodland** [Red Spruce / Skunk Currant Woodland] []
  G3G5 (1997-12-01) MA, ME, NB, NH, NY, QC?, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G922 Acadian-Appalachian Hardwood Forest

[ ]

IVC Colloquial Name: Acadian-Appalachian Hardwood Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group includes moist to dry-mesic forests of the Northern Appalachian region of New York and New England, extending into the temperate regions of the Maritime provinces of eastern Canada. Stands are dominated by some combination of northern hardwoods, including *Acer saccharum, Betula alleghaniensis, Fagus grandifolia, Fraxinus americana, Prunus serotina*, and *Tilia americana*, as well as the conifers *Tsuga canadensis, Picea rubens, Pinus strobus*, and occasional *Thuja occidentalis. Abies balsamea* can be locally frequent, especially at higher elevations. Early-successional stages may be dominated by *Acer rubrum, Betula papyrifera*, or *Populus tremuloides*, often with *Pinus strobus*. Except for *Quercus rubra*, oaks are generally unimportant. Diagnostic herbs include northern-affinity species such as *Aralia nudicaulis, Maianthemum canadense, Trientalis borealis*, and *Actaea rubra*. Stands are found on moist to mesic soils. Soil nutrient status is variable, from high-nutrient soils developed over alkaline, nutrient-rich soils to acidic, nutrient-poor soils developed over glacial till. Natural fires are very rare.
IVC Dynamics:
IVC Environment: Mesic sites in various landscape settings, usually not both dry and highly exposed. *Climate:* Cool temperate to sub-boreal, but maritime influence in the Maritime provinces.
Soil/substrate/hydrology: Typically circum-mesic, moderately acidic, and moderately nutrient-poor soils developed over glacial till.

DISTRIBUTION

IVC Geographic Range: This group includes moist to mesic forests of the Northern Appalachian region of New York and New England, extending into the temperate regions of the Maritime provinces of eastern Canada.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, ME, MI, MN, NB, NH, NJ, NS, NY, ON, PA, PE, QC, RI, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4447 *Acer saccharum* - *Betula alleghaniensis* / *Viburnum lantanoides* Forest Alliance** [Sugar Maple - Yellow Birch / Hobblebush Forest Alliance] []
  This alliance is composed of rich mesic hardwood forests in the Acadian-northern Appalachian region of the northeastern United States and adjacent southern Canada. *Acer saccharum, Betula alleghaniensis, Fagus grandifolia,* and *Tilia americana* are typical tree dominants, and *Viburnum lantanoides* a conspicuous shrub species.
- **A4449 *Acer saccharum* - *Fraxinus americana* Rich Acadian-Appalachian Forest Alliance** [Sugar Maple - White Ash Rich Acadian-Appalachian Forest Alliance] []
  These rich northern hardwood forests of the Acadian-northern Appalachian region contain a diverse tree canopy and understory, with *Acer saccharum and Fraxinus americana* common throughout and *Tilia americana* common west of the Maritime provinces.
- **A3297 *Acer saccharum* - *Tilia americana* Rocky Woodland Alliance** [Sugar Maple - American Basswood Rocky Woodland Alliance] []
  This alliance is composed of mostly deciduous woodlands of limestone pavement or colluvial slopes in the eastern Laurentian and Acadian-Northern Appalachian regions of the U.S. and Canada. *Acer saccharum* is the most constant species, but a variety of deciduous trees may also be present, including *Tilia americana* and *Quercus rubra*. Conifer such as *Tsuga canadensis, Thuja occidentalis*, and *Abies balsamea* are also present in some stands.
- **A4445 *Populus tremuloides* - *Acer rubrum* - *Picea rubens* Forest Alliance** [Quaking Aspen - Red Maple - Red Spruce Forest Alliance] []
  This is a common early-successional deciduous woodland and forest of the northern Appalachian and Acadian regions from New England, New York, and adjacent eastern Canada. Stands are dominated by a mix of *Populus tremuloides, Populus grandidentata, Betula papyrifera, Acer rubrum,* and saplings or young trees of *Picea rubens* and northern hardwoods.
- **A3241 *Quercus rubra* - *Acer saccharum* - *Betula alleghaniensis* Forest Alliance** [Northern Red Oak - Sugar Maple - Yellow Birch Forest Alliance] []
  This alliance is regarded as the "red oak" version of northern hardwood forests and woodlands characterized by a mixture of *Acer saccharum* and *Quercus rubra* in association with other hardwood species. It is found in the north-central and northeastern United States and southern Canada.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments: S. Gawler, M. Pyne, S. Menard, O. Loucks, L.A. Sneddon, and J. Drake

A4447 Sugar Maple - Yellow Birch / Hobblebush Forest Alliance

[ ]
Acer saccharum - Betula alleghaniensis / *Viburnum lantanoides* Forest Alliance
Acadian-Appalachian Mesic Hardwood Forest

IVC Scientific Name: *Acer saccharum - Betula alleghaniensis* / *Viburnum lantanoides* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is composed of rich mesic hardwood forests in the Acadian-northern Appalachian region of the northeastern United States and adjacent southern Canada. Stands typically have a closed canopy. Most of the trees are deciduous, but conifers are often scattered throughout the stands. *Acer saccharum, Betula alleghaniensis, Fagus grandifolia,* and *Tilia americana* are common codominants throughout much of the range. Other common trees include *Abies balsamea, Acer rubrum, Fraxinus americana, Ostrya virginiana, Picea rubens, Pinus strobus, Quercus rubra*, and *Tsuga canadensis*. The dense overstory inhibits the growth of an abundant shrub layer. *Acer pensylvanicum, Corylus cornuta, Hamamelis virginiana, Lonicera canadensis, Taxus canadensis*, and *Viburnum lantanoides* are typical shrubs. Herbaceous species vary, and include *Aralia nudicaulis, Chimaphila maculata, Clintonia borealis, Lycopodium* spp., *Maianthemum canadense, Osmorhiza claytonii, Oxalis montana,* and *Streptopus lanceolatus* var*. longipes*. Stands of this alliance are found on moderate to deep (60-150 cm) sandy loam, clay loam, or loamy sand soils that are typically slightly acidic to circumneutral, mesic to wet-mesic and nutrient-rich. Most stands develop on flat to moderate slopes over glacial till. A relatively thick layer of fallen leaves covers the forest floor. Sites are on flat to moderately sloping terrain on glacial features, such as till or moraines, or on calcareous rocks and sandstone.

IVC Dynamics: The most common disturbances are small to medium tree-fall gaps, with occasional large-scale catastrophic blowdowns.

IVC Environment: Stands of this alliance are found on moderate to deep (60-150 cm) sandy loam, clay loam, or loamy sand soils that are typically slightly acidic to circumneutral, mesic to wet-mesic and nutrient-rich. Most stands develop on flat to moderate slopes over glacial till. A relatively thick layer of fallen leaves covers the forest floor. Sites are on flat to moderately sloping terrain on glacial features, such as till or moraines, or on calcareous rocks and sandstone.

DISTRIBUTION

IVC Geographic Range: This alliance is composed of rich mesic hardwood forests in the Acadian-northern Appalachian region of the northeastern United States and adjacent southern Canada.

IVC Nations: CA,US

IVC States/Provinces: CT?, MA, ME, NB, NH, NS, NY, ON?, QC?, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005005** ***Acer saccharum - Pinus strobus / Acer pensylvanicum*** **Forest** [Sugar Maple - Eastern White Pine / Striped Maple Forest] []
  GNR. MA, ME, NH, NY, ON?, VT
- **CEGL006631** ***Acer saccharum - Betula alleghaniensis - Fagus grandifolia / Viburnum lantanoides*** **Forest** [Sugar Maple - Yellow Birch - American Beech / Hobblebush Forest] []
  G5 (2014-12-02) CT?, MA, ME, NB, NH, NY, VT
- **CEGL006633** ***Quercus rubra - Acer saccharum - Fagus grandifolia / Viburnum acerifolium*** **Forest** [Northern Red Oak - Sugar Maple - American Beech / Mapleleaf Viburnum Forest] []
  G4G5 (2014-12-02) MA, ME, NB, NY, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author: D. Faber-Langendoen

IVC Description Date:

IVC Acknowledgments: M.E. Hall.

A4449 Sugar Maple - White Ash Rich Acadian-Appalachian Forest Alliance

[ ]

Acer saccharum - Fraxinus americana Rich Acadian-Appalachian Forest Alliance

Acadian-Appalachian Rich Mesic Hardwood Forest

IVC Scientific Name: *Acer saccharum - Fraxinus americana* Rich Acadian-Appalachian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These rich northern hardwood forests of the Acadian-northern Appalachian region are found on sites with high fertility. Canopy dominants vary, but *Acer saccharum* and *Fraxinus americana* are almost always present. *Tilia americana* is common west of the Maritime provinces. Associated canopy trees often include *Acer spicatum, Fagus grandifolia, Ostrya virginiana*, and *Prunus serotina* var. *serotina*. The shrub layer is variable in cover depending on site characteristics and canopy density. Common species include *Cornus alternifolia, Corylus americana, Dirca palustris, Hamamelis virginiana, Lonicera canadensis, Sambucus racemosa, Viburnum acerifolium*, and *Viburnum lantanoides*. Typical herbs include *Adiantum pedatum, Arisaema triphyllum, Asarum canadense, Cardamine* spp., *Carex platyphylla, Caulophyllum thalictroides, Osmorhiza* spp., *Sanguinaria canadensis, Solidago flexicaulis, Trillium grandiflorum*, and *Viola* spp. Stands of this alliance occur in a variety of settings, including gentle to steep slopes, boulder talus, or in valleys adjacent to floodplains. Soils are usually deep, moderately to well-drained sands, loams, silt loams, moderately acidic to moderately alkaline, and of high fertility, often derived from calcareous parent materials. Soil moisture-holding and cation-exchange capabilities are high.

IVC Dynamics:

IVC Environment: Stands of this alliance occur in a variety of settings, including gentle to steep slopes, boulder talus, or in valleys adjacent to floodplains. Soils are usually deep, moderately to well-drained sands, loams, silt loams, moderately acidic to moderately alkaline, and of high fertility, often derived from calcareous parent materials. Soil moisture-holding and cation-exchange capabilities are high.

DISTRIBUTION

IVC Geographic Range: These rich northern hardwood forests of the Acadian-northern Appalachian region are found on sites with high fertility, occurring from central New England and the Adirondack and Catskill mountains to the Acadian region of eastern Canada.

IVC Nations: CA,US

IVC States/Provinces: CT?, MA, ME, NB, NH, NJ, NS, NY, ON, QC?, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006636** ***Acer saccharum - Fraxinus americana / Acer spicatum / Caulophyllum thalictroides*** **Forest** [Sugar Maple - White Ash / Mountain Maple / Blue Cohosh Forest] []
  G4? (2014-12-03) MA, ME, NB, NH, NY, ON, VT
- **CEGL006211** ***Acer saccharum - (Fraxinus americana) / Arisaema triphyllum*** **Forest** [Sugar Maple - (White Ash) / Jack-in-the-Pulpit Forest] []
  G4 (2005-12-07) CT?, MA, ME, NB, NH, NJ, NY, ON, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author: D. Faber-Langendoen

IVC Description Date:

IVC Acknowledgments: M.E. Hall

A3297 Sugar Maple - American Basswood Rocky Woodland Alliance

[ ]

Acer saccharum - Tilia americana Rocky Woodland Alliance

Northern Hardwoods Rocky Woodland

IVC Scientific Name: *Acer saccharum - Tilia americana* Rocky Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is composed of mostly rich, mesic deciduous woodlands of limestone pavement or colluvial slopes. *Acer saccharum* is the most constant species, but a variety of deciduous trees may also be present, including *Tilia americana* and *Quercus rubra*. Conifers, such as *Tsuga canadensis, Thuja occidentalis*, and *Abies balsamea*, are also present in some stands. The canopy is variable, ranging from open to closed (40-80% cover). The ground layer may contain a range of mesic herbaceous and shrub indicators.
IVC Dynamics:
IVC Environment: This alliance contains woodlands occurring on rich, moist calcareous or circumneutral limestone flats or talus composed of large boulders, or on rock outcrops. In New York, this type may represent the mesic component of the "limestone woodland" type in Jefferson County (USFS subsection 211Ee) (Edinger et al. 2002). More information is needed from Canadian ecologists on the range of this type elsewhere in the Laurentian and Acadians region of Canada.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from central Ontario and western New York east to Maritime Canada and northern and central New England.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, ME, NB, NH, NJ?, NS?, NY, ON, QC, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005190** ***Tsuga canadensis - Acer saccharum*** **Carbonate Talus Woodland** [Eastern Hemlock - Sugar Maple Carbonate Talus Woodland] []
  GNR. ON
- **CEGL006584** ***Betula alleghaniensis - Quercus rubra / Polypodium virginianum*** **Talus Woodland** [Yellow Birch - Northern Red Oak / Rock Polypody Talus Woodland] []
  This acidic, large-boulder talus slope woodland occurs in the northern Appalachian Mountains and northern New England north into eastern Canada. G3G5 (2014-12-02) MA, ME, NB, QC?, VT
- **CEGL005058** ***Acer saccharum - Tilia americana - Fraxinus americana / Ostrya virginiana / Geranium robertianum*** **Woodland** [Sugar Maple - American Basswood - White Ash / Hophornbeam / Robert's Geranium Talus Woodland] []
  G3G5 (1994-12-15) CT, MA, ME, NB, NH, NJ?, NY, ON, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A4445 Quaking Aspen - Red Maple - Red Spruce Forest Alliance

[ ]
Populus tremuloides - Acer rubrum - Picea rubens Forest Alliance
Acadian-Appalachian Aspen-Birch-Hardwood-Conifer Forest

IVC Scientific Name: *Populus tremuloides - Acer rubrum - Picea rubens* Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This is a common early-successional deciduous woodland and forest of the northern Appalachian and Acadian regions from New England, New York and adjacent eastern Canada. It occurs in various settings, often over thin glacial till. Elevation and aspect vary. The community is broadly defined but is typically found in naturally disturbed settings or after severe disturbance such as logging, fires, or severe hurricanes. This community can occur as closed-canopy forest or open woodland; in a few very exposed areas, it has been observed to grade to shrubland. The tree canopy is a heterogeneous mixture of light-requiring, wind-dispersed trees usually composed of several codominant species, including *Populus tremuloides, Populus grandidentata, Betula papyrifera, Betula populifolia, Populus balsamifera, Acer rubrum, Prunus serotina*, and/or *Prunus pensylvanica*. More minor components can include *Pinus strobus, Picea rubens, Abies balsamea, Acer saccharum, Quercus rubra, Fraxinus americana, Fraxinus pennsylvanica*, or *Ulmus americana*. The shrub layer can include *Sorbus americana, Acer pensylvanicum, Viburnum nudum* var. *cassinoides*, or *Hamamelis virginiana. Vaccinium angustifolium* and *Comptonia peregrina* may form a dwarf-shrub layer. Associated herbs to the north typically include *Pteridium aquilinum, Deschampsia flexuosa, Festuca ovina, Cornus canadensis, Doellingeria umbellata, Eurybia macrophylla, Danthonia spicata, Carex lucorum* and related species, and *Maianthemum canadense*. Typical bryoids include *Polytrichum commune, Polytrichum juniperinum, Dicranum* spp., and *Cladonia* spp. In the absence of major disturbance, these forests mostly succeed to northern hardwood, spruce-fir, or mixed northern hardwood-spruce-fir.

IVC Dynamics: The community is broadly defined but is typically found in naturally disturbed settings or after severe disturbance such as logging, fires, or severe hurricanes.

IVC Environment: It occurs in various settings, often over thin glacial till. Elevation and aspect vary.

DISTRIBUTION

IVC Geographic Range: This is a common early successional deciduous woodland and forest of the northern Appalachian and Acadian regions from New England, New York, and adjacent eastern Canada.

IVC Nations: CA,US

IVC States/Provinces: MA, ME, NB, NH, NS, NY, ON?, QC?, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2019b)

IVC Description Author: D. Faber-Langendoen

IVC Description Date:

IVC Acknowledgments: L. Sneddon, M.E. Hall

A3241 Northern Red Oak - Sugar Maple - Yellow Birch Forest Alliance

[ ]

Quercus rubra - Acer saccharum - Betula alleghaniensis Forest Alliance

Appalachian-Acadian Red Oak - Northern Hardwood Forest

IVC Scientific Name: *Quercus rubra - Acer saccharum - Betula alleghaniensis* Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is regarded as the "red oak" version of northern hardwood forests and woodlands. Canopy composition is a variable mixture of hardwood species. *Quercus rubra* (usually at least 30% of the canopy) is considered the diagnostic species. The most common codominant species include *Acer saccharum, Acer rubrum, Betula alleghaniensis*, and *Fagus grandifolia*. Other minor canopy species may include *Betula papyrifera, Betula populifolia, Populus grandidentata*, and *Prunus pensylvanica*. Conifers, if present, generally make up less than 20% of the canopy cover and may include *Pinus strobus* or *Tsuga canadensis*. A subcanopy composed of *Acer pensylvanicum* and *Acer spicatum* may be present. Typical shrubs include *Acer pensylvanicum, Amelanchier* spp., *Corylus cornuta, Hamamelis virginiana, Lindera benzoin*, and *Viburnum acerifolium*. The herb layer may be quite diverse depending on site characteristics. Species may include *Actaea pachypoda, Actaea rubra, Arabis* spp., *Arisaema triphyllum, Carex blanda, Carex laxiflora, Carex pedunculata, Carex platyphylla, Festuca subverticillata, Hepatica nobilis var. obtusa, Packera obovata, Phegopteris hexagonoptera, Polygonatum pubescens, Thalictrum dioicum, Thalictrum thalictroides, Viola rotundifolia*, and *Viola sororia*. This alliance is found in the north-central and northeastern United States and southern Canada. These forests typically occur on deep, moist to well-drained loams and silt loams on north and east midslopes to mesic ridgetops and coves, but stands may also occur on talus slopes or dry-mesic fine sandy loams and loamy sands.

IVC Dynamics: Historically, fire probably maintained stands in this alliance by decreasing competing woody species and improving light and moisture conditions for oak seedlings. Successful establishment of *Quercus rubra* and other associated oaks in this alliance is usually thought to require oak saplings in the understory prior to canopy disturbances or large-scale fires that remove competitors (Crow 1988, Nowacki et al. 1990). Current *Quercus rubra*-dominated stands in parts of this alliance's range may result from a combination of natural and human-caused disturbances (Nowacki et al. 1990).

IVC Environment: These forests and woodlands are distributed across the glaciated northern U.S. and Canada. They typically occur on slightly acidic, deep, moist to well-drained loams and silt loams on northern and eastern midslopes and coves. Stand may occasionally occur on ridges and talus slopes where soils are thin, patchy, and nutrient-poor. Some stands also occur on dry-mesic fine sandy loams and loamy sands (Nowacki et al. 1990). Elevations range from low to moderate up to 800 m.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from New Brunswick to Ontario and Quebec, south to Minnesota, east to New England, New York, and Pennsylvania.

IVC Nations: CA,US

IVC States/Provinces: CT, MA, ME, MI, MN, NB, NH, NJ, NY, ON, PA, QC, RI, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: L. Sneddon, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-09-26

IVC Acknowledgments:

G908 Acadian-Appalachian Pine - Oak Forest & Woodland

[ ]

IVC Colloquial Name: Acadian-Appalachian Pine - Oak Forest & Woodland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These dry-mesic to xeric pine-oak forests are found across the Northern Appalachian and Acadian regions of northern New England, Quebec, and Maritime Canada. They are dominated by a combination of *Pinus strobus, Quercus rubra, Pinus resinosa,* occasionally *Picea rubens* (on rocky sites) and other dry to dry-mesic northern hardwood species such as *Acer rubrum,*

Betula papyrifera, Populus grandidentata, and *Populus tremuloides.* Sites typically occur on coarse glacial deposits of sandy or loamy soils or rocky outcrops. Fire is an important natural disturbance. The understory ranges from moderately herb- and shrub-rich to extremely poor. In the tall-shrub layer, the important species are *Amelanchier* spp. and *Corylus cornuta*. In the low-shrub layer, *Vaccinium angustifolium, Vaccinium myrtilloides, Diervilla lonicera, Gaultheria procumbens*, and *Linnaea borealis* are locally important. The herbaceous layer is variable, sometimes poorly developed and with more prominent cover of feathermosses and lichens, in other cases with an open herb layer, including *Aralia nudicaulis, Clintonia borealis, Cornus canadensis, Eurybia macrophylla, Maianthemum canadense, Pteridium aquilinum, Oryzopsis asperifolia, Streptopus lanceolatus*, and *Trientalis borealis*. Occasional subboreal associates include *Pinus banksiana, Picea mariana, Abies balsamea, Vaccinium myrtilloides,* and *Cornus canadensis.*

IVC Dynamics: Fire can be an important natural disturbance. *Pinus resinosa* and *Pinus strobus* have extensive adaptations that make them well suited to frequent surface fires and occasional crown fires.

IVC Environment: This group typically occurs on coarse glacial deposits of sandy or loamy soils in cool north-temperate to subboreal climatic regions. Fire is an important natural disturbance. These forests occur on both dry to dry-mesic mineral soils and on upper hillslopes and low ridges, with shallow, bedrock soils. The soil deposition history can be either glaciofluvial or morainal in nature. Substrates include sand and gravel deposits on flats, such as outwash sands, delta sands, eskers, kames, kame terraces, and dry lake sands. Soil depth ranges from shallow < 10 cm to 61-100 cm. The soil textures are most commonly coarse sand or coarse loam soils, as well as some fine sands and silts.

DISTRIBUTION

IVC Geographic Range: This group occurs in the northern Appalachian and Maritime regions of northern New York and New England into southeastern Québec and the temperate regions of the Maritime provinces in Canada.

IVC Nations: CA,US

IVC States/Provinces: ME, NB, NH, NS, NY, ON, PA, PE, QC, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G3* rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. This type may have a restrictive range extent and area of occupancy that could raise the rank.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2125 *Pinus banksiana - Picea mariana / Rhododendron canadense* Forest Alliance** [Jack Pine - Black Spruce / Rhodora Forest Alliance] []
- **A4454 *Pinus banksiana - Pinus resinosa - Picea rubens* Acadian-Appalachian Forest & Woodland Alliance** [Jack Pine - Red Pine - Red Spruce Acadian-Appalachian Forest & Woodland Alliance] []
  These pine forests and woodlands occur in the Acadian-Northern Appalachian region, on a variety of dry sandy or rocky substrates, and are dominated by *Pinus banksiana, Pinus resinosa*, and *Pinus strobus*, typically with a heath layer.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

A2125 Jack Pine - Black Spruce / Rhodora Forest Alliance

[ ]

Pinus banksiana - Picea mariana / Rhododendron canadense Forest Alliance

Eastern Subboreal Jack Pine - Black Spruce Forest

IVC Scientific Name: *Pinus banksiana - Picea mariana* / *Rhododendron canadense* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is tentatively proposed to represent suboreal dry forests in the Eastern Boreal region of Canada dominated by jack pine and black spruce and with some temperate indicators.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: NB, NS, ON, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00219** ***Picea mariana - Abies balsamea / Ilex mucronata / Pleurozium schreberi*** [Black Spruce - Balsam Fir / Catberry / Schreber's Big Red-Stem Moss] [Épinette noire - Sapin baumier / Némopanthe mucroné / Pleurozie dorée]
  GNR.
- **CNVC00212** ***Picea mariana / Rhododendron canadense / Pteridium aquilinum*** [Black Spruce / Rhodora / Western Brackenfern] [Épinette noire / Rhododendron du Canada / Fougère-aigle]
  GNR.
- **CNVC00210** ***Pinus banksiana* (*Picea mariana*) / *Kalmia angustifolia* (*Rhododendron canadense*) / *Pleurozium schreberi*** [Jack Pine (Black Spruce) / Sheep Laurel (Rhodora) / Schreber's Big Red-Stem Moss] [Pin gris (Épinette noire) / Kalmia à feuilles étroites (Rhododendron du Canada) / Pleurozie dorée]
  GNR.
- **CNVC00203** ***Pinus banksiana / Gaylussacia baccata / Empetrum nigrum / Cladina rangiferina*** [Jack Pine / Black Huckleberry / Black Crowberry / *Cladina rangiferina*] [Pin gris / Gaylussaquier à fruits bacciformes / Camarine noire / Cladine rangifère]
  GNR.
- **CNVC00202** ***Pinus banksiana / Kalmia angustifolia - Rhododendron canadense / Cladina* spp.** [Jack Pine / Sheep Laurel - Rhodora / Reindeer Lichen species] [Pin gris / Kalmia à feuilles étroites - Rhododendron du Canada / Cladonies]
  GNR.
- **CNVC00240** ***Populus tremuloides - Betula papyrifera / Cornus canadensis - Aralia nudicaulis*** [Quaking Aspen - Paper Birch / Bunchberry Dogwood - Wild Sarsaparilla] [Peuplier faux-tremble - Bouleau à papier / Quatre-temps - Aralie à tige nue]
  GNR.
- **CNVC00236** ***Populus tremuloides - Picea glauca / Corylus cornuta / Clintonia borealis - Rubus pubescens*** [Quaking Aspen - White Spruce / Beaked Hazelnut / Bluebead - Dwarf Red Blackberry] [Peuplier faux-tremble - Épinette blanche / Noisetier à long bec / Clintonie boréale - Ronce pubescente]
  GNR.
- **CNVC00229** ***Picea glauca* (*Abies balsamea*) / *Oxalis montana* / *Pleurozium schreberi*** [White Spruce (Balsam Fir) / Mountain Woodsorrel / Schreber's Big Red-Stem Moss] [Épinette blanche (Sapin baumier) / Oxalide de montagne / Pleurozie dorée]
  GNR.
- **CNVC00230** ***Picea glauca* (*Abies balsamea*) / *Rubus pubescens - Galium triflorum*** [White Spruce (Balsam Fir) / Dwarf Red Blackberry - Fragrant Bedstraw] [Épinette blanche (Sapin baumier) / Ronce pubescente - Gaillet à trois fleurs]
  GNR.
- **CNVC00227** ***Picea glauca / Morella pensylvanica / Ammophila breviligulata*** [White Spruce / Northern Bayberry / American Beachgrass] [Épinette blanche / Cirier de Pennsylvanie / Ammophile à ligule courte]
  GNR.
- **CNVC00228** ***Picea glauca / Morella pensylvanica / Osmundastrum cinnamomeum*** [White Spruce / Northern Bayberry / *Osmundastrum cinnamomeum*] [Épinette blanche / Cirier de Pennsylvanie / Osmonde cannelle]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4454 Jack Pine - Red Pine - Red Spruce Acadian-Appalachian Forest & Woodland Alliance

[ ]

Pinus banksiana - Pinus resinosa - Picea rubens Acadian-Appalachian Forest & Woodland Alliance

Acadian-Appalachian Pine-Oak Dry Forest & Barrens

IVC Scientific Name: *Pinus banksiana - Pinus resinosa - Picea rubens* Acadian-Appalachian Forest & Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These pine forests and woodlands occur in the Acadian-Northern Appalachian region, on a variety of dry sandy or rocky substrates. The open to closed canopy tree layer contains various combinations of *Pinus banksiana, Pinus resinosa*, and *Pinus strobus*. The shrub layer is typically dominated by heath species, including *Gaylussacia baccata, Kalmia angustifolia*, and *Vaccinium angustifolium*, as well as other shrubs, such as *Aronia melanocarpa*. Lichen may be common in some stands.

IVC Dynamics: The pines (*Pinus banksiana* and *Pinus resinosa*) are fire-resistant, and fire appears be important in maintaining their dominance at some sites. In the absence of fire, the associated spruces, white pines, and hardwoods tend to become more abundant.

IVC Environment: Stands are found on a variety of dry sandy or rocky substrates, as well as glacial till, such as eskers and outwash. Soils are dry, acidic, and nutrient-poor.

DISTRIBUTION

IVC Geographic Range: These pine forests and woodlands occur in the Acadian-Northern Appalachian region from Central New England into the Acadian region of Canada.

IVC Nations: CA,US

IVC States/Provinces: ME, NB, NH, NS?, NY, ON, PA, PE?, QC, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006041** ***Pinus banksiana / Kalmia angustifolia - Vaccinium*** **spp. Woodland** [Jack Pine / Sheep Laurel - Blueberry species Woodland] []
  G3G5 (1997-12-01) ME, NB, NH, NS?, PE?, QC
- **CEGL005045** ***Pinus banksiana / Aronia melanocarpa / Xanthoparmelia*** **spp. Woodland** [Jack Pine / Black Chokeberry / Boulder Lichen species Woodland] []
  G4G5 (1998-10-15) NY
- **CEGL006010** ***Pinus resinosa / Gaylussacia baccata - Vaccinium angustifolium*** **Woodland** [Red Pine / Black Huckleberry - Lowbush Blueberry Woodland] []
  G3G5 (1997-12-01) ME, NB, NH, NY, PA, VT
- **CEGL006253** ***Pinus strobus - Pinus resinosa / Cornus canadensis*** **Forest** [Eastern White Pine - Red Pine / Bunchberry Dogwood Forest] []
  GNR. ME, NB, NH, NS?, NY, QC?, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

M013 Eastern North American Ruderal Forest

[ ]

IVC Colloquial Name: Eastern North American Ruderal Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This ruderal forest macrogroup is found in eastern temperate North America, and shows evidence of former and heavy human disturbance, such as through plowing, grading, skidding, etc., followed by plantings, but has been allowed to succeed more-or-less spontaneously. The tree layer is dominated (>80% cover) by "weedy" or generalist native tree species, or exotic invasive tree species. The list of ruderal tree species are as follows: Conifers: *Juniperus ashei, Juniperus virginiana, Pinus rigida, Pinus strobus, Pinus virginiana*. Hardwoods: *Acer negundo, Acer rubrum, Amelanchier* spp., *Betula populifolia, Crataegus* spp., *Crataegus crus-galli, Crataegus mollis, Diospyros virginiana, Fraxinus americana, Gleditsia triacanthos, Gymnocladus dioicus, Juglans nigra, Liquidambar styraciflua, Liriodendron tulipifera, Malus fusca, Morus rubra, Populus tremuloides, Prunus pensylvanica*, and *Prunus serotina*. Naturalized exotics include the conifer *Pinus thunbergii* and hardwoods *Acer platanoides, Ailanthus altissima, Catalpa bignonioides, Malus* spp., *Morus alba, Paulownia tomentosa*, and *Robinia pseudoacacia* (although a native in the central hardwoods region, it is so widely planted outside of its range that it is essentially exotic in character). Common conifer planted tree species in old or abandoned plantations include *Larix decidua, Picea abies, Picea glauca, Pinus banksiana, Pinus resinosa, Pinus strobus, Pinus sylvestris*, and *Pinus virginiana*. In these stands, trees may still show evidence of being planted in rows and be of uniform age. Regeneration of tree species in abandoned plantations rarely consists of the current overstory. Understory shrub and herb species can be sparse in old conifer plantations, and typically are native generalists or exotics. Understory shrub and herb species in all stands vary from exotic invasives to native generalists. Invasive shrub species include a variety of honeysuckles (*Lonicera japonica, Lonicera morrowii, Lonicera tatarica, Lonicera x bella*), *Rhamnus cathartica*, and others.

IVC Geographic Range: This macrogroup is found across much of the northeastern temperate region of the United States and Canada, west to the Great Lakes and Tallgrass Prairie region and south to the south-central United States.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC, DE, GA, IA, IL, IN, KS, KY, LA, MA, MB?, MD, ME, MI, MN, MO, MS, NB, NC, ND, NE, NF, NH, NJ, NS, NY, OH, OK, ON, PA, PE, QC, RI, SC, SD, TN, TX, VA, VT, WI, WV

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G030 Eastern North American Native Ruderal Forest []**
- **G032 Eastern North American Exotic Ruderal Forest []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen and S. Menard (2006)

IVC Description Author: D. Faber-Langendoen and S. Franklin

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G030 Eastern North American Native Ruderal Forest

[ ]

IVC Colloquial Name: Eastern North American Native Ruderal Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This native ruderal forest group is found in the cool temperate regions of eastern United States and Canada, from the East Coast, west to the Great Lakes and Tallgrass Prairie region and south to the south-central United States. The vegetation of this group shows evidence of former and heavy human disturbance, particularly to the soils, such as through plowing, grading,

skidding, etc., but has otherwise been allowed to succeed more-or-less spontaneously. The vegetation is a somewhat disparate mix of weedy and native species, and the ecological and floristic organization of the vegetation is not clear. The tree layer is dominated (>50% cover) by "weedy" or generalist native tree species, sometimes accompanied by exotic/invasive tree species. The list of ruderal tree species is as follows: Conifers: *Juniperus virginiana, Pinus rigida, Pinus strobus, Pinus virginiana*. Hardwoods: *Acer negundo, Acer rubrum, Amelanchier* spp., *Betula populifolia, Crataegus* spp., *Crataegus crus-galli, Crataegus mollis, Diospyros virginiana, Fraxinus americana, Gleditsia triacanthos, Gymnocladus dioicus, Juglans nigra, Liquidambar styraciflua, Liriodendron tulipifera, Morus* spp., *Malus fusca, Morus rubra, Populus tremuloides, Prunus pensylvanica, Prunus serotina, Prunus americana*, and *Robinia pseudoacacia*. Naturalized exotics include the conifer *Pinus thunbergii* and hardwoods *Acer platanoides* and *Ailanthus altissima*. *Robinia pseudoacacia*, although a native in the central hardwoods region, is so widely planted outside of its range that it is essentially exotic in character. The weedy natives often form mono-dominant or mixed dominance stands. Understory shrub and herb species vary from exotic invasives to native generalists. Invasive shrub species include a variety of honeysuckles (*Lonicera japonica, Lonicera morrowii, Lonicera tatarica, Lonicera x bella), Rhamnus cathartica*, and others. Sites show evidence of former and heavy human use, particularly with extensive and intensive soil disturbances, including plowing, grading, skidding, etc. Sites are often on dry-mesic to wet-mesic sites, suitable for agriculture or forest plantations.

IVC Dynamics: Stands most typically represent the tree-dominated stage in the development of vegetation on sites that were heavily disturbed by humans, including plowing, grading, skidding, etc. In these cases, earlier stages of vegetation include annual and perennial weeds, grasslands and shrublands [see Eastern North American Ruderal Meadow & Shrubland Group (G059)]. Because the extensive soil disturbances typically lead to a mix of weedy native and exotic shrub and herb species, the stands take on a ruderal composition, even if native trees invade or are planted. Canopy cover may be as low as 10%, but eventually stands may have more-or-less continuous canopy, leading to a shift to a more shade-tolerant ground layer.

The successional stages of this type have been described in many studies, particularly the early stages of tree invasion into old fields (e.g., Singleton et al. 2001), as have the limited recovery of these ruderal forests to a composition resembling the historic native forests of the region (Bellemare et al. 2002). See also Wright and Fridley (2010) for the biogeographic variation among stands of this type.

This type may also form in other ways. First, native forest plantation stands (tracked in 7. Agricultural & Developed Vegetation Cultural Class (CCL01))) could become ruderal stands if not intensively managed, as the planted trees begin to die out, and the ground layer is invaded by native species. Second, native forest stands that have not been plowed or planted may be stressed to the point where the characteristic native combination of species is altered (Curtis 1959). These stands are probably best tracked as altered variants of native types until the overstory itself is substantially altered.

IVC Environment: Sites show evidence of former and heavy human use, particularly with extensive and intensive soil disturbances, including plowing, grading, skidding, etc. Sites are often on dry-mesic to wet-mesic sites, suitable for agriculture or forest plantations.

DISTRIBUTION

IVC Geographic Range: This native ruderal forest group is found in the cool temperate regions of eastern United States and Canada, from the East Coast, west to the Great Lakes and Tallgrass Prairie region and south to the south-central United States.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC, DE, GA, IA, IL, IN, KS, KY, LA, MA, MB?, MD, ME, MI, MN, MO, MS, NB, NC, ND, NE, NF, NH, NJ, NS, NY, OH, OK, ON, PA, PE, QC, RI, SC, SD, TN, TX, VA, VT, WI, WV

IVC Omernik Ecoregions: 5.2.1.50:P, 5.2.2.49:P, 5.3.1.58:P, 5.3.3.62:P, 8.1.1.83:P, 8.1.3.60:P, 8.1.4.51:P, 8.1.5.52:P, 8.1.6.56:P, 8.1.7.59:P, 8.1.8.82:P, 8.1.10.61:P, 8.2.1.53:P, 8.2.2.57:P, 8.2.3.54:P, 8.2.4.55:P, 8.3.1.64:P, 8.3.2.72:P, 8.3.3.71:P, 8.3.4.45:P, 8.4.1.67:P, 8.4.2.69:P, 8.4.3.70:P, 8.4.4.66:P, 8.4.5.39:P, 8.4.6.38:P, 8.4.7.37:P, 8.4.8.36:P, 8.4.9.68:P, 8.5.4.84:P, 9.2.1.46:P, 9.2.2.48:P, 9.2.3.47:P, 9.2.4.40:P, 9.3.1.42:P, 9.3.4.44:P, 9.4.2.27:P, 9.4.4.28:P, 9.4.5.29:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2010-01-22)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3229 *Acer rubrum - Prunus serotina - Pinus strobus* Ruderal Forest Alliance** [Red Maple - Black Cherry - Eastern White Pine Ruderal Forest Alliance] []

  This early-successional forest vegetation of the northeastern United States occurs on sites that are becoming reforested after having been cleared for agriculture, long abandoned plantations or otherwise heavily modified in the past, with a generalist set of native, non-planted species, including *Acer rubrum, Fraxinus americana, Liriodendron tulipifera, Pinus strobus, Prunus serotina*, and *Robinia pseudoacacia*.

- **A3227 *Juniperus virginiana - Pinus virginiana - Pinus echinata* Ruderal Forest Alliance** [Eastern Red-cedar - Virginia Pine - Shortleaf Pine Ruderal Forest Alliance] []
  This semi-natural forest is found in locally disturbed areas, most commonly in old fields and pastures, and cleared land, with three variants: *Juniperus virginiana var. virginiana* stands, mixed *Juniperus virginiana var. virginiana - Quercus* spp. stands, and *Pinus* spp. (especially *Pinus echinata, Pinus strobus*, and *Pinus virginiana*) stands.
- **A3228 *Liriodendron tulipifera - Juglans nigra - Robinia pseudoacacia* Ruderal Forest Alliance** [Tuliptree - Black Walnut - Black Locust Ruderal Forest Alliance] []
  This ruderal forest alliance includes deciduous forests dominated by *Gleditsia triacanthos, Juglans nigra, Liriodendron tulipifera*, or *Robinia pseudoacacia* primarily in areas which were once clearcut, old fields, or cleared by fire or other natural disturbances and often planted to these species, but not maintained.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen and S. Menard (2006)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2015-05-05
IVC Acknowledgments: S. Franklin, J. Vanderhorst

A3229 Red Maple - Black Cherry - Eastern White Pine Ruderal Forest Alliance

[ ]
Acer rubrum - Prunus serotina - Pinus strobus Ruderal Forest Alliance
Northeastern Ruderal Conifer - Hardwood Forest

IVC Scientific Name: *Acer rubrum - Prunus serotina - Pinus strobus* Ruderal Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This early-successional forest vegetation of the northeastern United States occurs on sites that are becoming reforested after having been cleared for agriculture or otherwise heavily modified in the past. Environmental setting varies, but generally sites are dry-mesic to mesic, with small seepage inclusions in some examples. Physiognomy of this vegetation is highly variable, ranging from closed forest to open woodland and scrub. The generalist set of native, non-planted species include a combination of tree species, such as *Acer rubrum, Fraxinus americana, Liriodendron tulipifera, Pinus strobus*, and *Prunus serotina*. Other associates can include *Acer negundo, Acer saccharinum, Ailanthus altissima, Amelanchier* spp., *Betula lenta, Betula populifolia, Juglans nigra, Juniperus virginiana, Pinus strobus, Populus grandidentata, Quercus* spp., *Robinia pseudoacacia, Sassafras albidum*, and *Ulmus americana*. The low-shrub layer, if present, is usually characterized by the presence of *Rubus* spp. such as *Rubus allegheniensis, Rubus flagellaris, Rubus hispidus*, or *Rubus phoenicolasius*. This layer is often dominated by exotic species such as *Berberis thunbergii, Crataegus* spp., *Lonicera morrowii, Lonicera tatarica, Rhamnus cathartica*, and *Rosa multiflora*. The herbaceous layer is variable, often containing grasses and forbs of both native and exotic origin. The invasive species *Alliaria petiolata, Microstegium vimineum*, and *Polygonum cespitosum* can be abundant in this disturbed forest type. These forests are often young and resulted from the colonization of old agricultural fields by woody species. Recent disturbance or abundant invasive species give these forest stands a weedy character. It is unlikely that these stands will succeed to a natural plant community dominated by native species.
IVC Dynamics: These forests are often young and resulted from the colonization of old agricultural fields by woody species. Early-successional woody species dominate the canopy in a widely variable mix, depending on geographic location. In the Central Appalachians and Mid-Atlantic Piedmont, many stands represent decadent forests that were once dominated by *Robinia pseudoacacia* but are now mixed with various mid-successional hardwoods; other stands in this region regenerated as mixed stands, or from abandoned plantations, such as those of *Picea abies*. Recent disturbance or abundant invasive species give these forest stands a weedy character. It is unlikely that these stands will succeed to a natural plant community dominated by native species.
IVC Environment: This vegetation occurs on sites that have been cleared for agriculture, were planted with conifer plantation species and then abandoned, or were otherwise heavily modified in the past. Generally sites are dry-mesic and may have small seepage inclusions in some examples. Occasionally this type may occur in former agricultural bottomlands, in which case the soils may be temporarily flooded or saturated.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northern and central U.S. from southern Maine south to Virginia and west to eastern Ohio, Kentucky, and Tennessee.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, IN, KY, MA, MD, ME, NB, NH, NJ, NY, OH, PA, QC, RI, TN, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2013-09-27)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008720 *Populus tremuloides* - *Betula populifolia* Ruderal Woodland** [Quaking Aspen - Gray Birch Ruderal Woodland] []
  This is a common ruderal successional woodland/forest of the northern Appalachian Mountains, from New England, New York and adjacent Canada Stands develop on severely disturbed sites, including post-agricultural fields or logged or other managed sites that have several disturbed soil profiles. Typical dominants include *Populus tremuloides, Populus grandidentata,* the non-native *Populus alba*, and *Betula populifolia*. GNA. MA, ME, NB, NH, NY, PA, QC?, VT
- **CEGL006506 *Quercus rubra* - *Acer rubrum* - *Betula* spp. - *Pinus strobus* Ruderal Forest** [Northern Red Oak - Red Maple - Birch species - Eastern White Pine Ruderal Forest] []
  GNA (2012-05-14) CT, MA, ME, NB, NH, NY, RI, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A3227 Eastern Red-cedar - Virginia Pine - Shortleaf Pine Ruderal Forest Alliance

[ ]
Juniperus virginiana - Pinus virginiana - Pinus echinata Ruderal Forest Alliance
Ruderal Eastern Red-cedar - Virginia Pine - Mixed Conifer Forest

IVC Scientific Name: *Juniperus virginiana - Pinus virginiana - Pinus echinata* Ruderal Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This semi-natural forest is found in locally disturbed areas, most commonly in old fields and pastures, and cleared land. Three dominance-based suballiances may be recognized: (1) *Juniperus virginiana var. virginiana* stands occur widely and are more common on calcareous sites. Stand may be very dense, and the stature may be rather low. Associated species include *Acer rubrum, Carya tomentosa, Carya ovata, Cercis canadensis, Fraxinus americana*, and *Pinus virginiana*. The midstory is typically sparse, with canopy species, as well as *Cornus florida, Ilex opaca, Liquidambar styraciflua*, and *Prunus serotina var. serotina*. The vegetation may vary in structure from open-canopy woodland (particularly as it invades herbaceous old fields) to dense, closed-canopy forest. (2) A mixed *Juniperus virginiana var. virginiana - Quercus* spp. suballiance represents stands that may be fire-suppressed native stands, and may not be natural in character. Various oaks (including *Quercus coccinea, Quercus phellos, Quercus rubra, Quercus velutina*) are present. (3) *Pinus* spp. (especially *Pinus echinata, Pinus strobus*, and *Pinus virginiana*) stands occur on old fields (often from abandoned farmland), old pastures, clearcuts, and eroded areas. Soils are typically dry, acidic, and infertile. This forest typically has a very dense canopy of *Pinus virginiana* and little understory vegetation. The dense canopy may also include admixtures of other *Pinus* species (e.g., *Pinus taeda, Pinus echinata, Pinus rigida, Pinus strobus*) or other early-successional deciduous trees (e.g., *Acer rubrum, Liquidambar styraciflua, Prunus serotina, Liriodendron tulipifera, Fraxinus americana, Nyssa sylvatica*). Associated woody and herbaceous species vary with geography but are typically ruderal or exotic species. Shrub and herb layers are frequently very sparse. *Lonicera japonica* and *Rosa multiflora* are common. The herb

layer is characterized by weedy natives and exotics such as *Lycopodium digitatum, Achillea millefolium var. occidentalis, Hieracium caespitosum*, and *Lespedeza cuneata*.

IVC Dynamics:

IVC Environment: Forests in this alliance occur on usually high pH, fire-suppressed sites or old fields. The habitat for this alliance is most commonly old fields and pastures, successional cleared land, and other variously locally disturbed areas, especially on calcareous rocks.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northeastern U.S. from Massachusetts and New York, adjacent Ontario, Canada, to the southeastern U.S. from Virginia to Oklahoma and Texas, to the midwestern U.S. from Iowa to Missouri, and possibly elsewhere.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC, DE, GA, IA, IN, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, NH, NJ, NY, OH?, OK, ON, PA, RI, SC, TN, TX, VA, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2013-09-27)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002593 *Juniperus virginiana* Midwest Ruderal Forest** [Eastern Red-cedar Midwest Ruderal Forest] []
  GNA (1999-01-15) IA, MO, OH, ON

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, D.J. Allard and M. Pyne, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-01-08

IVC Acknowledgments:

A3228 Tuliptree - Black Walnut - Black Locust Ruderal Forest Alliance

[ ]

Liriodendron tulipifera - Juglans nigra - Robinia pseudoacacia Ruderal Forest Alliance

Ruderal Tuliptree - Black Walnut - Black Locust Forest

IVC Scientific Name: *Liriodendron tulipifera - Juglans nigra - Robinia pseudoacacia* Ruderal Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes deciduous forests dominated by *Gleditsia triacanthos, Juglans nigra, Liriodendron tulipifera*, or *Robinia pseudoacacia* primarily in areas which were once clearcut, old fields, or cleared by fire or other natural disturbances, and then planted to these species, but with no regular maintenance. Three suballiances are recognized based on dominant species: (1) *Liriodendron tulipifera* stands occur on old clearcut sites and old fields. This suballiance includes pure, often even-aged stands of *Liriodendron tulipifera*. Associated species vary with geographic location. Throughout most of the range of this suballiance *Acer rubrum, Robinia pseudoacacia, Betula lenta, Acer saccharum*, and *Acer negundo* are common components. (2) *Juglans nigra - Gleditsia triacanthos* stands are often associated with former homesites or other disturbances on fertile alluvial deposits. Associated canopy trees vary from site to site and can include *Liriodendron tulipifera, Juglans cinerea, Robinia pseudoacacia, Fraxinus americana, Ulmus americana, Platanus occidentalis, Acer saccharum, Acer nigrum*, and *Morus rubra*. The shrub layer may or may not be well-developed; common species include *Asimina triloba, Viburnum prunifolium, Lindera benzoin, Corylus americana*, and the exotic invasive *Rosa multiflora*. (3) *Robinia pseudoacacia* stands occur in pure stands or makes up the majority of the canopy. These are short-lived forests that typically result from planting or invasion following land abandonment or fire, or from other severe disturbance.

IVC Dynamics: These forests may not persist with the current set of dominant tree species after the first generation of trees dies, but the direction of long-term development is unclear.

IVC Environment: These forests often occur in areas which were once clearcut, old fields, or cleared by fire or other natural disturbances, and then planted to these species, but with no regular maintenance.

DISTRIBUTION

IVC Geographic Range: Forests in this alliance are found locally throughout the eastern United States and in extreme southeastern Canada on a wide range of disturbed sites.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, DC, DE, GA, IA, IL, KY, LA, MA, MD, MI, MO, MS, NC, NJ, NY, OH, OK, ON, PA, SC, TN, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2013-09-27)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005239** ***Fraxinus pennsylvanica - Ulmus americana - (Juglans nigra, Celtis occidentalis)*** **Ruderal Forest** [Green Ash - American Elm - (Black Walnut, Common Hackberry) Ruderal Forest] []
  GNA (1998-06-08) IA, ON

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-01-08

IVC Acknowledgments:

G032 Eastern North American Exotic Ruderal Forest

[ ]

IVC Colloquial Name: Eastern North American Exotic Ruderal Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This native ruderal forest group is found in the cool temperate regions of the eastern United States and Canada, from the East Coast, west to the Great Lakes and Tallgrass Prairie region and south to the south-central United States. The vegetation of this group shows evidence of former and heavy human disturbance, particularly to the soils, such as through plowing, grading, skidding, etc., but has otherwise been allowed to succeed more-or-less spontaneously. The vegetation is a disparate mix of exotic species, and the ecological and floristic organization of the vegetation is not clear. The tree layer is dominated (>80% cover) by exotic tree species. The list of exotic tree species include Conifers: *Pinus thunbergii* and Hardwoods: *Acer platanoides, Ailanthus altissima, Malus fusca*, and *Robinia pseudoacacia*. Although *Robinia pseudoacacia* is a native in the central hardwoods region, it is so widely planted outside of its range that it is exotic in character. Understory shrub and herb species vary from exotic invasives to native generalists. Invasive shrub species include a variety of honeysuckles (*Lonicera japonica, Lonicera morrowii, Lonicera tatarica, Lonicera x bella), Rhamnus cathartica*, and others. The most common exotic tree species found in abandoned plantations include *Larix decidua, Picea abies*, and *Pinus sylvestris*. Sites are often on dry-mesic to wet-mesic sites, suitable for agriculture or forest plantations.

IVC Dynamics: Stands most typically represent the tree-dominated stage in the development of vegetation on sites that were heavily disturbed by humans, including plowing, grading, skidding, etc. In these cases, earlier stages of vegetation include annual and perennial weeds, grasslands and shrublands [see Eastern North American Ruderal Meadow & Shrubland Group (G059)]. Because the extensive soil disturbances typically lead to a mix of weedy native and exotic shrub and herb species, the stands take on a ruderal composition. Exotic tree species may initiate establishment before natives or outcompete natives. Canopy cover may be as low as 10%, but eventually stands may have more-or-less continuous canopy, leading to a shift to a more shade-tolerant

ground layer. The successional stages of this type have been described in many studies, particularly the early stages of tree invasion into old fields (e.g., Singleton et al. 2001). See also Wright and Fridley (2010) for the biogeographic variation among stands of this type.

This type may also form in other ways. First, exotic forest plantation stands (tracked in 7. Agricultural & Developed Vegetation Cultural Class (CCL01))) could become exotic ruderal stands if not intensively managed and the planted trees begin to die out. But because exotic planted trees only rarely regenerate on sites where they are planted, these stands more typically are invaded by native generalist trees and succeed to Eastern North American Native Ruderal Forest Group (G030). Second, native forest stands that have not been plowed or planted may be stressed to the point where the characteristic native combination of species is altered (Curtis 1959). These stands are probably best tracked as altered variants of native types until the overstory itself is substantially altered to the point where exotics tree species are the dominant.

IVC Environment: Sites include uplands and marginally wet sites that have been altered by logging, clearing for agriculture or other activities. Sites are often on dry-mesic to wet-mesic sites, suitable for agriculture or forest plantations.

DISTRIBUTION

IVC Geographic Range: This native ruderal forest group is found in the cool temperate regions of the eastern United States and Canada, from the East Coast, west to the Great Lakes and Tallgrass Prairie region and south to the south-central United States.

IVC Nations: CA,US

IVC States/Provinces: AR, CT, DC, DE, IA, IL, KS, KY, MA, MB?, MD, ME, MI, MN, MO, NB, NC, ND, NE, NF, NH, NJ, NS, NY, OH, ON, PA, PE, QC, RI, SC?, SD, TN, VA, VT, WI, WV

IVC Omernik Ecoregions: 5.2.1.50:P, 5.2.2.49:P, 5.3.1.58:P, 5.3.3.62:P, 8.1.1.83:P, 8.1.3.60:P, 8.1.4.51:P, 8.1.5.52:P, 8.1.6.56:P, 8.1.7.59:P, 8.1.8.82:P, 8.1.10.61:P, 8.2.1.53:P, 8.2.2.57:P, 8.2.3.54:P, 8.2.4.55:P, 8.3.1.64:P, 8.3.2.72:P, 8.3.3.71:P, 8.3.4.45:P, 8.4.1.67:P, 8.4.2.69:P, 8.4.3.70:P, 8.4.4.66:P, 8.4.5.39:P, 8.4.6.38:P, 8.4.7.37:P, 8.4.8.36:P, 8.4.9.68:P, 8.5.4.84:P, 9.2.1.46:P, 9.2.2.48:P, 9.2.3.47:P, 9.2.4.40:P, 9.3.1.42:P, 9.3.4.44:P, 9.4.2.27:P, 9.4.4.28:P, 9.4.5.29:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2010-01-22)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3230 *Acer platanoides - Ailanthus altissima - Pinus* spp. Exotic Ruderal Forest Alliance** [Norway Maple - Tree-of-Heaven - Pine species Exotic Ruderal Forest Alliance] []
  These semi-natural forests are dominated by naturalized *Acer platanoides, Ailanthus altissima, Pinus thunbergii, Pinus nigra*, or *Paulownia tomentosa* in the eastern United States.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen and S. Menard (2006)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2015-05-05
IVC Acknowledgments:

A3230 Norway Maple - Tree-of-Heaven - Pine species Exotic Ruderal Forest Alliance

[ ]

Acer platanoides - Ailanthus altissima - Pinus spp. Exotic Ruderal Forest Alliance

Eastern Exotic Ruderal Forest

IVC Scientific Name: *Acer platanoides - Ailanthus altissima - Pinus* spp. Exotic Ruderal Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes semi-natural forests dominated by naturalized *Acer platanoides, Ailanthus altissima, Paulownia tomentosa, Pinus nigra*, or *Pinus thunbergii*. These are all exotic tree species that have locally established in the region. *Pinus thunbergii* stands occur in the northeastern coastal region and likely beyond, on well-drained to xeric sandy soils, usually on

sand dunes or near-coastal glacial tills. Stands are of variable canopy height and closure and dominated by *Pinus thunbergii* or *Pinus nigra*. *Ailanthus altissima* is a native of eastern Asia. This forest occurs mostly in disturbed areas, along roadsides, urban abandoned lands, and on limestone clifftops. In some parts of the range, this forest is associated with calcareous soils. *Acer platanoides* stands often occur to the exclusion of virtually all other canopy species. Most documented stands are at low elevations, on flat or rolling topography both above and below the glacial boundary. In some stands, native trees, including *Fraxinus americana* and *Acer saccharum* (the latter especially susceptible to exclusion by *Acer platanoides*), may be present in very limited amounts. Other stands may have non-native associates, including *Pinus nigra, Pinus sylvestris*, or *Robinia pseudoacacia*. The deep shade cast by *Acer platanoides* limits understory growth, aside from regeneration of *Acer platanoides*, or incursions by non-native shrubs such as *Rosa multiflora, Berberis vulgaris, Lonicera japonica*, or *Lonicera morrowii*. Native herbs are few, especially compared to more natural deciduous forests in similar settings. A few native or exotic herbaceous species or vines may occupy the ground layer, such as *Alliaria petiolata, Eurybia divaricata, Toxicodendron radicans*, and *Vinca minor*. *Paulownia tomentosa*, a native of Asia, has become naturalized in portions of the eastern United States, where it occurs as small, scattered populations along roadsides, in disturbed woodlots, and in streamside forests.

IVC Dynamics: The long-term persistence of these stands is not clear. They are not likely to become strongly invasive, since they require large-scale, substrate-scarifying disturbance for optimal establishment and maintenance (Patterson 1976, Williams 1993, Sneddon and Lundgren 2001).

IVC Environment: These forests occur mostly in disturbed areas, along roadsides, on well-drained to xeric sandy soils, including sand dunes or near-coastal glacial tills, steep rocky sites, urban abandoned lands, and calcareous sites (Patterson 1976, Williams 1993, Sneddon and Lundgren 2001).

DISTRIBUTION

IVC Geographic Range: The alliance is localized but widespread, occurring in locally disturbed areas throughout the Midwest, Northeast and Central United States.

IVC Nations: CA?,US

IVC States/Provinces: AR, CT, DE, KY, MA, MD, NC, NJ, NY, ON?, PA, RI, TN, VA, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2013-09-27)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006407 *Acer platanoides* Ruderal Forest** [Norway Maple Ruderal Forest] []
  GNA (2005-12-06) CT?, MA, MD?, NJ?, NY, OH, ON?, PA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, A. Weakley, L. Sneddon, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-01-08

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by Alan Weakley, Lesley Sneddon, Steve Simon, Gary Kauffman and D.M. Danley.

M500 Central Rocky Mountain Mesic Lower Montane Forest

Forêts mésiques des montagnes de faible altitude du centre des Rocheuses

IVC Colloquial Name: Central Rocky Mountain-Interior Moist Montane Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M500 describes lower montane forests in warm to cool, moist to wet, temperate climates in the North American Western Cordillera. In Canada, M500 forests occur in the northwestern and southeastern portions of the British Columbia (BC) interior. These are typically evergreen coniferous forests dominated by western hemlock (*Tsuga heterophylla*) and/or western red cedar (*Thuja plicata*), often consisting of tall, long-lived trees in stands that may persist for centuries. Stand-replacing fires occur less frequently than in other forests of the BC interior; gap dynamics driven by pathogens, insects and windthrow prevail. Common tree species associates include subalpine fir (*Abies lasiocarpa*), Rocky Mountain Douglas-fir (*Pseudotsuga menziesii* var. *glauca*), lodgepole pine (*Pinus contorta* var. *latifolia*) and hybrids of white spruce (interior spruce [*Picea engelmannii x glauca*]; Lutz spruce [*P. x lutzii*]). In the warmest parts of the Canadian range, western white pine (*Pinus monticola*), western larch (*Larix occidentalis*), ponderosa pine (*Pinus ponderosa*) and grand fir (*Abies grandis*) also occur. Trembling aspen (*Populus tremuloides*) and paper birch (*Betula papyrifera*) commonly occur following disturbance. Common understory shrubs include black huckleberry (*Vaccinium membranaceum*), falsebox (*Paxistima myrsinites*), western thimbleberry (*Rubus parviflorus*), devil's club (*Oplopanax horridus*), oval-leaved blueberry (*Vaccinium ovalifolium*), Rocky Mountain maple (*Acer glabrum*) and saskatoon (*Amelanchier alnifolia*). Typical herb/dwarf shrub species include single-flowered clintonia (*Clintonia uniflora*), bunchberry (*Cornus canadensis*), three-leaved foamflower (*Tiarella trifoliata*), twisted-stalks (*Streptopus* spp.), five-leaved dwarf bramble (*Rubus pedatus*), common pipsissewa (*Chimaphila umbellata*), wild sarsaparilla (*Aralia nudicaulis*) and twinflower (*Linnaea borealis*). Ferns often constitute an important component of the herb layer, especially common oak fern (*Gymnocarpium dryopteris)* and common lady fern *(Athyrium filix-femina).* Frequently occurring mosses are red-stemmed feathermoss (*Pleurozium schreberi*), knight's plume moss (*Ptilium crista-castrensis*), stairstep moss (*Hylocomium splendens*), pipecleaner moss (*Rhytidiopsis robusta*) and electrified cat's-tail moss (*Rhytidiadelphus triquetrus*).

In Canada, M500 occurs within a continental temperate climate with warm summers, cool winters and high annual precipitation. These forests grow best on well to imperfectly drained sites with high soil moisture. Mean annual precipitation is highly variable throughout the Canadian range, typically 700 to 1400 mm on average. Where precipitation is lower, sites rely on moisture inputs from snowmelt and stands often occur on lower/toe slopes or on cool aspects. Mean annual temperatures vary from approximately 2.5° to 8° C, depending on latitude and elevation; soils typically don't freeze in the winter. M500 forests occupy the low to mid-elevations (up to approximately 1500 mASL) in mountains and highlands in southeastern and northwestern BC, wherever precipitation levels are sufficient. All parts of the range experienced Pleistocene glaciation; soils are mostly Podzols, Luvisols and Brunisols developed in glacial surficial materials. Three subtypes characterize regional variation in the Canadian range of M500: CM500a [Southern Mesic Rocky Mountain Low Montane Forest] describes forests in southeastern BC near the international border; CM500b [Typic Mesic Rocky Mountain Low Montane Forest] is the typical condition for the main portion of the Canadian range in southeastern BC; CM500c [Northern Mesic Rocky Mountain Low Montane Forest] describes forests in northwestern BC in the lee of the Coast Mountains.

IVC Geographic Range: This forest and woodland macrogroup occurs in the interior lower montane regions of the Pacific Northwest, east of the Cascade Range south along the eastern Cascades from Lake Chelan south to Mount Hood in Oregon; from interior British Columbia south to eastern Washington, eastern Oregon, northern Idaho and western Montana east to the Continental Divide (DellaSala et al. 2011). In British Columbia, it occurs in the lee of the Coast Mountains in the northwest, and extensively in the mountain valleys of the southeast.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA, ID, MT, OR, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: M500 characterizes lower montane forests of warm, moist to wet, continental temperate climates (and moist sites of drier climates) in the Western Cordillera of North America. Lower montane forests and woodlands in drier climates (and dry sites of moist climates) of the warm interior of British Columbia (BC) are included in M501 [Central Rocky Mountain Dry Lower Montane - Foothill Forest]. Low elevation subboreal forests in central BC are described by M890 [Rocky Mountain Intermontane Subboreal Forest]. Low elevation forests of maritime temperate climates near the Pacific coast are described by M024 [Vancouverian Coastal Rainforest]. Higher elevation montane and subalpine forests contiguous with the range of M500 are characterized by M020 [Rocky Mountain Subalpine - High Montane Forest).

Abies lasiocarpa here refers to both *A. lasiocarpa* (subalpine fir) and *A. bifolia* (Rocky Mountain alpine fir), as well as their hybrids, as recognized by VASCAN.

Pinus contorta here refers to variety *latifolia* (lodgepole pine).
Pseudotsuga menziesii here refers to variety *glauca* (Rocky Mountain Douglas-fir).
Vaccinium ovalifolium here includes *V. alaskaense* (Alaska blueberry), according to VASCAN.

Groups in Canada:

- **G211 Central Rocky Mountain-Interior Mesic Grand Fir - Douglas-fir - Western Larch Forest []**
- **G217 Central Rocky Mountain Interior Western Red-cedar - Western Hemlock Forest []**
- **G212 East Cascades Moist-Mesic Grand Fir - Douglas-fir Forest []**

CNVC Concept Author: D. Meidinger, W. MacKenzie, K. Baldwin, USNVC
CNVC Concept Date: 2015-04-01
CNVC Description Author: D. Meidinger and K. Baldwin
CNVC Description Date: 2017-07-01
IVC Primary Concept Source: A.W. Küchler (1964)
IVC Description Author: M.S. Reid, K.A. Schulz, D. Meidinger, and D. Faber-Langendoen
IVC Description Date: 2015-06-09
IVC Acknowledgments:

G211 Central Rocky Mountain-Interior Mesic Grand Fir - Douglas-fir - Western Larch Forest

[ ]

IVC Colloquial Name: Central Rocky Mountain-Interior Mesic Grand Fir - Douglas-fir - Western Larch Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group also includes woodlands or "savannas" of the deciduous conifer *Larix occidentalis*; these were typically stands initiated following stand-replacing crown fires of other conifer forests, but are maintained by a higher frequency, surface-fire regime. Fire suppression has led to invasion of the more shade-tolerant tree species *Abies grandis, Abies lasiocarpa, Picea engelmannii*, or *Tsuga* spp. and loss of much of the single-story canopy woodlands. *Larix occidentalis* communities occur in settings where low-intensity, high-frequency fires create open larch woodlands, often with the undergrowth dominated by low-growing *Arctostaphylos uva-ursi, Cornus canadensis, Calamagrostis rubescens, Linnaea borealis, Spiraea betulifolia, Vaccinium cespitosum*, and/or *Xerophyllum tenax*. Less frequent or absence of fire creates mixed-dominance stands with often shrubby undergrowth; *Vaccinium cespitosum* is common, and taller shrubs can include *Acer glabrum, Ceanothus velutinus, Shepherdia canadensis, Holodiscus discolor, Physocarpus malvaceus, Rubus parviflorus*, or *Vaccinium membranaceum*.

IVC Dynamics: Typically, stand-replacement fires have 150- to 500-year return intervals, with moderate-severity fire intervals of 50-100 years. *Abies grandis* forests include many sites dominated by *Pseudotsuga menziesii* and *Pinus ponderosa* which were formerly maintained by wildfire, and may now be dominated by *Abies grandis* (a fire-sensitive, shade-tolerant species) due to fire exclusion (Lillybridge et al. 1995, Chappell et al. 1997). Pre-European settlement fire regimes were typically of frequent, low-intensity surface fires, maintaining relatively open stands of a mix of fire-resistant species. With the advent of effective fire suppression, longer fire-return intervals are now the rule, and mixed-stature stands with *Abies grandis* in various size classes now create ladder fuels making these forests more susceptible to high-intensity, stand-replacing fires (Cooper et al. 1987, Lillybridge et al. 1995).

Larix occidentalis is a long-lived species (in excess of 700 years in the northern Rocky Mountains), and thus stands of western larch are themselves persistent. However, the life of *Larix*-dominated stands probably rarely exceeds 250 years due to various mortality sources and the in-growth of shade-tolerant species, especially on mesic sites. Occurrences of *Larix occidentalis* stands are generated by stand-replacing fire, the fire-return interval for which is speculated to be approximately 80 to 200 years (Cooper et al. 1987). These sites may be maintained in a seral status for hundreds of years since *Larix occidentalis* is a long-lived species and the understory is often dominated by *Pseudotsuga*, which will grow into the upper canopy. The potential dominants, typically *Abies lasiocarpa, Picea engelmannii*, and/or *Abies grandis* or rarely *Tsuga heterophylla* or *Thuja plicata*, establish and grow on these sites, presenting the distinct probability, given the fire-return intervals for this type, that the "climax" (long-term stable) condition is never attained. It has been noted in northern Idaho that, following disturbance (particularly logging) in some mesic-site occurrences, *Larix occidentalis* does not necessarily replace itself, the first tree-dominated successional stages being dominated by *Pseudotsuga menziesii, Pinus contorta*, or less frequently by more shade-tolerant species (Cooper et al. 1987); this response is a consequence of the episodic nature of favorable cone crop years in *Larix occidentalis*.

IVC Environment: These forests occur in areas influenced by incursions of mild, wet, Pacific maritime air masses. Much of the annual precipitation occurs as rain, but where snow does occur, it is generally melted by rain during warm winter storms. Elevations range from 610 to 2195 m (2000-7200 feet). Occurrences generally are found on all slopes and aspects but grow best on sites

with high soil moisture, such as valley bottoms, on benches, well-drained slopes and moist ravines. Sites supporting these forests are typically warmer and moister than the prevailing local climate. However, these are moist, non-flooded or upland sites. *Soil/substrate/hydrology:* Parent materials are non-calcareous materials, predominately sedimentary rock and argillite. Intermittent shallow A horizons overlying a dominant B horizon indicate that volcanic ash and loess deposits have significant contribution to soil development. These forests occur on gravelly loams and silt loams are slightly acidic.

DISTRIBUTION

IVC Geographic Range: This group occurs in the Northern Rockies of western Montana west into north-central Idaho, the Blue Mountains in Oregon, northeastern Washington and possibly southern British Columbia. *Larix occidentalis* extends beyond the typical range of this group in north-central Washington and a short distance in southern British Columbia and then jumps to the Wenatchee Mountains and south along the eastern Cascades to the Columbia River.

IVC Nations: CA,US

IVC States/Provinces: AB, BC?, ID, MT, OR, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.15.16:P, 10.1.2.10:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5* rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3362 *Abies grandis - Pseudotsuga menziesii* Central Rocky Mountain Forest & Woodland Alliance** [Grand Fir - Douglas-fir Central Rocky Mountain Forest & Woodland Alliance] []
  This alliance occurs in the middle to northern Rocky Mountains and occasionally in the Cascade Range representing forest and woodland vegetation dominated by *Abies grandis* where *Pseudotsuga menziesii* may be an early-seral component, codominant or the sole dominant species.
- **A0275 *Larix occidentalis* Central Rocky Mountain Forest Alliance** [Western Larch Central Rocky Mountain Forest Alliance] []
  These seral forests are dominated by *Larix occidentalis* and reported from the northern Rocky Mountains in northwestern Montana, and occur in Idaho, Washington, Oregon and possibly British Columbia, Canada.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: R.F. Daubenmire and J.B. Daubenmire (1968)

IVC Description Author: M.S. Reid, R. Crawford and M. Manning

IVC Description Date: 2013-05-30

IVC Acknowledgments: R. Crawford and M. Manning

A3362 Grand Fir - Douglas-fir Central Rocky Mountain Forest & Woodland Alliance

[ ]

Abies grandis - Pseudotsuga menziesii Central Rocky Mountain Forest & Woodland Alliance

Central Rocky Mountain Grand Fir - Douglas-fir Forest & Woodland

IVC Scientific Name: *Abies grandis - Pseudotsuga menziesii* Central Rocky Mountain Forest & Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance occurs in the middle to northern Rocky Mountains and occasionally in the Cascade Range in a variety of topographic positions. These are highly variable montane coniferous forests that lie between drier *Pseudotsuga menziesii - Pinus ponderosa* and more moist *Tsuga heterophylla* or *Thuja plicata* forests on the moisture scale, and are warmer than forests

dominated by *Abies lasiocarpa*. Stands are dominated by *Abies grandis* where *Pseudotsuga menziesii* may be an early-seral component, codominant or the sole dominant species. Several other conifers may be present in the canopy, typically as seral species, including *Larix occidentalis, Pinus contorta*, or *Pinus monticola*. *Picea engelmannii* and *Taxus brevifolia* become increasingly common towards the eastern edge of the range, and *Tsuga heterophylla* and *Thuja plicata* may be associates at moister sites. The shrub and herbaceous components of these forests are highly variable across the range of the alliance and are very species-diverse due to the moderate climate regime. Cold-deciduous or ericaceous shrubs can be abundant in some stands. Shrubs can include *Acer glabrum, Linnaea borealis, Menziesia ferruginea, Physocarpus malvaceus, Spiraea betulifolia, Symphoricarpos occidentalis*, and *Vaccinium membranaceum*. Herbaceous layers may be graminoid- or forb-dominated and may include *Asarum caudatum, Bromus vulgaris, Calamagrostis rubescens, Carex geyeri, Clintonia uniflora, Coptis occidentalis, Cornus canadensis, Linnaea borealis*, and *Trautvetteria caroliniensis*. Elevations range from 460-1950 m. Topographic positions include montane slopes, alluvial benches and terraces, ridgetops, flats, protected coves, ravines, and valley bottoms. All aspects are represented and slopes can be flat to steep. Parent materials are highly variable, but volcanic ash is often present in the soil profile. Soils are derived from basalt colluvium and alluvium, volcanic ash, granitics, shale, sandstone, meta-sediments, gneiss, quartzite, limestone, and loess or loess-ash over colluvium or alluvium.

IVC Dynamics: *Abies grandis* forests include many sites dominated by *Pseudotsuga menziesii* and *Pinus ponderosa* which were formerly maintained by wildfire, and may now be dominated by *Abies grandis* (a fire-sensitive, shade-tolerant species) (Lillybridge et al. 1995, Chappell et al. 1997). Pre-European settlement fire regimes were typically of frequent, low-intensity surface fires, maintaining relatively open stands of a mix of fire-resistant species. With the advent of vigorous fire suppression, longer fire-return intervals are now the rule, and mixed-stature stands with *Abies grandis* in various size classes now provide fuel "ladders," making these forests more susceptible to high-intensity, stand-replacing fires (Cooper et al. 1987, Lillybridge et al. 1995). This alliance also includes montane forests along rivers and slopes, and in mesic "coves" which were historically protected from wildfires. They are very productive forests which have been priorities for timber production. Successional relationships in this alliance are complex. *Pseudotsuga menziesii* is less shade-tolerant than many northern or montane trees such as *Abies concolor, Picea engelmannii, Thuja plicata*, or *Tsuga heterophylla*, and seedlings compete poorly in deep shade. At drier locales, seedlings may be favored by moderate shading, such as by a canopy of *Pinus ponderosa*, which helps to minimize drought stress. In some locations, much of these forests have been logged or burned during European settlement, and present-day stands are second-growth forests dating from fire, logging, or other stand-replacing disturbances (Mauk and Henderson 1984, Chappell et al. 1997). *Pseudotsuga menziesii* forests were probably subject to a moderate-severity fire regime in pre-settlement times, with fire-return intervals of 30-100 years. Many of the important tree species in these forests are fire-adapted (*Larix occidentalis, Pinus contorta, Pinus ponderosa, Populus tremuloides*) (Pfister et al. 1977), and fire-induced reproduction of *Pinus ponderosa* can result in its continued codominance in *Pseudotsuga menziesii* forests (Steele et al. 1981). Seeds of the shrub *Ceanothus velutinus* can remain dormant in forest stands for 200 years (Steele et al. 1981) and germinate abundantly after fire, competitively suppressing conifer seedlings. Some stands may have higher tree-stem density than historically, due largely to fire suppression. Fire suppression has also led to the succession of *Pinus ponderosa* woodlands or *Quercus* spp. woodlands to *Pseudotsuga menziesii* forests.

IVC Environment: Associations within this alliance are highly variable montane coniferous forests occurring within the region of maritime influence of the Pacific Northwest and northern Rocky Mountains. The climate regime with which this alliance is associated is usually submesic with annual precipitation ranging from 50-100 cm, with a maximum in winter or late spring. Snowpacks typically accumulate each winter but melt off in early spring at lower elevation sites. Elevations reported for associations in this alliance range from 460-1920 m in the northern Rocky Mountains of Idaho and Montana, 970-1955 m in the Blue Mountains of Oregon, to as low as 760 m in the eastern Cascades. Topographic positions include montane slopes, alluvial benches and terraces, ridgetops, flats, protected coves, ravines, and valley bottoms. All aspects are represented, and slopes can be flat to steep. Parent materials are highly variable, but most studies report that volcanic ash is often present in the soil profile. Soils are derived from basalt colluvium and alluvium, volcanic ash, granitics, shale, sandstone, meta-sediments, gneiss, quartzite, limestone, and loess or loess-ash over colluvium or alluvium. Soils textures cover the range from excessively rocky and well-drained to silty loams with a clay pan in the B horizon.

DISTRIBUTION

IVC Geographic Range: This alliance is distributed from the northern Rocky Mountains from eastern Washington and Oregon to Montana. Ecoregional sections include the Okanogan Highlands, Bitterroot Mountains, Idaho Batholith, and Blue Mountains.

IVC Nations: CA,US

IVC States/Provinces: AB, ID, MT, OR, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005852 *Pseudotsuga menziesii / Vaccinium membranaceum / Xerophyllum tenax* Forest** [Douglas-fir / Thinleaf Huckleberry / Common Beargrass Forest] []
  G4G5 (2004-02-11) AB, ID, MT, OR?, WA
- **CEGL005850 *Pseudotsuga menziesii / Clintonia uniflora* Forest** [Douglas-fir / Bride's Bonnet Forest] []
  G4G5 (2004-02-11) AB, ID, MT, OR, WA
- **CEGL005854 *Pseudotsuga menziesii / Clintonia uniflora - Xerophyllum tenax* Forest** [Douglas-fir / Bride's Bonnet - Common Beargrass Forest] []
  G4G5 (2004-02-11) AB?, ID, MT, OR, WA
- **CEGL005851 *Pseudotsuga menziesii / Menziesia ferruginea / Clintonia uniflora* Forest** [Douglas-fir / Rusty Menziesia / Bride's Bonnet Forest] []
  G3? (2004-02-11) AB?, ID, MT, OR?, WA?
- **CEGL005853 *Pseudotsuga menziesii / Heracleum maximum* Forest** [Douglas-fir / Common Cow-parsnip Forest] []
  G2? (2004-02-10) AB, ID, MT, WY
- **CEGL000465 *Pseudotsuga menziesii / Vaccinium cespitosum* Forest** [Douglas-fir / Dwarf Bilberry Forest] []
  G5 (1996-02-01) ID, MT, OR, WA
- **CEGL005904 *Betula papyrifera* - Conifer / *Clintonia uniflora* Woodland** [Paper Birch - Conifer / Bride's Bonnet Woodland] []
  G3G4 (2004-02-09) AB?, ID, MT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: A.W. Küchler (1964)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A0275 Western Larch Central Rocky Mountain Forest Alliance

[ ]
Larix occidentalis Central Rocky Mountain Forest Alliance
Central Rocky Mountain Western Larch Forest

IVC Scientific Name: *Larix occidentalis* Central Rocky Mountain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These seral forests are reported from the northern Rocky Mountains in northwestern Montana, and occur in Idaho, Washington, Oregon and possibly British Columbia, Canada. Stands dominated by *Larix occidentalis* grow best on mesic sites, but also may occur on relatively dry sites. Sites include valley bottoms, benches and lower mountain slopes often on the more mesic north and east aspects, but it is found on all aspects in its northern extent. Substrates are variable, but may include glacial till or colluvium derived from limestone, argillite and quartzite. Soils range from gravelly to non-gravelly loams and silt loams, occasionally with finer texture subsoils. Stands are dominated by the shade-intolerant, fire-tolerant, cold-deciduous conifer *Larix occidentalis*. They are typically even-aged, developing after catastrophic disturbances such as crownfires or clearcuts. Stand height varies from 30-55 m but can be much less if trees are stunted by high stocking densities of seedlings that may form "doghair" stands similar to *Pinus contorta*. Young stands may appear to be pure stands of *Larix occidentalis*, but with time develop into mixed-species stands as slower growing, shade-tolerant species become codominant, including *Pseudotsuga menziesii* or *Abies lasiocarpa*. Unless there are frequent fires to reduce the shade-tolerant subcanopy, *Larix occidentalis* may be over overtopped and quickly decline. Other than juvenile shade-tolerant trees, the understory may have shrub and herbaceous layers depending on tree canopy closure. Shrubs may include *Acer glabrum, Alnus viridis ssp. sinuata, Amelanchier alnifolia, Paxistima myrsinites, Physocarpus malvaceus, Rubus parviflorus, Salix scouleriana, Symphoricarpos albus*, and *Vaccinium* spp. The herbaceous layer is often conspicuous. Adjacent stands include other montane and subalpine forests dominated by *Pseudotsuga menziesii, Abies lasiocarpa, Picea engelmannii, Pinus contorta, Pinus ponderosa, Thuja plicata*, and *Tsuga heterophylla*. This alliance ranges from 500-1600 m in elevation. Stands in Montana are mostly above 1000 m. Climate is temperate, continental with influences from the Pacific maritime. Mean annual precipitation ranges from 71-81 cm, occurring mostly in the winter with about 20% of the annual precipitation falling in the growing season in May-June. July and August are

typically dry. Snow is common in the middle to upper elevation and higher latitude sites. These stands are restricted by cold, short growing seasons and drought at lower elevations.

IVC Dynamics: *Larix occidentalis* is a highly shade-intolerant, fire-resistant, long-lived (>700 years), deciduous conifer tree species of the northern Rocky Mountains and interior Pacific Northwest (Burns and Honkala 1990a, FEIS 1998). It has very thick bark with low resins, a high and open branching habit, deep roots, low-flammability foliage, and a tendency to self-prune lower branches, which reduces ladder fuels and thus reduces the chance for stand-replacing crownfires (Schmidt et al. 1976, Peet 1988, Burns and Honkala 1990a, FEIS 1998). This tree needs full sunlight and will quickly invade and grow rapidly in openings created by fire or other large disturbance. If needles are scorched by a burn, they will quickly regrow (Burns and Honkala 1990a, FEIS 1998). In the northern Rocky Mountains, for stands on relatively dry sites with *Pseudotsuga menziesii* or *Picea engelmannii* as potential late-successional dominants, the mean fire interval ranges from 20-75 years, with stand-replacing fires occurring at greater than 100 years. Recurring low- to medium-intensity surface fires may shorten the interval. The fire regimes on moist sites with potential late-successional dominants of *Abies grandis, Tsuga heterophylla* or *Thuja plicata* ranges from 120-350 years for severe stand-replacing fires (FEIS 1998).

IVC Environment: Forests included in this alliance are reported from northwestern Montana, but likely occur elsewhere in the northern Rocky Mountains and the interior northwestern U.S. This alliance ranges from 500-1600 m in elevation. Stands in Montana are mostly above 1000 m. Climate is temperate, continental with influences from the Pacific maritime. Mean annual precipitation ranges from 71-81 cm, occurring mostly in the winter with about 20% of the annual precipitation falling in the growing season in May-June. July and August are typically dry. Snow is common in the middle to upper elevation and higher latitude sites. These stands are restricted by cold, short growing seasons and drought at lower elevations. Stands dominated by *Larix occidentalis* grow best on mesic sites, but also may occur on relatively dry sites. Sites include valley bottoms, benches and lower mountain slopes often on the more mesic north and east aspects, but it is found on all aspects in its northern extent. Substrates are variable, but may include glacial till or colluvium derived from limestone, argillite and quartzite (Burns and Honkala 1990a). Soils range from gravelly to non-gravelly loams and silt loams, occasionally with finer texture subsoils.

DISTRIBUTION

IVC Geographic Range: These seral forests are reported from the northern Rocky Mountains in northwestern Montana, and occur in Idaho, Washington, Oregon and possibly British Columbia, Canada.

IVC Nations: CA?,US

IVC States/Provinces: BC?, ID, MT, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005882** ***Larix occidentalis / Vaccinium cespitosum*** **Forest** [Western Larch / Dwarf Bilberry Forest] []
  GNR. ID, MT, WA
- **CEGL005883** ***Larix occidentalis / Vaccinium cespitosum / Clintonia uniflora*** **Forest** [Western Larch / Dwarf Bilberry / Bride's Bonnet Forest] []
  GNR. ID, MT, WA
- **CEGL005880** ***Larix occidentalis / Clintonia uniflora*** **Forest** [Western Larch / Bride's Bonnet Forest] []
  GNR. ID, MT, OR, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-01-08

IVC Acknowledgments:

G217 Central Rocky Mountain Interior Western Red-cedar - Western Hemlock Forest

[ ]

IVC Colloquial Name: Central Rocky Mountain Interior Western Red-cedar - Western Hemlock Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This forest group occurs in the Northern Rockies west of the Continental Divide within the maritime-influenced climatic zone of the northern Rocky Mountains of western Montana, west into northeastern Washington and southern British Columbia. These are forests dominated by *Tsuga heterophylla* and *Thuja plicata* in most cases, found in areas influenced by incursions of mild, wet, Pacific maritime air masses. Much of the annual precipitation occurs as rain, 25-50% falls as snow. Snowpacks are often melted by rain during warm winter storms. Occurrences generally are found on all slopes and aspects but grow best on sites with high soil moisture, such as toeslopes and bottomlands. At the periphery of its distribution, this group is confined to moist canyons and cooler, moister aspects. Generally these are moist, non-flooded or upland sites that are not saturated yearlong. Along with *Tsuga heterophylla* and *Thuja plicata, Pseudotsuga menziesii* commonly shares the canopy, and *Pinus monticola, Pinus contorta, Abies grandis, Taxus brevifolia*, and *Larix occidentalis* are major associates. *Cornus nuttallii* may be present in some situations. *Picea engelmannii, Abies lasiocarpa*, and *Pinus ponderosa* may be present but only on the coldest or warmest and driest sites. *Linnaea borealis, Mahonia nervosa, Paxistima myrsinites, Acer glabrum, Spiraea betulifolia, Symphoricarpos hesperius, Cornus canadensis, Rubus parviflorus, Menziesia ferruginea*, and *Vaccinium membranaceum* are common shrub species. The composition of the herbaceous layer reflects local climate and degree of canopy closure; it is typically highly diverse in all but closed-canopy conditions. Important forbs and ferns include *Actaea rubra, Achlys triphylla, Anemone piperi, Aralia nudicaulis, Asarum caudatum, Clintonia uniflora, Coptis occidentalis, Thalictrum occidentale, Tiarella trifoliata, Trientalis borealis, Trillium ovatum, Viola glabella, Gymnocarpium dryopteris, Polystichum munitum*, and *Adiantum pedatum*. Typically, stand-replacement, fire-return intervals are 150-500 years, with moderate-severity fire intervals of 50-100 years. Species in East Cascade forests (G212) that are absent to rare in the Northern Rockies are *Picea sitchensis, Abies amabilis, Acer macrophyllum, Acer circinatum, Gaultheria shallon, Rhododendron macrophyllum, Mahonia nervosa, Rubus spectabilis, Vaccinium alaskaense, Vaccinium parvifolium, Blechnum spicant, Achlys triphylla, Oxalis oregana, Anemone deltoidea, Anemone oregana, Rubus lasiococcus*, and *Streptopus streptopoides*.

IVC Dynamics: These are very productive forests which have been priority stands for timber production. Typically, stand-replacement fire-return intervals are 150-500 years in the Cascades, or 150-500 years in the Northern Rockies, with moderate-severity fire-return intervals of 50-100 years. *Thuja* and *Tsuga* are capable of remaining dominant within these forests due to their longevity and *Thuja*'s ability to regenerate vegetatively. In the absence of disturbance, both species continue to regenerate under shaded conditions. Under closed-canopy conditions, both species favor vegetative reproduction over sexual reproduction, thus intermediate and young trees are found under these conditions.

IVC Environment: This forest group is found in areas influenced by incursions of mild, wet, Pacific maritime air masses. Much of the annual precipitation occurs as rain, but where snow does occur, it can generally be melted by rain during warm winter storms. In the Cascades, it occurs on the upper east slopes in Washington, south of Lake Chelan and south to Mount Hood in Oregon. Elevations in the Cascades range from 610 to 1220 m (2000-4000 feet) in a very restricted range occupying less than 5% of the forested landscape in the East Cascades. In this region, these forests are associated with a submesic climate regime with annual precipitation ranging from 100 to 200 cm (40-80 inches) and maximum winter snowpacks that typically melt off in spring at lower elevations. Further east in the Northern Rockies, annual precipitation tends to be lower, averaging around 75 cm, while the elevation ranges from 550 m to over 1600 m (1700-5248 feet). Cooper et al. (1987) report that these interior hemlock-cedar forests require at least 20 cm of precipitation during the warm season. Occurrences generally are found on all slopes and aspects but grow best on sites with high soil moisture, such as toeslopes and bottomlands. At the periphery of its distribution, this group is confined to moist canyons and cooler, moister aspects. Generally these are moist, non-flooded or upland sites that are not saturated yearlong. This group differs from west of the Cascade groups in lower overall precipitation, warmer summer and colder winter temperatures, and more frequent fire (Goward and Spribille 2005).

Climate: This forest group is found in areas influenced by incursions of mild, wet, Pacific maritime air masses. Much of the annual precipitation occurs as rain, but where snow does occur, it can generally be melted by rain during warm winter storms. In the East Cascades, these forests are associated with a submesic climate regime with annual precipitation ranging from 100 to 200 cm (40-80 inches) and maximum winter snowpacks that typically melt off in spring at lower elevations. Further east in the Northern Rockies, annual precipitation tends to be lower, averaging around 75 cm. Cooper et al. (1987) report that these interior hemlock-cedar forests require at least 20 cm of precipitation during the warm season. *Soil/substrate/hydrology:* Parent materials are predominately sedimentary rock and argillite. Volcanic ash and loess deposits may have an influence on soil development, resulting in higher fertility and moisture-holding capacity required for supporting the dominant species. These forests occur on gravelly loams and silts with good aeration and drainage and a neutral to slightly acidic pH.

DISTRIBUTION

IVC Geographic Range: This forest group occurs in the interior regions of the Pacific Northwest, east of the Cascades; from interior British Columbia south to eastern Washington, Oregon, northern Idaho and western Montana east to the Continental Divide (DellaSala et al. 2011).

IVC Nations: CA,US

IVC States/Provinces: BC, ID, MT, OR, WA

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.15.16:P, 10.1.2.10:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5* rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3612 *Tsuga heterophylla - Thuja plicata* Cool-Mesic Central Rocky Mountain Forest & Woodland Alliance** [Western Hemlock - Western Red-cedar Cool-Mesic Central Rocky Mountain Forest & Woodland Alliance] []
  Forests dominated by *Tsuga heterophylla* and/or *Thuja plicata* and occupying cool-mesic topographic positions of the maritime-influenced regions of the Pacific Northwest.
- **A3613 *Tsuga heterophylla - Thuja plicata* Warm-Mesic Central Rocky Mountain Forest & Woodland Alliance** [Western Hemlock - Western Red-cedar Warm-Mesic Central Rocky Mountain Forest & Woodland Alliance] []
  Forests and woodlands dominated by *Tsuga heterophylla* and/or *Thuja plicata* and occupying warm-mesic topographic positions occurring in the Pacific Northwest of northeastern Washington, east to Idaho and Montana west of the Continental Divide and north into British Columbia.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: R.F. Daubenmire and J.B. Daubenmire (1968)

IVC Description Author: M.S. Reid

IVC Description Date: 2013-06-05

IVC Acknowledgments: R. Crawford

A3612 Western Hemlock - Western Red-cedar Cool-Mesic Central Rocky Mountain Forest & Woodland Alliance

[ ]

Tsuga heterophylla - Thuja plicata Cool-Mesic Central Rocky Mountain Forest & Woodland Alliance

Central Rocky Mountain Western Hemlock - Western Red-cedar Cool-Mesic Forest & Woodland

IVC Scientific Name: *Tsuga heterophylla - Thuja plicata* Cool-Mesic Central Rocky Mountain Forest & Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance occurs in all the maritime-influenced regions of northeastern Washington, northern Idaho, British Columbia and northeastern Montana. Communities occupy positions that represent the cooler part of the environmental gradient that supports these forests. These forests have a closed tree canopy less than 50 m tall that is dominated or codominated by *Thuja plicata* and/or *Tsuga heterophylla*. *Abies grandis, Abies lasiocarpa, Larix occidentalis, Picea engelmannii, Pinus contorta, Pinus monticola, Pseudotsuga menziesii*, or *Taxus brevifolia* may be present. The understory is complex and diverse from low, sparse forb-dominated to shrub-dominated understories. Common broad-leaved evergreen and deciduous shrubs may include *Acer circinatum, Alnus viridis ssp. sinuata, Amelanchier alnifolia, Lonicera utahensis, Mahonia aquifolium,*

Menziesia ferruginea, Paxistima myrsinites, Rosa gymnocarpa, Spiraea betulifolia, Symphoricarpos albus, Vaccinium membranaceum, and *Vaccinium parvifolium*. The most common dominant herbaceous species include *Aralia nudicaulis, Clintonia uniflora*, and *Xerophyllum tenax*. Other common herbaceous associates include *Arnica latifolia, Asarum caudatum, Bromus vulgaris, Clintonia uniflora, Coptis occidentalis, Galium triflorum, Goodyera oblongifolia, Gymnocarpium dryopteris, Maianthemum stellatum, Prosartes hookeri, Pyrola asarifolia, Tiarella trifoliata, Trillium ovatum*, and *Viola orbiculata*. These forests occur at 550 to 1675 m. Positions include toeslopes to the tops of ridges, bottomlands, benches and stream terraces.

IVC Dynamics: Forest associations of this alliance are dominated by moderately fast-growing, shade-tolerant conifers, which require moist conditions and a moderate temperature regime for establishment and growth. Following disturbance, a variety of other conifer species can become established and dominate sites previously supporting stands of this forest alliance. *Pseudotsuga menziesii*, in particular, can become established and dominate sites for many years following disturbance. In the northern Rocky Mountains, stand-replacing disturbance can result in conversion to communities dominated by either *Larix occidentalis* or *Pinus monticola*. Typically, stand-replacement fire-return intervals are 150-500 years with moderate-severity fire intervals of 50-100 years. Specific fire influences vary with site characteristics. Generally, wetter sites burn less frequently and are older stands with more *Tsuga heterophylla* and *Thuja plicata*. Drier sites are younger and have more diverse canopies. These are the moistest mid-montane environments on the east side of the Cascades and in northeastern Washington.

IVC Environment: Vegetation of this alliance occurs within the maritime-influenced region of the Pacific Northwest extending east into the northern Rocky Mountains. These forest associations represent major forest types in both regions. Throughout the range of this alliance, much of the annual precipitation occurs as rain. Where snow does occur, it can generally be melted by rain during warm winter storms. In all settings, this type occurs where environmental conditions are moderated by the marine influence, with moderate drought and frost. These forests occur at 550 to 1675 m and generally occur at moist, non-flooded or upland sites that are not saturated yearlong. Positions include toeslopes to the tops of ridges, bottomlands, benches and stream terraces.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the interior regions of the Pacific Northwest, east of the Cascades, from interior British Columbia south to eastern Washington, Oregon, northern Idaho and western Montana east to the Continental Divide.

IVC Nations: CA,US

IVC States/Provinces: BC, ID, MT, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000471 *Thuja plicata / Aralia nudicaulis* Forest** [Western Red-cedar / Wild Sarsaparilla Forest] []
  G2 (1998-11-30) BC?, ID?, MT, WA
- **CEGL000474 *Thuja plicata / Clintonia uniflora* Forest** [Western Red-cedar / Bride's Bonnet Forest] []
  G4 (1996-02-01) BC?, ID, MT, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: C. Chappell, R. Crawford, J. Kagan, and P.J. Doran (1997)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-01-08

IVC Acknowledgments:

A3613 Western Hemlock - Western Red-cedar Warm-Mesic Central Rocky Mountain Forest & Woodland Alliance

[ ]

Tsuga heterophylla - Thuja plicata Warm-Mesic Central Rocky Mountain Forest & Woodland Alliance

Central Rocky Mountain Western Hemlock - Western Red-cedar Warm-Mesic Forest & Woodland

IVC Scientific Name: *Tsuga heterophylla - Thuja plicata* Warm-Mesic Central Rocky Mountain Forest & Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance occurs in all the maritime-influenced regions of northeastern Washington, northern Idaho, British Columbia and northeastern Montana west of the Continental Divide. Communities occupy positions that represent the warmer part of the environmental gradient that supports these forests. These forests have a closed tree canopy less than 50 m tall that is dominated or codominated by *Thuja plicata* and/or *Tsuga heterophylla*. Common canopy associates include *Abies grandis, Betula papyrifera, Larix occidentalis, Picea engelmannii, Pinus monticola* (particularly in northern Idaho), and *Pseudotsuga menziesii*. The shrub layer is often species-rich, but without substantial cover and clearly subordinate to the herbaceous cover. Species with high constancy include *Acer glabrum, Linnaea borealis, Lonicera utahensis, Menziesia ferruginea, Paxistima myrsinites, Rosa gymnocarpa, Rubus parviflorus, Taxus brevifolia*, and *Vaccinium membranaceum*. Communities of this alliance typically feature a lush herbaceous layer indicative of abundant moisture. Herbaceous species of high constancy include *Adenocaulon bicolor, Adiantum pedatum, Anemone piperi, Aralia nudicaulis, Asarum caudatum, Athyrium filix-femina, Clintonia uniflora, Galium triflorum, Gymnocarpium dryopteris, Maianthemum stellatum, Polystichum munitum, Prosartes hookeri, Rubus pedatus, Senecio triangularis, Tiarella trifoliata, Trautvetteria caroliniensis, Trillium ovatum*, and *Viola orbiculata*. These forests are generally restricted to conditions of abundant moisture, including sheltered slopes and toeslopes, alluvial bottoms and benches. It shows no affinity for particular aspects due to sheltered positions and is perhaps subirrigated, at least until early summer. The elevation range is from 555 to 1525 m.

IVC Dynamics: Forest associations of this alliance are dominated by moderately fast-growing, shade-tolerant conifers, which require moist conditions, and a moderate temperature regime for establishment and growth. Following disturbance, a variety of other conifer species can become established and dominate sites previously supporting stands of this forest alliance. *Pseudotsuga menziesii*, in particular, can become established and dominate sites for many years following disturbance. In the northern Rocky Mountains, stand-replacing disturbance can result in conversion to communities dominated by either *Larix occidentalis* or *Pinus monticola*. Typically, stand-replacement fire-return intervals are 150-500 years with moderate-severity fire intervals of 50-100 years. Specific fire influences vary with site characteristics. Generally, wetter sites burn less frequently and are older stands with more *Tsuga heterophylla* and *Thuja plicata*. Drier sites are younger and have more diverse canopies. These are the moistest mid-montane environments on the east side of the Cascades and in northeastern Washington.

IVC Environment: Vegetation of this alliance occurs within the maritime-influenced region of the Pacific Northwest, extending east into the northern Rocky Mountains. These forest associations represent major forest types in both regions. Throughout the range of this alliance, much of the annual precipitation occurs as rain. Where snow does occur, it can generally be melted by rain during warm winter storms. These forests are generally restricted to conditions of abundant moisture, including sheltered slopes and toeslopes, alluvial bottoms and benches. Slopes are moderate to steep. It shows no affinity for particular aspects due to sheltered positions and is perhaps subirrigated, at least until early summer. The elevation range is from 555 to 1525 m. Soils are acidic and derived of alluvium, colluvium or both. Textures may include silt, silt loam, loam and sandy loam.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the interior regions of the Pacific Northwest, east of the Cascades, from interior British Columbia south to eastern Washington, Oregon, northern Idaho and western Montana east to the Continental Divide.

IVC Nations: CA,US

IVC States/Provinces: BC, ID, MT, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000488 *Tsuga heterophylla / Aralia nudicaulis* Forest** [Western Hemlock / Wild Sarsaparilla Forest] []
  G3 (1996-02-01) BC?, ID, MT, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: C. Chappell, R. Crawford, J. Kagan, and P.J. Doran (1997)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-01-08
IVC Acknowledgments:

G212 East Cascades Moist-Mesic Grand Fir - Douglas-fir Forest

[ ]

IVC Colloquial Name: East Cascades Moist-Mesic Grand Fir - Douglas-fir Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This forested group occurs on the upper slopes of the eastern Cascades in Washington, south of Lake Chelan to Mount Hood in Oregon. These forests are dominated by a mix of *Pseudotsuga menziesii* with *Abies grandis*. Several other conifers can dominate or codominate, including *Pinus contorta, Pinus monticola*, and *Larix occidentalis*. *Acer circinatum, Cornus nuttallii, Linnaea borealis, Mahonia nervosa, Paxistima myrsinites, Rubus parviflorus, Spiraea betulifolia, Symphoricarpos hesperius*, and *Vaccinium membranaceum* are common shrub species. The composition of the herbaceous layer reflects local climate and degree of canopy closure and contains species more restricted to the Cascades, for example, *Achlys triphylla, Anemone deltoidea*, and *Vancouveria hexandra*. Elevations range from 610 to 1220 m (2000-4000 feet) in a very restricted range occupying less than 5% of the forested landscape in the eastern Cascades. This group typically occurs below the Pacific silver fir forests found along the crest of the Cascades, and occurs along rivers and in mesic "coves" which were historically protected from wildfires. Typically, stand-replacement fire-return intervals are 150-500 years with moderate-severity fire-return intervals of 50-100 years. These are very productive forests in the eastern Cascades which have been priority stands for timber production. This group is associated with a submesic climate regime with annual precipitation ranging from 100 to 200 cm (40-80 inches) and maximum winter snowpacks that typically melt off in spring at lower elevations.

IVC Dynamics: Typically, stand-replacement fire-return intervals are 150-500 years with moderate-severity fire-return intervals of 50-100 years. These are very productive forests in the eastern Cascades which have been priority stands for timber production. *Abies grandis* and other fire-sensitive, shade-tolerant species dominate forests on many sites once dominated by *Pseudotsuga menziesii* and *Pinus ponderosa*, which were formerly maintained by wildfire.

IVC Environment: This forested group occurs on the upper east slopes of the Cascades in Washington, south of Lake Chelan and south to Mount Hood in Oregon. Elevations range from 610 to 1220 m (2000-4000 feet) in a very restricted range occupying less than 5% of the forested landscape in the East Cascades. This group is associated with a submesic climate regime with annual precipitation ranging from 100 to 200 cm (40-80 inches) and maximum winter snowpacks that typically melt off in spring at lower elevations. This group is composed of variable montane coniferous forests typically below Pacific silver fir forests along the crest east of the Cascades. This group also includes montane forests along rivers and slopes, and in mesic "coves" which were historically protected from wildfires.

DISTRIBUTION

IVC Geographic Range: This group occurs on the upper east slopes of the Cascades in Washington, south of Lake Chelan and south to Mount Hood in Oregon.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 10.1.2.10:P

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G3G4 rank that was calculated from closely related ecological system global ranks. A rank of G3G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3583 *Abies grandis - Pseudotsuga menziesii* Mesic Cascadian Forest Alliance** [Grand Fir - Douglas-fir Mesic Cascadian Forest Alliance] []
  This alliance consists of forests dominated by *Abies grandis* or a mix of *Pseudotsuga menziesii* with *Abies grandis*. Several other conifers can dominate or codominate, including *Pinus contorta, Pinus monticola*, and *Larix occidentalis*. It occurs along the eastern slope of the Cascades south of Lake Chelan, in the eastern Okanogan Highlands in Washington, south to Mount Hood in Oregon.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: C. Topik (1989)
IVC Description Author: M.S. Reid, R. Crawford and G. Kittel
IVC Description Date: 2015-11-09
IVC Acknowledgments: R. Crawford

A3583 Grand Fir - Douglas-fir Mesic Cascadian Forest Alliance

[ ]
Abies grandis - Pseudotsuga menziesii Mesic Cascadian Forest Alliance
Cascadian Grand Fir - Douglas-fir Mesic Forest

IVC Scientific Name: *Abies grandis - Pseudotsuga menziesii* Mesic Cascadian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance consists of forests dominated by *Abies grandis* or a mix of *Pseudotsuga menziesii* with *Abies grandis*. Several other conifers can dominate or codominate, including *Pinus contorta, Pinus monticola*, and *Larix occidentalis*. Understory species are characteristic of the eastern Cascades and include *Acer circinatum, Achlys triphylla, Anemone deltoidea, Chrysolepis chrysophylla, Cornus nuttallii, Mahonia nervosa*, and *Vancouveria hexandra*. This alliance occurs along the eastern slope of the Cascades south of Lake Chelan, in the eastern Okanogan Highlands in Washington, south to Mount Hood in Oregon. Elevations range from 590 to 760 m in the eastern Cascades. All aspects are represented, and slopes can be flat to steep. Parent materials are highly variable, but volcanic ash is often present in the soil profile.

These woodlands generally occur on sites which are intermediate in moisture between forest types dominated by *Abies grandis* and low-elevation steppe grasslands or woodlands, which occupy wetter and drier sites, respectively. *Abies grandis* woodland associations occur on a wide variety of soil types but are usually associated with well-drained soils, and often occupy southerly or westerly aspects. The shrub layer is dominated by the prostrate, mat-forming *Arctostaphylos nevadensis*, with *Arctostaphylos uva-ursi* also being important in some stands. The other associations have taller shrub layers composed of cold-deciduous or ericaceous species, including *Acer circinatum, Acer glabrum, Arctostaphylos nevadensis, Chrysolepis chrysophylla, Cornus nuttallii, Holodiscus discolor, Mahonia nervosa*, and *Vaccinium membranaceum*. The herbaceous component of these woodlands is dominated by perennial bunchgrasses or cespitose sedges. *Calamagrostis rubescens* is present in almost all stands, and can be dominant (up to 70% cover), and *Carex geyeri* is another dominant species in some stands. Lichens can be common on some sites, primarily growing on exposed rock.

IVC Dynamics: These woodlands include fire-maintained stands where *Abies grandis* will eventually become the canopy dominant with fire suppression. Lillybridge et al. (1995) report fire-return intervals of 30-50 years, and that all stands show evidence of fire, such as char on logs and snags, and charcoal in the soil. Other stands of this alliance includes montane forests along rivers and slopes. They are very productive forests which have been priorities for timber production.

IVC Environment: The climate regime with which this alliance is associated is usually submesic with annual precipitation ranging from 50-100 cm, with a maximum in winter or late spring. Snowpacks typically accumulate each winter but melt off in early spring at lower elevation sites. Elevations rage between 590 and 760 m in the eastern Cascades. All aspects are represented, and slopes can be flat to steep. Parent materials are highly variable, but most studies report that volcanic ash is often present in the soil profile. Soils are derived from basalt colluvium and alluvium, volcanic ash, granitics, shale, sandstone, meta-sediments, gneiss, quartzite, limestone, and loess or loess-ash over colluvium or alluvium. Soils textures cover the range from excessively rocky and well-drained to silty loams with a clay pan in the B horizon. Soils vary, but several authors report volcanic ash over varied parent materials.

DISTRIBUTION

IVC Geographic Range: This forested alliance occurs on the upper to mid eastern slopes of the Cascade Range in Washington, south of Lake Chelan and south to Mount Hood in Oregon.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008239 *Acer macrophyllum* / *Rubus parviflorus* / *Maianthemum racemosum* Woodland** [Bigleaf Maple / Thimbleberry / Feathery False Lily-Of-The-Valley Woodland] []
  Short-statured *Acer macrophyllum* woodlands of mesic toe slopes and avalanche chutes with a dense tall-shrub layer and well-developed herbaceous cover. GNR. BC?, OR?, WA
- **CEGL008271 *Pseudotsuga menziesii* - (*Tsuga heterophylla*) / *Acer circinatum* - *Paxistima myrsinites* Forest** [Douglas-Fir - (Western Hemlock) / Vine Maple - Oregon Boxleaf Forest] []
  Dry *Pseudotsuga menziesii* - *Tsuga heterophylla*-dominated forests from east of the Cascade Crest with a dense tall shrub layer dominated by *Acer circinatum* over abundant *Paxistima myrsinites*. GNR. BC?, OR?, WA
- **CEGL008267 *Pseudotsuga menziesii* - (*Abies grandis*) / *Acer circinatum* - *Paxistima myrsinites* Forest** [Douglas-Fir - (Grand Fir) / Vine Maple - Oregon Boxleaf Forest] []
  Apparently mid-seral forests east of the Cascade Crest dominated by *Pseudotsuga me*nziesii, or codominated by *Abies grandis* (depending on stand age), with a dense tall shrub layer dominated by *Acer circinatum* over abundant *Paxistima myrsinites*. GNR. BC?, OR?, WA
- **CEGL008233 *Acer macrophyllum* / *Acer circinatum* - *Paxistima myrsinites* - (*Corylus cornuta*) Woodland** [Bigleaf Maple / Vine Maple - Oregon Boxleaf - (Beaked Hazelnut) Woodland] []
  Short-statured, open *Acer macrophyllum* woodlands of debris aprons and dry avalanche chutes with a dense tall-shrub layer and sparse herbaceous cover. GNR. BC?, OR?, WA
- **CEGL008240 *Acer macrophyllum* / *Symphoricarpos albus* Woodland** [Bigleaf Maple / Common Snowberry Woodland] []
  Acer macrophyllum-dominated woodlands with *Symphoricarpos albus* understory, occurring at low elevations, east of the Cascade Crest on high floodplain terraces or gentle south-facing slopes recovering from fires. GNR. BC?, OR?, WA
- **CEGL008269 *Pseudotsuga menziesii* - (*Pinus ponderosa*) / *Symphoricarpos albus* Forest** [Douglas-Fir - (Ponderosa Pine) / Common Snowberry Forest] []
  Forests and woodlands of the East Cascades dominated by *Pseudotsuga menziesii*, with prominent *Pinus ponderosa*, above a *Symphoricarpos albus*-dominated shrub layer. Cascadian indicators such as *Acer macrophyllum* are present. GNR. BC?, WA
- **CEGL000921 *Abies lasiocarpa* - *Pseudotsuga menziesii* / *Acer circinatum* Woodland** [Subalpine Fir - Douglas-fir / Vine Maple Woodland] []
  G4Q (1996-02-01) BC?, OR, WA
- **CEGL002322 *Pseudotsuga menziesii* - *Picea x albertiana* / *Ptilium crista-castrensis* Forest** [Douglas-fir - Western White Spruce / Knight's Plume Moss Forest] []
  G3 (2004-06-03) BC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

M501 Central Rocky Mountain Dry Lower Montane - Foothill Forest

Forêts sèches des montagnes de faible altitude et du piémont du centre des Rocheuses

IVC Colloquial Name: Central Rocky Mountain Montane Forest & Woodland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M501 describes foothill, lower montane and plateau forests and woodlands of warm, dry, continental temperate climates of the North American Western Cordillera. The Canadian range includes continuous forests as well as woodlands and forest patches of the Cordilleran Dry Forest and Rocky Mountain Foothills Parkland CNVC vegetation zones in south-central British Columbia (BC) and southwestern Alberta. In the warmest and driest areas, the climate is moist enough to support tree growth only under certain conditions and the natural vegetation is often a landscape mosaic comprising patches of grassland or shrub-steppe and groves of forest and woodland (i.e., parkland). In cooler and moister areas, forest cover can be continuous. In parkland landscapes, M501 describes only the treed portion of the vegetation mosaic. In BC, these are primarily coniferous forests and woodlands; in Alberta, cold-deciduous broad-leaved species dominate. In BC, communities are generally dominated or co-dominated by Ponderosa pine (*Pinus ponderosa*) or Rocky Mountain Douglas-fir (*Pseudotsuga menziesii* var. *glauca*), although lodgepole pine (*Pinus contorta* var. *latifolia*) often occurs with Douglas-fir. In Alberta, most occurrences of M501 are pure stands of trembling aspen (*Populus tremuloides*), sometimes accompanied by balsam poplar (*Populus balsamifera*), white spruce (*Picea glauca*), Douglas-fir and/or lodgepole pine. Understory composition is variable, depending on site conditions and degree of canopy closure. Typical shrubs include saskatoon (*Amelanchier alnifolia*), snowberries (*Symphoricarpos albus; S. occidentalis*), holly-leaved barberry (*Berberis aquifolium*), shiny-leaved meadowsweet (*Spiraea lucida*), wild roses (*Rosa* spp.), soapberry (*Shepherdia canadensis*) and common juniper (*Juniperus communis*). Grass species are often important in the understory, including pine reedgrass (*Calamagrostis rubescens*), bluebunch wheatgrass (*Pseudoroegneria spicata*), mountain rough fescue (*Festuca campestris*), Idaho fescue (*F. idahoensis*) and prairie junegrass (*Koeleria macrantha*). Other common understory species include common yarrow (*Achillea millefolium*), wild strawberry (*Fragaria virginiana*), common bearberry (*Arctostaphylos uva-ursi*), arrow-leaved balsamroot (*Balsamorhiza sagittata*), heart-leaved arnica (*Arnica cordifolia*) and northern bedstraw (*Galium boreale*). Red-stemmed feathermoss (*Pleurozium schreberi*) is the most frequent moss. Fire and insect infestations are the most common forms of natural disturbance, often amplified by drought. The forests and woodlands of M501 are adapted to frequent low- to moderate-intensity surface fires that maintain relatively open stands of fire-resistant species (especially in BC) as well as restricting the size of forest patches in parkland landscapes. With fire suppression, stands have become denser, forest groves have encroached into grasslands, and high intensity stand-replacing fires are more prevalent.

In Canada, M501 occurs in a dry, continental temperate climate with warm summers and cool winters. Mean annual temperature varies from 2° to 9°C, and precipitation typically varies from 350 to 600 mm. Elevations seldom exceed 1400 mASL, and can be as low as 150 mASL. All parts of the range experienced Pleistocene glaciation; soils are mostly Luvisols, Brunisols and, in Alberta, Chernozems, developed in glacial surficial materials. A surface layer of volcanic ash occurs in some areas. Two subtypes distinguish regional variation in the Canadian range of M501: CM501a [Warm Dry Rocky Mountain Low Montane Forest] describes Ponderosa pine - Douglas-fir forests and woodlands in the driest valleys and plateaux of southern BC, and CM501b [Cool Dry Rocky Mountain Low Montane Forest] characterizes forests and woodlands of higher elevations in BC as well as the parkland areas of the Rocky Mountain foothills in southwestern Alberta.

IVC Geographic Range: This widespread macrogroup occurs in Canada in southern British Columbia in the Fraser River drainage and eastward in valleys that drain into the Columbia and Kootenay rivers, and in southwestern Alberta east of the Continental Divide. Southward into the U.S. it occurs along the Cascades and central Rocky Mountains of Washington, Oregon and the Modoc Plateau of northeastern California. It also is found throughout the middle Rocky Mountains of central and southern Idaho (Lemhi, Beaverhead and Lost River ranges), south and east into the Greater Yellowstone region, and south and east into the Wind River, Gros Ventre and Bighorn ranges of Wyoming. In the northeastern part of its range, it extends across the central Rocky Mountains west of the Continental Divide into western Montana, south to the Snake River Plain in Idaho, and east of the Continental Divide into the foothills of west-central Montana. It extends east into the "sky island" ranges of central Montana, and from there east into the northwestern Great Plains along areas that border the Rocky Mountains and into the central Great Plains in a few scattered localities. Some associations placed in this macrogroup also occur in Colorado and northeastern Utah in the Uinta Mountains.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, KS?, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: M501 characterizes lower montane, foothill and plateau forests and woodlands of the warm, dry, continental temperate climates (and dry sites of moister climates) in the Western Cordillera of North America. Low montane

forests of moister climates (and moist sites of drier climates) in the warm interior of British Columbia (BC) are included in M500 [Central Rocky Mountain Mesic Lower Montane Forest]. Low elevation subboreal forests in central BC are described by M890 [Rocky Mountain Intermontane Subboreal Forest]. Low elevation forests of maritime temperate climates near the Pacific coast are described by M024 [Vancouverian Coastal Rainforest]. Higher elevation montane and subalpine forests contiguous with the range of M501 are characterized by M020 [Rocky Mountain Subalpine - High Montane Forest].

The CNVC Cordilleran Dry Forest and Rocky Mountain Foothills Parkland vegetation zones are geographic areas comprising, at least in part, a landscape mosaic of grassland or shrub-steppe patches and groves of forest and woodland. They occupy the northernmost limit of the North American dry lower montane region of the central Rocky Mountains and reflect an ecoclimatic transition from temperate grassland and shrub-steppe desert (at lower elevations) to high montane forest vegetation. The treed component of the natural parkland vegetation complex in Canada is represented by some of the forests and woodlands in M501 and is described in this factsheet. Grassland and shrub-steppe components of the parkland mosaic are described in USNVC factsheets for M048 [Central Rocky Mountain Montane - Foothill Grassland & Shrubland] (for M501b) & M169 [Great Basin-Intermountain Tall Sagebrush Steppe & Shrubland] (for M501a), respectively, representing non-treed plant communities that occur in spatial relationship with treed communities across the east to west range of M501.

Pseudotsuga menziesii here refers to variety *glauca* (Rocky Mountain Douglas-fir).

Pinus contorta here refers to variety *latifolia* (lodgepole pine).

Groups in Canada:

- **G213 Central Rocky Mountain Ponderosa Pine Forest & Woodland []**
- **G210 Central Rocky Mountain Dry Mixed Conifer Forest & Woodland []**
- **G215 Central Rocky Mountain Mesic-Moist Mixed Conifer Forest []**
- **G209 Rocky Mountain Foothill-Rock Outcrop Limber Pine - Juniper Woodland []**

CNVC Concept Author: D. Meidinger, W. MacKenzie, K. Baldwin, USNVC
CNVC Concept Date: 2015-04-01
CNVC Description Author: D. Meidinger and K. Baldwin
CNVC Description Date: 2017-07-01
IVC Primary Concept Source: Faber-Langendoen et al. (2014)
IVC Description Author: M.S. Reid
IVC Description Date: 2014-10-15
IVC Acknowledgments:

G213 Central Rocky Mountain Ponderosa Pine Forest & Woodland

[ ]

IVC Colloquial Name: Central Rocky Mountain Ponderosa Pine Forest & Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This inland Pacific Northwest group occurs in the foothills of the central Rocky Mountains in the Columbia Plateau region and west along the foothills of the Modoc Plateau and eastern Cascades into southern interior British Columbia. It also occurs east across Idaho into the eastern foothills of the Montana Rockies. This group includes two physiognomic phases: true woodlands of *Pinus ponderosa* with shrubby or grassy understories, and "wooded steppes" with widely spaced, scattered *Pinus ponderosa* trees over generally shrubby but sparse understories. The former are generally fire-maintained, while the later are often too dry and with widely spaced vegetation to carry fire. *Pinus ponderosa var. ponderosa* is the predominant conifer; *Pseudotsuga menziesii* or *Pinus flexilis* may be present in the tree canopy but are usually absent. The understory can be shrubby, with *Amelanchier alnifolia, Arctostaphylos patula, Arctostaphylos uva-ursi, Artemisia tridentata, Cercocarpus ledifolius, Physocarpus malvaceus, Purshia tridentata, Rosa* spp., *Symphoricarpos albus*, or *Symphoricarpos oreophilus* as common species. In transition areas with sagebrush steppe, *Artemisia tridentata ssp. tridentata, Artemisia tridentata ssp. wyomingensis, Artemisia tripartita*, and *Purshia tridentata* may be common in fire-protected sites such as rocky areas. Deciduous shrubs, such as *Physocarpus malvaceus, Spiraea betulifolia*, or *Symphoricarpos albus*, can be abundant in more northerly sites or more moist climates. Herbaceous vegetation in the true savanna occurrences is predominantly fire-resistant grasses and forbs that resprout following surface fires; shrubs, understory trees and downed logs are uncommon. These more open stands support grasses such as *Achnatherum* spp., dry *Carex* species (*Carex inops*), *Elymus elymoides, Festuca campestris, Festuca idahoensis, Hesperostipa* spp., or *Pseudoroegneria spicata*. These woodlands and savannas occur at the lower treeline/ecotone between grasslands or shrublands and more mesic coniferous forests, typically on warm, dry, exposed sites. These interior Pacific Northwest woodlands receive winter and spring rains, and thus have a greater spring "green-up" than the drier woodlands in the Central Rockies. However, sites are often too droughty to support a closed tree canopy. Elevations range from less than 500 m in British

Columbia to 1600 m in the central Idaho mountains. Occurrences are found on all slopes and aspects; however, moderately steep to very steep slopes or ridgetops and plateaus are most common. This group generally occurs on most geological substrates from weathered rock to glacial deposits to eolian deposits. Characteristic soil features include good aeration and drainage, coarse textures, circumneutral to slightly acidic pH, an abundance of mineral material, and periods of drought during the growing season. Some occurrences may occur as edaphic climax communities on very skeletal, infertile and/or excessively drained soils, such as pumice, cinder or lava fields, and scree slopes. Surface textures are highly variable in this group, ranging from sand to loam and silt loam. Exposed rock and bare soil consistently occur to some degree in all the associations. The more mesic portions of this group may include *Calamagrostis rubescens* or *Carex geyeri*, species more typical of Central Rocky Mountain Douglas-fir - Pine Forest Group (G210). Mixed fire regimes and surface fires of variable return intervals maintain these woodlands, typically with a shrub-dominated or patchy shrub layer, depending on climate, degree of soil development, and understory density. Historically, many of these woodlands and savannas lacked the shrub component as a result of 3- to 7-year fire-return intervals.

IVC Dynamics: *Pinus ponderosa* is a drought-resistant, shade-intolerant conifer which usually occurs at lower treeline in the major ranges of the western United States. Historically, surface fires and drought were influential in maintaining open-canopy conditions in these woodlands. With settlement and subsequent fire suppression, occurrences have become denser. Presently, some occurrences contain understories of more shade-tolerant species, such as *Pseudotsuga menziesii* and/or *Abies* spp., as well as younger cohorts of *Pinus ponderosa*. These altered structures have affected fuel loads and fire regimes. Presettlement fire regimes were primarily frequent (5- to 15-year return intervals), low-intensity surface fires triggered by lightning strikes or deliberately set fires by Native Americans. With fire suppression and increased fuel loads, fire regimes are now less frequent and often become intense crown fires, which can kill mature *Pinus ponderosa* (Reid et al. 1999). Establishment is erratic and believed to be linked to periods of adequate soil moisture and good seed crops as well as fire frequencies, which allow seedlings to reach sapling size. Longer fire-return intervals have resulted in many occurrences having dense subcanopies of overstocked and unhealthy young *Pinus ponderosa*, along with *Pseudotsuga menziesii* on moist sites (Reid et al. 1999).

Additional associations included in this group are subject to periodic drought that limits tree establishment. This climate-edaphic interaction results in widely scattered trees over "shrub-steppe" of sagebrush, bitterbrush, or sparsely distributed grasses. Tree growth is likely episodic, with regeneration episodes in years with available moisture. Tree density is limited in some areas by available growing space due to rocky conditions of the site. Hence the tree canopy in these associations will never reach woodland density or close due to the interaction of climate and edaphic factors, even in the absence of fire. They burn occasionally, but the vegetation is sparse enough that fires are typically not carried through the stand. Fire frequency is speculated to be 30-50 years. Some stands also occur on areas of sand dunes, scablands, and pumice where the edaphic conditions limit tree abundance.

A meeting of Pacific Northwest ecologists for Landfire concluded that the "true savannas" of high-frequency / low-intensity fires and grassy understories are now rare. Most areas that may have been savanna in the past are now more nearly closed-canopy woodlands/forests. Conclusion was that these true savannas should be included with this woodland group, along with the climatically-edaphically controlled "wooded steppes" which are also in this group. The wooded steppes included here are not fire-maintained; they occur on sites too droughty to support a closed tree canopy. They do burn with a high-frequency / low-intensity regime, but fire is not carried because of the sparse vegetation of the edaphically constrained sites (rock outcrops, dunes, super-dry, sparse trees over shrubs and sometimes grasses but widely spaced). Louisa Evers (pers. comm. 2006) notes that she has not found any evidence that ponderosa pine savanna existed historically in north-central and central Oregon. In north-central Oregon, the savanna would have been oak or pine-oak. In central Oregon, it may well have been western juniper. Condition surveys of the Cascades Forest Reserve and General Land Office survey notes suggest that ponderosa pine formed a woodland with grassy understories, but still was often referred to as open-parklike. Conversely pine-oak and Douglas-fir-oak savannas appeared to have once been quite common in the Willamette Valley.

IVC Environment: This group within the interior Pacific Northwest region occurs at the lower treeline/ecotone between grasslands or shrublands and more mesic coniferous forests typically in warm, dry, exposed sites at elevations ranging from 500-1600 m (1600-5248 feet). These interior Pacific Northwest woodlands receive winter and spring rains, and thus have a greater spring "green-up" than the drier woodlands in the Central Rockies. However, these sites are often too droughty to support a closed tree canopy. They can occur on all slopes and aspects; however, they commonly occur on moderately steep to very steep slopes or ridgetops and plateaus. Substrates include glacial till, glacio-fluvial sand and gravel, dunes, basaltic rubble and scablands, colluvium, or deep loess or volcanic ash-derived soils, all with characteristic features of good aeration and drainage, coarse textures, circumneutral to slightly acidic pH, an abundance of mineral material, rockiness, and periods of drought during the growing season. In the Oregon "pumice zone" this group occurs as matrix-forming, extensive woodlands on rolling pumice plateaus and other volcanic deposits.

Climate: This group within the interior Pacific Northwest region occurs at the lower treeline/ecotone between grasslands or shrublands and more mesic coniferous forests typically in warm, dry, exposed sites at elevations ranging from 500-1600 m (1600-5248 feet). These interior Pacific Northwest woodlands receive winter and spring rains, and thus have a greater spring "green-up" than the drier woodlands in the Central Rockies.

Soil/substrate/hydrology: These sites are often too droughty to support a closed tree canopy. They can occur on all slopes and aspects; however, they commonly occur on moderately steep to very steep slopes or ridgetops and plateaus. Substrates include glacial till, glacio-fluvial sand and gravel, dunes, basaltic rubble and scablands, colluvium, or deep loess or volcanic ash-derived soils, all with characteristic features of good aeration and drainage, coarse textures, circumneutral to slightly acidic pH, an abundance of mineral material, rockiness, and periods of drought during the growing season. In the Oregon "pumice zone" this group occurs as matrix-forming, extensive woodlands on rolling pumice plateaus and other volcanic deposits.

DISTRIBUTION

IVC Geographic Range: This group is found in the Fraser River drainage of southern British Columbia south along the Cascades and central Rocky Mountains of Washington, Oregon and the Modoc Plateau of northeastern California. In the northeastern part of its range, it extends across the central Rocky Mountains west of the Continental Divide into northwestern Montana, south to the Snake River Plain in Idaho, and east into the foothills of western Montana (but not into central or eastern Montana). In Oregon, it is most common in south-central Oregon, in lands managed by the Lakeview District of the BLM, and by the adjacent Fremont and Deschutes national forests. It also occurs on the marginal lands coming south out of the Blue Mountains, on the edge of the northern Basin and Range.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA, CO, ID, MT, ND, NM, NV?, OR, SD, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.15.16:P, 9.3.3.43:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.8.12:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G4 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4709 *Pinus ponderosa* / Herbaceous Understory Central Rocky Mountain Open Woodland Alliance** [Ponderosa Pine / Herbaceous Understory Central Rocky Mountain Open Woodland Alliance] []
- **A4708 *Pinus ponderosa* / Shrub Understory Central Rocky Mountain Woodland Alliance** [Ponderosa Pine / Shrub Understory Central Rocky Mountain Woodland Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: R.F. Daubenmire and J.B. Daubenmire (1968)

IVC Description Author: M.S. Reid, K.A. Schulz and M. Manning

IVC Description Date: 2015-11-09

IVC Acknowledgments: M. Manning

A4709 Ponderosa Pine / Herbaceous Understory Central Rocky Mountain Open Woodland Alliance

[ ]

Pinus ponderosa / Herbaceous Understory Central Rocky Mountain Open Woodland Alliance

Central Rocky Mountain Ponderosa Pine / Herb Open Woodland

IVC Scientific Name: *Pinus ponderosa* / Herbaceous Understory Central Rocky Mountain Open Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC, CA?, CO, ID, MT, ND, OR, SD, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL000865 *Pinus ponderosa / Pseudoroegneria spicata* Woodland** [Ponderosa Pine / Bluebunch Wheatgrass Woodland] []
  G4 (1996-02-01) BC, ID, MT, ND, OR, SD, WA, WY
- **CEGL000185 *Pinus ponderosa / Festuca campestris* Woodland** [Ponderosa Pine / Rough Fescue Woodland] []
  G3G4 (1996-02-01) BC?, ID, MT, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Triepke et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4708 Ponderosa Pine / Shrub Understory Central Rocky Mountain Woodland Alliance

[ ]
Pinus ponderosa / Shrub Understory Central Rocky Mountain Woodland Alliance
Central Rocky Mountain Ponderosa Pine / Shrub Woodland

IVC Scientific Name: *Pinus ponderosa* / Shrub Understory Central Rocky Mountain Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC?, CA, CO, ID, MT, NM, OR, SD, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL000189 *Pinus ponderosa / Physocarpus malvaceus* Forest** [Ponderosa Pine / Mallow Ninebark Forest] []
  G2 (1997-11-04) BC?, ID, MT, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Triepke et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G210 Central Rocky Mountain Dry Mixed Conifer Forest & Woodland

[ ]

IVC Colloquial Name: Central Rocky Mountain Dry Mixed Conifer Forest & Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is composed of highly variable montane coniferous forests found in the interior Pacific Northwest, from southernmost interior British Columbia, eastern Washington, eastern Oregon, northern Idaho, western and north-central Montana, and south along the east slope of the Cascades in Washington and Oregon. Most occurrences of this group are dominated by a mix of *Pseudotsuga menziesii* and *Pinus ponderosa* (but there can be one without the other) and other typically seral species, including *Larix occidentalis* (not in central Montana), *Pinus contorta*, and *Pinus monticola* (not in central Montana). *Picea engelmannii* (or *Picea glauca* or their hybrid) becomes increasingly common towards the eastern edge of the range. In the eastern Cascades, *Pinus contorta* may be the codominant pine, rather than *Pinus ponderosa*. The nature of this forest group is a matrix of large patches dominated or codominated by one or combinations of the above species; *Abies grandis* (a fire-sensitive, shade-tolerant species not occurring in central Montana) has increased on many sites once dominated by *Pseudotsuga menziesii* and *Pinus ponderosa*, which were formerly maintained by low-severity wildfire. Understories are typically dominated by graminoids, such as *Calamagrostis rubescens, Carex geyeri, Carex rossii*, and *Pseudoroegneria spicata*, and a variety of shrubs, such as *Acer glabrum, Juniperus communis, Physocarpus malvaceus, Spiraea betulifolia, Symphoricarpos albus*, or *Vaccinium membranaceum* on mesic sites. *Abies concolor* and *Abies grandis x concolor* hybrids in central Idaho (the Salmon Mountains) may occur in some stands, but have very restricted ranges in this area. *Abies concolor* and *Abies grandis* in the Blue Mountains of Oregon are probably hybrids of the two and mostly *Abies grandis*. This group is associated with a submesic climate regime with annual precipitation ranging from 50 to 100 cm, with a maximum in winter or late spring. Winter snowpacks typically melt off in early spring at lower elevations. Elevations range from 460 to 1920 m. These communities rarely form either upper or lower timberline forests. Presettlement fire regimes may have been characterized by frequent, low-intensity surface fires that maintained relatively open stands of a mix of fire-resistant species. Under present conditions the fire regime is mixed-severity and more variable, with stand-replacing fires more common, and the forests are more homogeneous. With vigorous fire suppression, longer fire-return intervals are now prevalent, and multi-layered stands of *Pseudotsuga menziesii, Pinus ponderosa*, and/or *Abies grandis* provide fuel "ladders," making these forests more susceptible to high-intensity, stand-replacing fires. They are very productive forests which have been priority areas for timber production.

IVC Dynamics: Presettlement fire regimes may have been characterized by frequent, low-intensity surface fires that maintained relatively open stands of a mix of fire-resistant species. Under present conditions, the fire regime is mixed severity and more variable, with stand-replacing fires more common, and the forests are more homogeneous. With vigorous fire suppression, longer fire-return intervals are now the rule, and multi-layered stands of *Pseudotsuga menziesii, Pinus ponderosa*, and/or *Abies grandis* provide fuel "ladders," making these forests more susceptible to high-intensity, stand-replacing fires. They are very productive forests which have been priorities for timber production.

IVC Environment: *Climate:* This group is associated with a submesic climate regime with annual precipitation ranging from 50 to 100 cm, with a maximum in winter or late spring. Winter snowpacks typically melt off in early spring at lower elevations. Elevations range from 460 to 1920 m. These communities rarely form either upper or lower timberline forests.

DISTRIBUTION

IVC Geographic Range: This group is found in the interior Pacific Northwest, from southern interior British Columbia south and east into Oregon, Idaho (including north and central Idaho, down to the Boise Mountains), and western Montana, and south along the east slope of the Cascades in Washington and Oregon.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA, CO, ID, MT, OR, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.8.12:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3396 *Pseudotsuga menziesii - Pinus contorta* Central Rocky Mountain Forest Alliance** [Douglas-fir - Lodgepole Pine Central Rocky Mountain Forest Alliance] []
  This alliance is composed of montane coniferous forests found in the interior Pacific Northwest that occur on cool, dry sites and is composed of a mix of *Pseudotsuga menziesii* and *Pinus contorta* (but there can be stands without the latter) and sometimes with other species, including *Pinus ponderosa, Pinus monticola*, and *Larix occidentalis*.
- **A3395 *Pseudotsuga menziesii - Pinus ponderosa* / Herbaceous Understory Central Rocky Mountain Woodland Alliance** [Douglas-fir - Ponderosa Pine / Herbaceous Understory Central Rocky Mountain Woodland Alliance] []
  This alliance represents montane coniferous forests found in the interior Pacific Northwest that are dominated by a mix of *Pseudotsuga menziesii* and *Pinus ponderosa* (but there can be stands without the latter) with a grass-dominated understory.
- **A3392 *Pseudotsuga menziesii - Pinus ponderosa* / Shrub Understory Central Rocky Mountain Forest & Woodland Alliance** [Douglas-fir - Ponderosa Pine / Shrub Understory Central Rocky Mountain Forest & Woodland Alliance] []
  This alliance represents montane coniferous forests found in the interior Pacific Northwest that are dominated by a mix of *Pseudotsuga menziesii* and *Pinus ponderosa* (but there can be stands without the latter) with a shrub-dominated understory.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: R.F. Daubenmire and J.B. Daubenmire (1968)
IVC Description Author: M.S. Reid and K.A. Schulz
IVC Description Date: 2015-11-09
IVC Acknowledgments: M. Manning

A3396 Douglas-fir - Lodgepole Pine Central Rocky Mountain Forest Alliance

[ ]
Pseudotsuga menziesii - Pinus contorta Central Rocky Mountain Forest Alliance
Central Rocky Mountain Douglas-fir - Lodgepole Pine Forest

IVC Scientific Name: *Pseudotsuga menziesii - Pinus contorta* Central Rocky Mountain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Most occurrences of this montane coniferous forest alliance are dominated by a mix of *Pseudotsuga menziesii* and *Pinus contorta* (but there can be stands without the latter) and sometimes with other species, including *Pinus ponderosa, Pinus monticola*, and *Larix occidentalis*. The understory is often dominated by graminoids, such as *Calamagrostis rubescens, Carex geyeri, Carex rossii*, and *Pseudoroegneria spicata*. On mesic sites, a variety of shrubs such as *Acer glabrum, Juniperus communis, Physocarpus malvaceus, Symphoricarpos albus, Spiraea betulifolia*, or *Vaccinium membranaceum* may from a layer. This alliance is found in the interior Pacific Northwest, from southernmost interior British Columbia, eastern Washington, eastern Oregon, northern Idaho, western and northern Montana, and south along the east slope of the Cascades in Washington and Oregon. It is associated with a submesic climate regime with annual precipitation ranging from 50 to 100 cm, with a maximum in winter or late spring. Winter snowpacks typically melt off in early spring at lower elevations. Elevations range from 460 to 2400 m (1500-7900 feet). Stands occur on cool, dry sites on mid to upper slopes, steep slopes, ridgelines, rocky sites and benches on all aspects.
IVC Dynamics: The nature of this forest system is a matrix of large patches dominated or codominated by one or combinations of the above species. In some stands, *Abies grandis* (a fire-sensitive, shade-tolerant species not occurring in central Montana) has

increased on sites once dominated by *Pseudotsuga menziesii* and *Pinus ponderosa*, which were formerly maintained by low-severity wildfire. Presettlement fire regimes may have been characterized by frequent, low-intensity surface fires that maintained relatively open stands of a mix of these fire-resistant species. Under present conditions, the fire regime is mixed-severity and more variable, with stand-replacing fires more common, and the forests are more homogeneous. With vigorous fire suppression, longer fire-return intervals are now the rule, and multi-layered stands of *Pseudotsuga menziesii, Pinus ponderosa*, and/or *Abies grandis* provide fuel "ladders," making these forests more susceptible to high-intensity, stand-replacing fires.

IVC Environment: This alliance is composed of montane coniferous forests found in the interior Pacific Northwest, from southernmost interior British Columbia, eastern Washington, eastern Oregon, northern Idaho, western and northern Montana, and south along the east slope of the Cascades in Washington and Oregon. This alliance is associated with a submesic climate regime with annual precipitation ranging from 50 to 100 cm, with a maximum in winter or late spring. Winter snowpacks typically melt-off in early spring at lower elevations. Elevations range from 460 to 2400 m (1500-7900 feet). Stands occur on cool, dry sites on mid to upper slopes, steep slopes, ridgelines, rocky sites and benches on all aspects. Surface rocks can be abundant. It can be associated with glacial outwash or till in cold-air drainages.

DISTRIBUTION

IVC Geographic Range: This alliance is composed of montane coniferous forests found in the interior Pacific Northwest, from southernmost interior British Columbia, eastern Washington, eastern Oregon, northern Idaho, western and northern Montana, and south along the east slope of the Cascades in Washington and Oregon. Peripheral stands are found on relatively dry sites in the northern Cascades such as Mount Rainier.

IVC Nations: CA,US

IVC States/Provinces: BC, ID, MT, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel and K.A. Schulz

IVC Description Date: 2014-01-08

IVC Acknowledgments:

A3395 Douglas-fir - Ponderosa Pine / Herbaceous Understory Central Rocky Mountain Woodland Alliance

[ ]

Pseudotsuga menziesii - Pinus ponderosa / Herbaceous Understory Central Rocky Mountain Woodland Alliance

Central Rocky Mountains Douglas-fir - Ponderosa Pine / Herb Woodland

IVC Scientific Name: *Pseudotsuga menziesii - Pinus ponderosa* / Herbaceous Understory Central Rocky Mountain Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Most occurrences of this montane coniferous forest alliance are dominated by a mix of *Pseudotsuga menziesii* and *Pinus ponderosa* (but there can be stands without the latter) and sometimes with other species, including *Pinus contorta, Pinus monticola, Populus tremuloides*, and *Larix occidentalis*. The understory is dominated by the herbaceous layer, usually graminoids, such as *Calamagrostis rubescens, Carex geyeri, Carex rossii, Festuca campestris, Festuca idahoensis, Festuca occidentalis*, and *Pseudoroegneria spicata*, but also ferns such as *Aspidotis densa*, and the forbs *Balsamorhiza sagittata* and *Achillea millefolium* may also be abundant. This alliance is found in the interior Pacific Northwest, from southernmost interior British Columbia, eastern Washington, eastern Oregon, northern Idaho, western and northern Montana, and south along the

east slope of the Cascades in Washington and Oregon and ranges in Wyoming and northern Utah. It is associated with a submesic climate regime with annual precipitation ranging from 40 to >150 cm, with a maximum in winter or late spring. Winter snowpacks typically melt off in early spring at lower elevations. Elevations range from 460 to 2400 m (1500-7900 feet). Stands occur on cool, dry sites on mid to upper slopes, steep slopes, ridgelines, rocky sites and benches on all aspects. Slopes can be moderate to steep (3-60%), and soils are derived from pumice ash, lava, tuff, and granitic. Surface rocks can be abundant. It can be associated with glacial outwash or till in cold-air drainages.

IVC Dynamics: Vegetation within this alliance is often comprised of relatively young stands, which were historically subject to recurrent fires. Both *Pinus ponderosa* and *Pseudotsuga menziesii* are tolerant of surface fires, and many mature trees have fire scars. The fire frequency is 5-30 years. Fire suppression has favored *Pseudotsuga menziesii*, but canopy closure is rare because of the harshness of these sites (Williams et al. 1990b). In addition, *Pseudotsuga menziesii* is more tolerant than *Pinus ponderosa*. Following fire, regeneration of *Pinus ponderosa* is aggressive. With increasing stand age, *Pseudotsuga menziesii* comes to dominate regeneration and eventually attains canopy dominance. Some stands require fire or other disturbance at moderate return intervals to maintain a mixed canopy. For example, in northern stands, *Abies grandis* will eventually become the canopy dominant with fire suppression. This alliance also occurs as an edaphic climax on moderate to steep slopes, in canyons, and in places along the ecotone between the *Pseudotsuga menziesii* and *Pinus ponderosa* zones. The exotic grass *Bromus tectorum* often invades the herbaceous layer of disturbed stands.

IVC Environment: This alliance is composed of montane coniferous forests found in the interior Pacific Northwest, from southernmost interior British Columbia, eastern Washington, eastern Oregon, northern Idaho, western and northern Montana, and south along the east slope of the Cascades in Washington and Oregon. Elevations range from 460 to 2400 m (1500-7900 feet). Climate is mostly temperate, continental with maritime influences and is strongly influenced by the rainshadow effect of the Cascade Range or Coast Ranges of southern Oregon. Winter snowpacks typically melt off in early spring at lower elevations. Annual precipitation ranges from 40 cm in the Blue Mountains, up to 150-230 cm in the Cascades. Sites are typically on hot, dry, middle to upper slopes near grassy ridgetops. Slopes are moderate to steep with typically southern to western aspects, but stands may occur on northern slopes at low elevations. Substrates are typically shallow, lithic, course-textured soils derived from colluvium and residuum. Soil texture ranges from gravelly sand to sandy loam. There is often high surface cover of rock (to 50%), and coarse fragments average 40%. Parent materials may include granitic till or outwash, basalt, lava, pumice ash, tuff, granitics and sandstone. These shallow soils have so little moisture-holding capacity that these sites are effectively very dry for plant growth despite the substantial input of precipitation on most sites. These sites are exposed to high winds. Wind detracts from soil moisture status by blowing off snow, directly desiccating plants, and eroding soil.

DISTRIBUTION

IVC Geographic Range: This alliance is composed of montane coniferous forests found in the interior Pacific Northwest, from southernmost interior British Columbia, eastern Washington, eastern Oregon, northern Idaho, western and northern Montana, and south along the east slope of the Cascades in Washington and Oregon. Peripheral stands are found on relatively dry sites in the northern Cascades such as Mount Rainier.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CO, ID, MT, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000210** ***Pinus ponderosa - Pseudotsuga menziesii / Calamagrostis rubescens*** **Woodland** [Ponderosa Pine - Douglas-fir / Pinegrass Woodland] []
  G2Q (1996-02-01) BC?, WA
- **CEGL000207** ***Pinus ponderosa - Pseudotsuga menziesii / Pseudoroegneria spicata ssp. inermis*** **Woodland** [Ponderosa Pine - Douglas-fir / Beardless Wheatgrass Woodland] []
  G3Q (1996-02-01) BC?, WA
- **CEGL000429** ***Pseudotsuga menziesii / Calamagrostis rubescens*** **Woodland** [Douglas-fir / Pinegrass Woodland] []
  G5 (1996-02-01) BC, ID, MT, OR, UT, WA, WY
- **CEGL000908** ***Pseudotsuga menziesii / Pseudoroegneria spicata*** **Woodland** [Douglas-fir / Bluebunch Wheatgrass Woodland] []
  G4 (1996-02-01) BC, CO, ID, MT, OR, UT?, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A3392 Douglas-fir - Ponderosa Pine / Shrub Understory Central Rocky Mountain Forest & Woodland Alliance

[ ]

Pseudotsuga menziesii - Pinus ponderosa / Shrub Understory Central Rocky Mountain Forest & Woodland Alliance

Central Rocky Mountain Douglas-fir / Shrub Forest & Woodland

IVC Scientific Name: *Pseudotsuga menziesii - Pinus ponderosa* / Shrub Understory Central Rocky Mountain Forest & Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Most occurrences of this montane coniferous forest alliance are dominated by a mix of *Pseudotsuga menziesii* and *Pinus ponderosa* (but there can be stands without the latter) and sometimes with other species, including *Pinus contorta, Pinus monticola*, and *Larix occidentalis*. This understory is characterized by open to dense layer of shrubs and dwarf-shrubs. Characteristic species include *Arctostaphylos uva-ursi, Holodiscus discolor, Juniperus communis, Paxistima myrsinites, Penstemon fruticosus, Physocarpus malvaceus, Purshia tridentata, Spiraea betulifolia, Symphoricarpos albus*, or *Vaccinium membranaceum*. There herbaceous layer is variable. If herbaceous cover exceeds the shrub cover, then there is a distinct shrub layer present with at least 10% cover. This alliance is found in the interior Pacific Northwest, from southernmost interior British Columbia, eastern Washington, eastern Oregon, northern Idaho, western and northern Montana, and south along the east slope of the Cascades in Washington and Oregon. It is associated with a submesic climate regime with annual precipitation ranging from 40 to >150 cm, with a maximum in winter or late spring. Winter snowpacks typically melt off in early spring at lower elevations. Elevations range from 460 to 2400 m (1500-7900 feet). Stands occur on cool, dry sites on mid to upper slopes, steep slopes, ridgelines, rocky sites and benches on all aspects. Slopes can be moderate to steep (3-60%), and soils are derived from pumice ash, lava, tuff, and granitics. Surface rocks can be abundant. It can be associated with glacial outwash or till in cold-air drainages.

IVC Dynamics: Vegetation within this alliance is often comprised of relatively young stands, which were historically subject to recurrent fires. Both *Pinus ponderosa* and *Pseudotsuga menziesii* are tolerant of surface fires, and many mature trees have fire scars. The fire frequency is 5-30 years. Fire suppression has favored *Pseudotsuga menziesii*, but canopy closure is rare because of the harshness of these sites (Williams et al. 1990b). In addition, *Pseudotsuga menziesii* is more tolerant than *Pinus ponderosa*. Following fire, regeneration of *Pinus ponderosa* is aggressive. With increasing stand age, *Pseudotsuga menziesii* comes to dominate regeneration and eventually attains canopy dominance. Some stands require fire or other disturbance at moderate return intervals to maintain a mixed canopy. For example, in northern stands, *Abies grandis* will eventually become the canopy dominant with fire suppression. This alliance also occurs as an edaphic climax on moderate to steep slopes, in canyons, and in places along the ecotone between the *Pseudotsuga menziesii* and *Pinus ponderosa* zones. The exotic grass *Bromus tectorum* often invades the herbaceous layer of disturbed stands.

IVC Environment: This alliance is composed of montane coniferous forests found in the interior Pacific Northwest, from southernmost interior British Columbia, eastern Washington, eastern Oregon, northern Idaho, western and northern Montana, and south along the east slope of the Cascades in Washington and Oregon. Elevations range from 460 to 2400 m (1500-7900 feet). Climate is mostly temperate, continental with maritime influences and is strongly influenced by the rainshadow effect of the Cascade Range or Coast Ranges of southern Oregon. Winter snowpacks typically melt off in early spring at lower elevations. Annual precipitation ranges from 40 cm in the Blue Mountains, up to 150-230 cm in the Cascades. Sites are typically on hot, dry, middle to upper slopes near grassy ridgetops. Slopes are moderate to steep with typically southern to western aspects, but stands may occur on northern slopes at low elevations. Substrates are typically shallow, lithic, course-textured soils derived from colluvium and residuum. Soil texture ranges from gravelly sand to sandy loam. There is often high surface cover of rock (to 50%), and coarse fragments average 40%. Parent materials may include granitic till or outwash, basalt, lava, pumice ash, tuff, granitics and sandstone. These rocky, shallow soils have so little moisture-holding capacity that these sites are effectively very dry for plant growth despite the substantial input of precipitation on most sites. These sites are exposed to high winds. Wind detracts from soil moisture status by blowing off snow, directly desiccating plants, and eroding soil.

DISTRIBUTION

IVC Geographic Range: This alliance is composed of montane coniferous forests found in the interior Pacific Northwest, from southernmost interior British Columbia, eastern Washington, eastern Oregon, northern Idaho, western and northern Montana, and south along the east slope of the Cascades in Washington and Oregon. Peripheral stands are found on relatively dry sites in the northern Cascades such as Mount Rainier.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA?, ID, MT, OR, UT, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000212** ***Pinus ponderosa - Pseudotsuga menziesii / Penstemon fruticosus*** **Woodland** [Ponderosa Pine - Douglas-fir / Bush Penstemon Woodland] []
  G2G3 (2000-12-17) BC?, WA
- **CEGL008276** ***Pseudotsuga menziesii - Pinus ponderosa var. ponderosa / Arctostaphylos nevadensis - Paxistima myrsinites*** **Woodland** [Douglas-Fir - Ponderosa Pine / Pinemat Manzanita - Oregon Boxleaf Woodland] []
  Pseudotsuga menziesii - Pinus ponderosa woodlands with a mat-forming *Arctostaphylos nevadensis* understory on steep slopes, ridgelines, and rocky sites; often associated with exposed glacial outwash or till in cold-air drainages. GNR. BC?, WA
- **CEGL000214** ***Pinus ponderosa - Pseudotsuga menziesii / Purshia tridentata*** **Woodland** [Ponderosa Pine - Douglas-fir / Antelope Bitterbrush Woodland] []
  G3 (1996-02-01) BC?, CA?, OR, UT, WA
- **CEGL000424** ***Pseudotsuga menziesii / Arctostaphylos uva-ursi*** **Forest** [Douglas-fir / Kinnikinnick Forest] []
  G4 (1996-02-01) AB, CO, MT, NM
- **CEGL008268** ***Pseudotsuga menziesii / Holodiscus discolor / Calamagrostis rubescens*** **Forest** [Douglas-Fir / Oceanspray / Pinegrass Forest] []
  Pseudotsuga menziesii-dominated forests of the East Cascades on dry topographic positions with *Holodiscus discol*or, *Acer glabrum*, and *Amelanchier alnifolia* dominant in the shrub layer and *Calamagrostis rubescens* beneath. GNR. BC?, WA
- **CEGL008274** ***Pseudotsuga menziesii / Paxistima myrsinites - Spiraea betulifolia*** **Woodland** [Douglas-Fir / Oregon Boxleaf - Shinyleaf Meadowsweet Woodland] []
  Pseudotsuga menziesii - Pinus ponderosa woodlands with mixed shrub understory dominated by *Paxistima myrsinites* and/or *Spiraea lucida* (= *betulifolia*) on cool, dry, south-facing mid to upper slopes. GNR. BC?, OR?, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-01-08

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by Marion Reid and D. Sarr.

G215 Central Rocky Mountain Mesic-Moist Mixed Conifer Forest

[ ]

IVC Colloquial Name: Central Rocky Mountain Mesic-Moist Mixed Conifer Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group occurs throughout the middle Rocky Mountains of central and southern Idaho (Beaverhead, Lemhi, and Lost River ranges), south and east into the Greater Yellowstone region, and the Bighorn, Gros Ventre and Wind River ranges of Wyoming. It extends north into Montana on the east side of the Continental Divide, north to about the McDonald Pass area, and

also into the Rocky Mountain Front region and central "sky island" ranges of Montana. This is a *Pseudotsuga menziesii*-dominated group without the maritime floristic composition; these are forests and woodlands occurring in the Central Rockies where the southern monsoon influence is less and maritime climate regime is not important. This group includes extensive *Pseudotsuga menziesii* forests, occasionally with *Pinus flexilis* on calcareous substrates, and *Pinus contorta* at higher elevations. True firs, such as *Abies concolor, Abies grandis*, and *Abies lasiocarpa*, are generally absent in these occurrences, but *Picea engelmannii* can occur in some stands. *Pinus ponderosa* is not common in this group. Understory components include shrubs such as *Juniperus communis, Mahonia repens, Physocarpus malvaceus*, and *Symphoricarpos oreophilus*, and graminoids such as *Calamagrostis rubescens, Carex rossii*, and *Leucopoa kingii*. The fire regime is of mixed severity with moderate frequency. This group often occurs at the lower treeline immediately above valley grasslands, or sagebrush steppe and shrublands. Sometimes there may be a "bath-tub ring" of *Pinus ponderosa* at lower elevations or *Pinus flexilis* between the valley non-forested and the solid *Pseudotsuga menziesii* forest. In the Wyoming Basins, this group occurs as isolated stands of *Pseudotsuga menziesii*, with *Artemisia tridentata, Carex rossii, Leucopoa kingii*, and *Pseudoroegneria spicata*.

IVC Dynamics: Successional relationships in this group are complex. *Pseudotsuga menziesii* is less shade-tolerant than many northern or montane trees such as *Tsuga heterophylla, Abies concolor, Picea engelmannii*, or *Thuja plicata*, and seedlings compete poorly in deep shade. At drier locales, seedlings may be favored by moderate shading, such as by a canopy of *Pinus ponderosa*, which helps to minimize drought stress. In some locations, much of these forests have been logged or burned during European settlement, and present-day stands are second-growth forests dating from fire, logging, or other stand-replacing disturbances (Mauk and Henderson 1984). *Pseudotsuga menziesii* forests were probably subject to a moderate-severity fire regime in presettlement times, with fire-return intervals of 30-100 years. Many of the important tree species in these forests are fire-adapted (*Populus tremuloides, Pinus ponderosa, Pinus contorta*) (Pfister et al. 1977), and fire-induced reproduction of *Pinus ponderosa* can result in its continued codominance in *Pseudotsuga menziesii* forests (Steele et al. 1981). Seeds of the shrub *Ceanothus velutinus* can remain dormant in forest stands for 200 years (Steele et al. 1981) and germinate abundantly after fire, competitively suppressing conifer seedlings. Some stands may have higher tree-stem density than historically, due largely to fire suppression.

IVC Environment: These are forests and woodlands occurring in the Central Rockies where the southern monsoon influence is less and maritime climate regime is not important. In the middle Rocky Mountains, *Pseudotsuga menziesii* forests occur under a comparatively drier and more continental climate regime, and at higher elevations than in the Pacific Northwest. Elevations range from less than 1000 m in the central Rocky Mountains to over 2400 m in the Wyoming Rockies. Lower elevation stands typically occupy protected northern exposures or mesic ravines and canyons, often on steep slopes. At higher elevations, these forests occur primarily on southerly aspects or ridgetops and plateaus. Annual precipitation ranges from 50-100 cm with moderate snowfall and a greater proportion falling during the growing season. Monsoonal summer rains can contribute a significant proportion of the annual precipitation in the southern portion of the range. Soils are highly variable and derived from diverse parent materials. *Pseudotsuga menziesii* forests are reported by most studies (Pfister et al. 1977, Steele et al. 1981, Mauk and Henderson 1984, Lillybridge et al. 1995) to show no particular affinities to geologic substrates. Rock types can include extrusive volcanics in the Yellowstone region, and sedimentary rocks elsewhere in the Rockies. The soils are typically slightly acidic (pH 5.0-6.0), well-drained, and well-aerated. They can be derived from moderately deep colluvium or shallow-jointed bedrock, and are usually gravelly or rocky.

DISTRIBUTION

IVC Geographic Range: This group occurs throughout the middle Rocky Mountains of central and southern Idaho (Lemhi, Beaverhead and Lost River ranges), south and east into the Greater Yellowstone region, and south and east into the Wind River, Gros Ventre and Bighorn ranges of Wyoming. It extends north into Montana on the east side of the Continental Divide to the Rocky Mountain Front and east into the "sky island" ranges of central Montana. It may also occur in scattered patches in southeastern Oregon. Some associations placed in this group also occur in Colorado.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC?, CO, ID, MT, NM, NV, OR, TX, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.8.12:P

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G3G4 rank that was calculated from closely related ecological system global ranks. A rank of G3G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3462 *Pseudotsuga menziesii* Central Rocky Mountain Dry-Mesic Mixed Conifer Forest & Woodland Alliance** [Douglas-Fir Central Rocky Mountain Dry-Mesic Mixed Conifer Forest & Woodland Alliance] []
  This forest and woodland alliance is dominated by *Pseudotsuga menziesii* and occurs on relatively dry to mesic sites throughout the middle Rocky Mountains of central and southern Idaho, the Greater Yellowstone region, and the Wind River, Gros Ventre and Bighorn ranges of Wyoming and in Montana on the east side of the Continental Divide.
- **A3463 *Pseudotsuga menziesii* Central Rocky Mountain Mesic-Moist Mixed Conifer Forest Alliance** [Douglas-Fir Central Rocky Mountain Mesic-Moist Mixed Conifer Forest Alliance] []
  This forest and woodland alliance is dominated by *Pseudotsuga menziesii* without the maritime floristic composition. It occurs on relatively moist, cool to warm sites throughout the middle Rocky Mountains of central and southern Idaho, the Greater Yellowstone region, and the Wind River, Gros Ventre and Bighorn ranges of Wyoming and in Montana on the east side of the Continental Divide.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: R. Steele, R.D. Pfister, R.A. Ryker, and J.A. Kittams (1981)
IVC Description Author: M.S. Reid and K.A. Schulz
IVC Description Date: 2015-11-09
IVC Acknowledgments:

A3462 Douglas-Fir Central Rocky Mountain Dry-Mesic Mixed Conifer Forest & Woodland Alliance

[ ]

Pseudotsuga menziesii Central Rocky Mountain Dry-Mesic Mixed Conifer Forest & Woodland Alliance

Central Rocky Mountain Douglas-fir - Mixed Conifer Dry-Mesic Forest & Woodland

IVC Scientific Name: *Pseudotsuga menziesii* Central Rocky Mountain Dry-Mesic Mixed Conifer Forest & Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Stands of this alliance are *Pseudotsuga menziesii*-dominated forests and woodlands occasionally with *Juniperus osteosperma, Juniperus scopulorum, Pinus flexilis* (on calcareous substrates), *Populus tremuloides* (on disturbed sites), and *Pinus contorta* (at higher elevations). True firs, such as *Abies concolor, Abies grandis*, and *Abies lasiocarpa*, are absent, but occasional *Picea engelmannii* can occur in some stands. *Pinus ponderosa* is also not common in this group. Understory components include shrubs such as *Cercocarpus ledifolius, Juniperus communis, Mahonia repens, Purshia tridentata, Spiraea betulifolia, Symphoricarpos albus*, and *Symphoricarpos oreophilus*. Common graminoids include *Calamagrostis rubescens, Carex rossii, Leucopoa kingii*, and *Pseudoroegneria spicata*. Forbs are variable, but typical taxa include *Arnica cordifolia, Thalictrum occidentale, Viola adunca*, and species of many other genera, including *Antennaria, Arenaria, Erigeron, Eriogonum, Lathyrus, Lupinus, Penstemon*, and *Vicia*. This alliance occurs on relatively dry to mesic sites throughout the middle Rocky Mountains of central and southern Idaho, the Greater Yellowstone region, and the Wind River, Gros Ventre and Bighorn ranges of Wyoming. It extends north into Montana on the east side of the Continental Divide, to the McDonald Pass area, and also into the Rocky Mountain Front region and central "sky island" ranges of Montana. This alliance often occurs at the lower treeline immediately above valley grasslands, or sagebrush steppe and shrublands. Stands are found on all aspects in the Central Rockies where the southern monsoon influence is less and maritime climate regime is not important. Climate is drier and more continental than at higher elevations or in the Pacific Northwest. Annual precipitation ranges from 50-100 cm with moderate snowfall and a greater proportion falling during the growing season. Monsoonal summer rains can contribute a significant proportion of the annual precipitation in the southern portion of the range. Elevations range from less than 1000 m in the central Rocky Mountains to over 2400 m in the Wyoming Rockies. Lower elevation stands typically occupy cooler, less xeric northern exposures often on steep slopes. At higher elevations, these forests occur primarily on southerly aspects or ridgetops and plateaus. Soils are highly variable and derived from diverse parent materials, including extrusive volcanics in the Yellowstone region, and sedimentary rocks elsewhere in the Rockies. The soils are typically well-drained and well-aerated. They can be derived from moderately deep colluvium or shallow-jointed bedrock, and are usually gravelly or rocky.

IVC Dynamics: Successional relationships in this alliance are complex. *Pseudotsuga menziesii* is less shade-tolerant than many northern or montane trees such as *Abies concolor, Picea engelmannii, Thuja plicata*, or *Tsuga heterophylla*, and seedlings compete poorly in deep shade. At drier locales, seedlings may be favored by moderate shading, such as by a canopy of *Pinus*

ponderosa, which helps to minimize drought stress. In some locations, much of these forests have been logged or burned during European settlement, and present-day stands are second-growth forests dating from fire, logging, or other stand-replacing disturbances (Mauk and Henderson 1984). *Pseudotsuga menziesii* forests were probably subject to a moderate-severity fire regime in presettlement times, with fire-return intervals of 30-100 years.

IVC Environment: This alliance occurs on relatively dry to mesic sites throughout the middle Rocky Mountains of central and southern Idaho, the Greater Yellowstone region, and the Wind River, Gros Ventre and Bighorn ranges of Wyoming. It extends north into Montana on the east side of the Continental Divide, to the McDonald Pass area, and also into the Rocky Mountain Front region and central "sky island" ranges of Montana. Stands are found on all aspects in the Central Rockies where the southern monsoon influence is less and maritime climate regime is not important. Climate is drier and more continental than at higher elevations or in the Pacific Northwest. Annual precipitation ranges from 50-100 cm with moderate snowfall and a greater proportion falling during the growing season. Monsoonal summer rains can contribute a significant proportion of the annual precipitation in the southern portion of the range. Elevations range from less than 1000 m in the central Rocky Mountains to over 2400 m in the Wyoming Rockies. Lower elevation stands typically occupy protected northern exposures and canyons, often on steep slopes. At higher elevations, these forests occur primarily on southerly aspects or ridgetops and plateaus. Substrates are typically shallow, lithic, course-textured soils derived from colluvium and residuum. Soil texture ranges from gravelly sand to loam. There is typically high surface cover of rock, as well as coarse fragments within the soil. Soil pH varies from acidic to alkaline depending on parent material. Parent materials are extremely varied and may include andesite, basalt, dolomite, gneiss, granite, lava, limestone, mudstone, rhyolite, sandstone and tuff. Extrusive volcanics are common in the Yellowstone region, and sedimentary rocks elsewhere in the Rockies. *Pseudotsuga menziesii* forests are reported by most studies (Pfister et al. 1977, Steele et al. 1981, Mauk and Henderson 1984) to show no particular affinities to geologic substrates. These rocky, shallow soils have so little moisture-holding capacity that these sites are effectively very dry for plant growth even where there is substantial precipitation. In some cases, these sites are exposed to high winds. Wind detracts from soil moisture status by blowing off snow, directly desiccating plants, and eroding soil.

DISTRIBUTION

IVC Geographic Range: This alliance occurs on relatively dry to mesic sites throughout the middle Rocky Mountains of central and southern Idaho, the Greater Yellowstone region, and the Wind River, Gros Ventre and Bighorn ranges of Wyoming. It extends north into Montana on the east side of the Continental Divide, to the McDonald Pass area, and also into the Rocky Mountain Front region and central "sky island" ranges of Montana.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC?, CO, ID, MT, NM, NV, OR, TX, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000457 *Pseudotsuga menziesii / Spiraea betulifolia* Forest** [Douglas-fir / Shinyleaf Meadowsweet Forest] []
  G5 (1996-02-01) AB, ID, MT, OR, WY
- **CEGL000459 *Pseudotsuga menziesii / Symphoricarpos albus* Forest** [Douglas-fir / Common Snowberry Forest] []
  G5 (1996-02-01) AB, BC?, ID, MT, OR, WA, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz and M.S. Reid

IVC Description Date: 2014-01-08

IVC Acknowledgments:

A3463 Douglas-Fir Central Rocky Mountain Mesic-Moist Mixed Conifer Forest Alliance

[ ]

Pseudotsuga menziesii Central Rocky Mountain Mesic-Moist Mixed Conifer Forest Alliance
Central Rocky Mountain Douglas-fir Mesic-Moist Mixed Conifer Forest

IVC Scientific Name: *Pseudotsuga menziesii* Central Rocky Mountain Mesic-Moist Mixed Conifer Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Stands are *Pseudotsuga menziesii*-dominated forests and woodlands; occasionally *Populus tremuloides* may codominate on disturbed sites ,and *Pinus contorta* may be present at higher elevations. True firs, such as *Abies concolor, Abies grandis*, and *Abies lasiocarpa*, are absent, but occasional *Picea engelmannii* can occur in some stands. *Pinus ponderosa* is also not common in this group. Understory components include relatively mesic species such as the shrubs *Acer glabrum, Amelanchier alnifolia, Linnaea borealis*, and *Physocarpus malvaceus*, and herbs and grasses such as *Achillea millefolium, Bromus carinatus, Eucephalus engelmannii, Fragaria vesca, Geranium viscosissimum, Lathyrus* spp., *Osmorhiza berteroi*, and *Piptatheropsis micrantha*. This alliance is restricted to mesic to wet sites in the middle Rocky Mountains of central and southern Idaho, the Greater Yellowstone region, and the Wind River, Gros Ventre and Bighorn ranges of Wyoming. It extends north into Montana on the east side of the Continental Divide, to the McDonald Pass area, and also into the Rocky Mountain Front region and central "sky island" ranges of Montana. This alliance occurs in the Central Rockies where the southern monsoon influence is less and maritime climate regime is not important. Climate is drier and more continental than at higher elevations or in the Pacific Northwest. Annual precipitation ranges from 50-100 cm with moderate snowfall and a greater proportion falling during the growing season. Monsoonal summer rains can contribute a significant proportion of the annual precipitation in the southern portion of the range. Elevations range from less than 1000 m in the central Rocky Mountains to over 2400 m in the Wyoming Rockies. Stands typically occupy cooler northern exposures in relatively moist sites such as lower slopes, benches and valley bottoms. Lower elevation stands occupy mesic ravines and canyons on northerly aspects. Soils are highly variable and derived from diverse parent materials, including extrusive volcanics in the Yellowstone region, and sedimentary rocks elsewhere in the Rockies. The soils can be derived from moderately deep colluvium or shallow-jointed bedrock, and are usually gravelly or rocky.

IVC Dynamics: Successional relationships in this alliance are complex. *Pseudotsuga menziesii* is less shade-tolerant than many northern or montane trees such as *Abies concolor, Picea engelmannii, Thuja plicata*, or *Tsuga heterophylla*, and seedlings compete poorly in deep shade. At drier locales, seedlings may be favored by moderate shading, such as by a canopy of *Pinus ponderosa*, which helps to minimize drought stress. In some locations, much of these forests have been logged or burned during European settlement, and present-day stands are second-growth forests dating from fire, logging, or other stand-replacing disturbances (Mauk and Henderson 1984). *Pseudotsuga menziesii* forests were probably subject to a moderate severity fire regime in presettlement times, with fire-return intervals of 30-100 years.

IVC Environment: This alliance is restricted to mesic to wet sites in the middle Rocky Mountains of central and southern Idaho, the Greater Yellowstone region, and the Wind River, Gros Ventre and Bighorn ranges of Wyoming. It extends north into Montana on the east side of the Continental Divide, to the McDonald Pass area, and also into the Rocky Mountain Front region and central "sky island" ranges of Montana. This alliance occurs in the Central Rockies where the southern monsoon influence is less and maritime climate regime is not important. Climate is drier and more continental than at higher elevations or in the Pacific Northwest. Annual precipitation ranges from 50-100 cm with moderate snowfall and a greater proportion falling during the growing season. Monsoonal summer rains can contribute a significant proportion of the annual precipitation in the southern portion of the range. Elevations range from less than 1000 m in the central Rocky Mountains to over 2400 m in the Wyoming Rockies. Stands typically occupy cooler northern exposures in relatively moist sites such as lower slopes, benches and valley bottoms. Lower elevation stands occupy mesic ravines and canyons on northerly aspects. Soils are highly variable and derived from diverse parent materials, including extrusive volcanics in the Yellowstone region, and sedimentary rocks elsewhere in the Rockies. The soils can be derived from moderately deep colluvium or shallow-jointed bedrock, and are usually gravelly or rocky.

DISTRIBUTION

IVC Geographic Range: This alliance occurs on relatively moist, cool to warm sites throughout the middle Rocky Mountains of central and southern Idaho, the Greater Yellowstone region, and the Wind River, Gros Ventre and Bighorn ranges of Wyoming. It extends north into Montana on the east side of the Continental Divide, to the McDonald Pass area, and also into the Rocky Mountain Front region and central "sky island" ranges of Montana

IVC Nations: CA,US

IVC States/Provinces: AB, BC?, CO, ID, MT, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000447 *Pseudotsuga menziesii / Physocarpus malvaceus* Forest** [Douglas-fir / Mallow Ninebark Forest] []
  G5 (1996-02-01) BC?, ID, MT, OR, UT, WA, WY
- **CEGL000418 *Pseudotsuga menziesii / Acer glabrum* Forest** [Douglas-fir / Rocky Mountain Maple Forest] []
  G4? (1996-02-01) AB, CO, ID, MT?, OR, UT, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz and M.S. Reid
IVC Description Date: 2014-01-08
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by Marion Reid.

G209 Rocky Mountain Foothill-Rock Outcrop Limber Pine - Juniper Woodland

[ ]

IVC Colloquial Name: Rocky Mountain Foothill-Rock Outcrop Limber Pine - Juniper Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These patchy, rock outcrop and foothill woodlands are found from Alberta and northern Montana south to central Colorado and east on escarpments in the western Great Plains. It is common across Wyoming on smaller, dry ranges and at lower treeline on larger ranges such as the Big Horn and Wind River mountains where it occurs generally below continuous forests of *Pseudotsuga menziesii* or *Pinus ponderosa*. Vegetation is characterized by an open tree canopy or patchy woodland that is dominated by *Juniperus scopulorum, Pinus flexilis* or *Juniperus osteosperma*. This group generally occurs outside of the range of *Pinus edulis*, which is not present. A sparse to moderately dense short-shrub layer, if present, may include a variety of shrubs, such as *Artemisia nova, Artemisia tridentata, Cercocarpus ledifolius, Cercocarpus montanus, Ericameria nauseosa, Juniperus horizontalis, Purshia tridentata*, or *Rhus trilobata*. Herbaceous layers are generally sparse, but range to moderately dense, and are typically dominated by perennial graminoids such as *Bouteloua gracilis, Hesperostipa comata, Koeleria macrantha, Piptatheropsis micrantha, Poa secunda*, or *Pseudoroegneria spicata*. Within this group, there may be small patches of grassland or shrubland composed of some of the above species. These woodlands are restricted to shallow soils and fractured bedrock derived from a variety of parent material, including limestone, sandstone, dolomite, granite, and colluvium. Elevations range from 1000-2400 m. An unusual plant association in Idaho occurs on relatively unweathered mafic lava flows, where it occurs in mesic pockets within the fractured lava. In all cases, soils have a high rock component (typically over 50% cover) and are coarse- to fine-textured, often gravelly and calcareous. Slopes are typically moderately steep to steep. At upper elevation range, stands are limited to the most xeric aspects on rock outcrops, and at lower elevations to the less xeric north aspects on coarse substrates where water infiltration is greater (reverse texture effect). Fire is infrequent and spotty because the rocky substrates prevent development of a continuous vegetation canopy needed to spread.

IVC Dynamics: Fire is infrequent and spotty because the rocky substrates prevent development of a continuous vegetation canopy needed to spread fire. Foothill and escarpment woodlands comprise a small proportion of the landscape, but like riparian zones, they provide critical habitat for many species of animals (Knight 1999). Nurse plants (shrubs) appears to be important for the establishment of trees is areas near Big Horn Mountains with a high proportion of juniper recruitment occurring under sagebrush (Waugh 1986 as cited by D. H. Knight 1994).

IVC Environment: This group occurs in foothill and may extend into the lower montane zones in the Rocky Mountains from southern Alberta and northern Montana south to central Colorado and on escarpments across basins in eastern Idaho and Wyoming extending out into the western Great Plains. Elevation ranges from 850-2400 m. It occurs below continuous forests of *Pseudotsuga menziesii* or *Pinus ponderosa.*

Climate: Climatologically, the region is semi-arid and has a continental regime of hot summers and cold winters. High winds are a common feature found to the east of the Continental Divide and out in the Great Plains; limber pine is adapted to these winds with highly flexible branches which prevent breakage. Precipitation patterns are variable, but snow is common in winter, and spring rains are an important contributor.

Soil/substrate/hydrology: These woodlands are restricted to shallow soils and fractured bedrock derived from a variety of parent material, including limestone, sandstone, dolomite, granite, and colluvium. An unusual plant association in Idaho occurs on relatively unweathered mafic lava flows, where it occurs in mesic pockets within the fractured lava. In all cases, soils have a

high rock component (typically over 50% cover) and are coarse- to fine-textured, often gravelly and calcareous. Slopes are typically moderately steep to steep.

DISTRIBUTION

IVC Geographic Range: This group occurs in foothill and lower montane zones in the Rocky Mountains from southern Alberta and northern Montana south to central Colorado and on escarpments across Wyoming extending out into the western Great Plains. This group also occurs in the Snake River Plain in southeastern Idaho, though it would not be common there.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, ID, MT, ND, NE, OK, OR, SD, TX?, UT, WY

IVC Omernik Ecoregions: 6.2.4.41:P, 6.2.10.17:P, 6.2.13.19:P, 6.2.14.21:P, 9.3.1.42:P, 9.3.3.43:P, 9.4.1.25:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.8.12:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G4 rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3427 *Juniperus scopulorum* - *Juniperus osteosperma* / Grass Understory Rocky Mountain Woodland Alliance** [Rocky Mountain Juniper - Utah Juniper / Grass Understory Rocky Mountain Woodland Alliance] []
  This foothill and outcrop alliance primarily occurs along the eastern slope of the central Rocky Mountains and adjacent Great Plains, but extends from Colorado to Alberta. Stands have an open canopy dominated by *Juniperus scopulorum* or, less commonly, *Juniperus osteosperma* with understory characterized by a moderately dense to low perennial grass layer. If shrubs are present, then cover is low (<10%) and perennial grass cover exceeds shrub cover.
- **A3426 *Juniperus scopulorum* - *Juniperus osteosperma* / Shrub Understory Rocky Mountain Woodland Alliance** [Rocky Mountain Juniper - Utah Juniper / Shrub Understory Rocky Mountain Woodland Alliance] []
  This foothill and outcrop alliance primarily occurs along the eastern slope of the central Rocky Mountains and adjacent Great Plains, but extends from central Colorado to Alberta. Stands have an open to moderately dense tree canopy dominated by *Juniperus scopulorum* or, less commonly, dominated by *Juniperus osteosperma* with understory characterized by an open to moderately dense shrub cover. Shrub cover is typically >10%, but if less, then shrub cover exceeds herbaceous layer.
- **A3424 *Pinus flexilis* / Shrub Understory Central Rocky Mountain Woodland Alliance** [Limber Pine / Shrub Understory Central Rocky Mountain Woodland Alliance] []
  This foothill and outcrop woodland alliance occurs along the eastern slope of the central Rocky Mountains and adjacent Great Plains. It is dominated by *Pinus flexilis* and may be codominated by *Juniperus scopulorum* or, less commonly, *Juniperus osteosperma* with an understory characterized by an open to moderately dense shrub layer. Herbaceous cover is typically low with less than cover than the shrubs.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D.H. Knight (1994)
IVC Description Author: M.S. Reid and K.A. Schulz
IVC Description Date: 2013-05-30
IVC Acknowledgments:

A3427 Rocky Mountain Juniper - Utah Juniper / Grass Understory Rocky Mountain Woodland Alliance

[ ]

Juniperus scopulorum - Juniperus osteosperma / Grass Understory Rocky Mountain Woodland Alliance

Central Rocky Mountain Juniper / Grass Woodland

IVC Scientific Name: *Juniperus scopulorum - Juniperus osteosperma* / Grass Understory Rocky Mountain Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This woodland alliance occurs in foothill and lower montane zones in the Rocky Mountains from southern Alberta and northern Montana south to central Colorado and on escarpments across Wyoming extending out into the western Great Plains. The vegetation is characterized by an open-tree canopy or patchy woodland that is dominated by either *Juniperus scopulorum* or, less commonly, *Juniperus osteosperma* with a grassy understory. *Pinus flexilis* is absent or has low cover. The herbaceous layer ranges from low to moderately dense, and is typically dominated by perennial graminoids such as *Bouteloua gracilis, Hesperostipa comata, Koeleria macrantha, Piptatheropsis micrantha, Poa secunda*, or *Pseudoroegneria spicata*. If shrubs are present, then cover is low (<10%) and perennial grass cover exceeds shrub cover. These are rock outcrop, escarpment and patchy woodlands, occurring generally below continuous forests of *Pseudotsuga menziesii* or *Pinus ponderosa*. Elevation ranges from 1000-2400 m. Climatologically, the region is semi-arid and has a continental regime of hot summers and cold winters. Precipitation patterns are variable, but snow is common in winter, and spring rains are an important contributor. At higher elevations, it is limited to the most xeric aspects on rock outcrops, and at lower elevations to the relatively mesic north aspects. Slopes range from gentle to steep. Soils are typically thin, stony, clay or clay loam, commonly with exposed bedrock. The soil parent material varies with community association, but may be limestone, gneiss, sandstone, scoria, or shale. Stands are best developed on calcareous soils.

IVC Dynamics: Woodlands in this alliance are considered to be edaphic or topographic climax communities (Hansen et al. 1984, Tiedemann et al. 1987). *Juniperus scopulorum* is a long-lived species. Hansen and Hoffman (1988) found most trees in stands they sampled to be over 120 years, with some individuals older than 360 years. Fire can be used to control *Juniperus scopulorum* stands on rangeland because the species will not resprout after being burned (Wright et al. 1979, Fischer and Bradley 1987). Young individuals are most vulnerable to fire (Wright et al. 1979, Fischer and Bradley 1987). The effect of fire on a stand is largely dependent on the tree height and density, fine fuel load on the ground, weather conditions, and season (Wright et al. 1979). Trees are more vulnerable in open stands where fires frequently occur in the spring, the humidity is low, wind speeds are over 10-20 mph, and there are adequate fine fuels to carry fire (Wright et al. 1979, Fischer and Bradley 1987). Under other conditions, burns tend to be spotty with low tree mortality. Large trees are generally not killed unless fine fuels, such as tumbleweeds, have accumulated beneath the tree to provide fuel ladders for the fire to reach the crown. Closed-canopy stands rarely burn because they typically do not have enough understory or wind to carry a fire. Altered fire regimes, cutting trees for fencing, and improper grazing by livestock have significant impacts on the quality of sites. Grazing by livestock can modify the fire regime by removing the fine fuels that carry fire. Fire, livestock grazing, and trampling by hikers and vehicles disturb cryptogamic soil crusts that help maintain soil structure, reduce soil erosion, provide habitat for plants and preserve biological diversity. More study is needed to understand and manage these woodlands.

IVC Environment: This foothill and outcrop alliance occurs in foothill and lower montane zones in the Rocky Mountains from southern Alberta and northern Montana south to central Colorado and on escarpments across Wyoming extending out into the western Great Plains. These are rock outcrop, escarpment and patchy woodlands, generally below continuous montane forests of *Pseudotsuga menziesii* or *Pinus ponderosa*. Elevation ranges from 1000-2400 m. Climatologically, the region is semi-arid and has a continental regime of hot summers and cold winters. Precipitation patterns are variable, but snow is common in winter, and spring rains are an important contributor. Annual precipitation is 40-60 cm. These woodlands are restricted to shallow soils and fractured bedrock derived from a variety of parent material, including limestone, sandstone, dolomite, granite, lava, shale and colluvium. Soils have a high rock component (typically over 50% cover) and are coarse- to fine-textured, often gravelly and are best developed calcareous soils. Slopes are typically moderately steep to steep. At higher elevations, it is limited to the most xeric aspects on rock outcrops, and at lower elevations to the relatively mesic north aspects.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in foothill and lower montane zones in the Rocky Mountains from southern Alberta and northern Montana south to central Colorado and on escarpments across Wyoming extending out into the western Great Plains and the Black Hills. This alliance generally occurs outside of the range of *Pinus edulis*, which is not present.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, ID, MT, ND, NE, OK, SD, TX?, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A3426 Rocky Mountain Juniper - Utah Juniper / Shrub Understory Rocky Mountain Woodland Alliance

[ ]

Juniperus scopulorum - Juniperus osteosperma / Shrub Understory Rocky Mountain Woodland Alliance

Central Rocky Mountain Juniper / Shrub Woodland

IVC Scientific Name: *Juniperus scopulorum - Juniperus osteosperma* / Shrub Understory Rocky Mountain Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This woodland alliance occurs in foothill and lower montane zones in the Rocky Mountains from southern Alberta and northern Montana south to central Colorado and on escarpments across Wyoming extending out into the western Great Plains. The vegetation is characterized by an open-tree canopy or patchy woodland that is dominated by either *Juniperus scopulorum* or, less commonly, *Juniperus osteosperma*. *Pinus flexilis* is absent or has low cover. The understory is characterized by open to moderately dense shrub cover (>10%) composed of *Artemisia nova, Artemisia tridentata, Cercocarpus ledifolius, Cercocarpus montanus*, or *Purshia tridentata*. Total shrub cover is typically >10%, but if less, then shrub cover exceeds herbaceous layer. These are rock outcrop, escarpment and patchy woodlands, occurring generally below continuous forests of *Pseudotsuga menziesii* or *Pinus ponderosa*. Elevation ranges from 1000-2400 m. Climatologically, the region is semi-arid and has a continental regime of hot summers and cold winters. Precipitation patterns are variable, but snow is common in winter, and spring rains are an important contributor. At higher elevations, it is limited to the most xeric aspects on rock outcrops, and at lower elevations to the relatively mesic north aspects. Slopes range from gentle to steep. Soils are typically thin, stony, clay or clay loam, commonly with exposed bedrock. The soil parent material varies with community association, but may be limestone, gneiss, sandstone, scoria, or shale. Stands area best developed on calcareous soils.

IVC Dynamics: Woodlands in this alliance are considered to be edaphic or topographic climax communities (Hansen et al. 1984, Tiedemann et al. 1987). *Juniperus scopulorum* is a long-lived species. Hansen and Hoffman (1988) found most trees in stands they sampled to be over 120 years, with some individuals older than 360 years. Fire can be used to control *Juniperus scopulorum* stands on rangeland because the species will not resprout after being burned (Wright et al. 1979, Fischer and Bradley 1987). Young individuals are most vulnerable to fire (Wright et al. 1979, Fischer and Bradley 1987). The effect of fire on a stand is largely dependent on the tree height and density, fine fuel load on the ground, weather conditions, and season (Wright et al. 1979). Trees are more vulnerable in open stands where fires frequently occur in the spring when the humidity is low, wind speeds are over 10-20 mph, and there is adequate fine fuels to carry fire (Wright et al. 1979, Fischer and Bradley 1987). Under other conditions, burns tend to be spotty with low tree mortality. Large trees are generally not killed unless fine fuels, such as tumbleweeds, have accumulated beneath the tree to provide fuel ladders for the fire to reach the crown. Closed-canopy stands rarely burn because they typically do not have enough understory or wind to carry a fire. Altered fire regimes, cutting trees for fencing, and improper grazing by livestock have significant impacts on the quality of sites. Grazing by livestock can modify the fire regime by removing the fine fuels that carry fire. Fire, livestock grazing, and trampling by hikers and vehicles disturb biological soil crusts that help maintain soil structure, reduce soil erosion, provide habitat for plants and preserve biological diversity. More study is needed to understand and manage these woodlands.

IVC Environment: These are rock outcrop, escarpment and patchy woodlands, occurring generally below continuous forests of *Pseudotsuga menziesii* or *Pinus ponderosa* from the lower montane zone in the Rocky Mountains and Black Hills to breaks in the Great Plains. Elevation ranges from 1000-2400 m. Climatologically, the region is semi-arid and has a continental regime of hot summers and cold winters. Precipitation patterns are variable, but snow is common in winter, and spring rains are an important contributor. At higher elevations, it is limited to the most xeric aspects on rock outcrops, and at lower elevations to the relatively mesic north aspects. Slopes range from gentle to steep. Soils are typically thin, stony, clay or clay loam, commonly with exposed bedrock. The soil parent material varies with community association, but may be limestone, gneiss, granite,

sandstone, scoria, or shale. Stands are best developed on calcareous soils. Exposed bedrock is common and many stands have over 50% bare soil. Soil pH ranges from slightly acidic to alkaline.

Adjacent vegetation at higher elevations is woodland and forest dominated by *Pinus ponderosa, Pinus flexilis*, or *Pseudotsuga menziesii*. Adjacent vegetation at lower elevations includes shrubland dominated by *Artemisia* spp., *Cercocarpus* spp., or *Purshia tridentata*, riparian woodland dominated by *Pseudotsuga menziesii*, or dry prairie. The transition can be abrupt or an extended ecotone where the woodland grades into a savanna.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in foothill and lower montane zones in the Rocky Mountains from southern Alberta and northern Montana south to central Colorado and on escarpments across Wyoming extending out into the western Great Plains.
IVC Nations: CA,US
IVC States/Provinces: AB, CO, ID, MT, SD, UT, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A3424 Limber Pine / Shrub Understory Central Rocky Mountain Woodland Alliance

[ ]
Pinus flexilis / Shrub Understory Central Rocky Mountain Woodland Alliance
Central Rocky Mountain Limber Pine / Shrub Woodland

IVC Scientific Name: *Pinus flexilis* / Shrub Understory Central Rocky Mountain Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This foothill and outcrop woodland alliance occurs along the eastern slope of the central and northern Rocky Mountains and on escarpments in the northwestern Great Plains. Stands have an open canopy dominated by *Pinus flexilis* and may be codominated by *Juniperus scopulorum* or, less commonly, *Juniperus osteosperma*. The understory typically has an open to moderately dense shrub layer (10-40% cover). Shrubs such as *Amelanchier utahensis, Artemisia tridentata, Cercocarpus montanus, Purshia tridentata*, and *Rhus trilobata* are common. Total shrub cover is typically >10%, but if less, then shrub cover exceeds herbaceous layer. The herbaceous layer is sparse to moderately dense and is composed primarily of graminoids such as *Achnatherum hymenoides, Bouteloua gracilis, Festuca campestris, Leucopoa kingii, Koeleria macrantha*, and *Pseudoroegneria spicata*. Scattered forbs may be present. Stands occur intermittently from lower montane and foothill zones in the central and northern Rocky Mountains, and on geographic breaks in the northwestern Great Plains. Elevations range from 850-2400 m. Sites are typically xeric on exposed, windswept rocky slopes and ridges. Some stands are on eroded substrates and resemble "badlands" while others may occur on lavaflows. These open woodlands occur on all aspects, but are most common on dry south- and west-facing slopes. Soils are typically shallow, skeletal and coarse-textured, such as gravelly, sandy loams or loams, but may include alkaline clays. Exposed bedrock is common and many stands have over 50% bare soil.
IVC Dynamics: Although some of the conifers that are typically codominant in *Pinus flexilis* stands are late-successional species, they are not likely to displace *Pinus flexilis*. This is because most of these stands occur on harsh sites where *Pinus flexilis* is more competitive than most other conifer species. These stands are generally considered to be topographic or edaphic "climax" stands (Cooper 1975, Eyre 1980). Even in stands at lower elevations, such as prairie breaks, it is unlikely that other coniferous

species will become dominant (Eyre 1980). Because *Pinus flexilis* occurs over a broad range of elevations, it can also be important as a post-fire seral species on drier sites in the Rocky Mountains (Cooper 1975, Peet 1988). Peet (1978a) reported apparent competitive displacement with *Pinus flexilis* in Colorado. He noted that *Pinus flexilis* may dominate xeric sites from low to high elevations, except where *Pinus aristata* or *Pinus albicaulis* occur. There, *Pinus flexilis* is largely restricted to lower elevation, rocky sites. Peet (1978a) also reported that *Pinus flexilis* occurs in the less xeric *Pinus contorta* and *Pinus ponderosa* habitats.

Birds and small mammals often eat and cache the large, wingless pine seeds. Most important is the Clark's nutcracker, which can transport the seeds long distances and cache them on exposed windswept sites (Lanner and Vander Wall 1980). This results in the regeneration of pines in clumps from forgotten caches (Eyre 1980, Steele et al. 1983).

IVC Environment: Woodlands included in this alliance occur intermittently from lower montane and foothill zones in central and northern Rocky Mountains, and on geographic breaks in the northwestern Great Plains. Elevations range from 850-2400 m. Sites are typically xeric on exposed, windswept rocky slopes and ridges. Some stands are on eroded substrates and resemble "badlands" while others may occur on lavaflows. These open woodlands occur on all aspects, but are most common on dry south- and west-facing slopes. Soils are typically shallow, skeletal and coarse-textured, such as gravelly, sandy loams or loams, but may include alkaline clays. Exposed bedrock is common and many stands have over 50% bare soil.

Adjacent vegetation at high elevations includes lower montane stands that are dominated by *Pinus ponderosa* or *Pseudotsuga menziesii*. At lower elevations adjacent vegetation may include *Juniperus*-dominated woodlands and savannas; shrublands dominated by species of *Artemisia, Cercocarpus*, or *Purshia tridentata*; or dry prairie. The transition can be abrupt or an extended ecotone where patchy or open woodlands grade into a savanna and then prairie with scattered trees.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in foothill and lower montane zones in the Rocky Mountains from southern Alberta and northern Montana south to northern Colorado and on escarpments across Wyoming extending out into the western Great Plains.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, ID, MT, ND, OR, SD, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-01-08

IVC Acknowledgments:

M020 Rocky Mountain Subalpine - High Montane Forest

Forêts subalpines et des montagnes de haute altitude des Rocheuses

IVC Colloquial Name: Rocky Mountain Subalpine-Upper Montane Forest & Woodland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M020 describes North American continental, temperate subalpine and high montane treed vegetation of the Western Cordillera. The Canadian expression includes mid- to high-elevation forests and woodlands of southern and central British Columbia (BC), southern and west-central Alberta, and southwestern Saskatchewan. Canopies are usually evergreen coniferous, although some cold-deciduous broad-leaved species are found in mid-elevation montane forests and local occurrences of cold-deciduous conifer species are found in southern parts of the Canadian range. Stands of M020 vary from closed forests to very open short-statured woodlands, becoming more open and patchy with higher elevation and often occurring as tree islands or ribbons in a matrix of grasslands, meadows or shrublands at elevational treeline. At the highest elevations or on the sites most exposed to wind, trees can be "flagged" or damaged by blowing snow and ice crystals as well as severe cold. Avalanches, windthrow, insect infestations and stand-replacing fires are the most widespread forms of natural disturbance. Dominant tree species include subalpine fir (*Abies lasiocarpa*), Engelmann spruce (*Picea engelmannii*), lodgepole pine (*Pinus contorta* var. *latifolia*) and interior spruce (*Picea engelmannii x glauca*). Rocky Mountain Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) and trembling aspen (*Populus tremuloides*) are common in mid-elevation montane forests, especially on warm aspects. Mountain hemlock (*Tsuga mertensiana*), limber pine (*Pinus flexilis*), whitebark pine (*Pinus albicaulis*), subalpine larch (*Larix lyalli*) and western larch (*L. occidentalis*) are characteristic trees in some areas. Understory species composition is highly diverse and varies with environmental conditions. The ericaceous species mountain huckleberry (*Vaccinium membranaceum*), white-flowered rhododendron (*Rhododendron albiflorum*), grouseberry (*V. scoparium*) and false azalea (*Menziesia ferruginea*) are common and often dominant. Characteristic herbs include arnicas (*Arnica cordifolia, A. latifolia*), five-leaved dwarf bramble (*Rubus pedatus*), three-leaved foamflower (*Tiarella trifoliata*), Sitka valerian (*Valeriana sitchensis*), single-flowered clintonia (*Clintonia uniflora*), oak fern (*Gymnocarpium dryopteris*) and green false hellebore (*Veratrum viride*). Mosses and liverworts include red-stemmed feathermoss (*Pleurozium schreberi*), broom mosses (*Dicranum* spp.), ragged mosses (*Brachythecium* spp.) and leafy liverworts (*Barbilophozia* spp.).

In Canada, M020 occurs within the mountains and high plateaux of interior British Columbia, in the Rocky Mountains, in the foothills of southwestern Alberta and in the Cypress Hills of southeastern Alberta and southwestern Saskatchewan. Elevations extend from approximately 850 mASL to 2300 mASL, depending on location. The macroclimate is dry to subhumid, temperate and continental, with cold, snowy winters and short, cool summers. However, subregional orographic effects create highly variable climatic regimes: mean annual temperatures vary from -1°C to +3°C; annual precipitation varies from 400 mm to >2000 mm, much of it falling as snow. All parts of the range experienced Pleistocene glaciation; soils are mostly Luvisols, Brunisols and Podzols developed in glacial surficial materials.

Three subtypes characterize regional variation in the Canadian range of M020. Subtype CM020a [Dry Rocky Mountain Mid-Montane Forest] characterizes montane forests that occur at mid-elevations in relatively drier, warmer climates of southern BC, western Alberta and southwestern Saskatchewan. CM020b [Dry Rocky Mountain High Montane & Subalpine Forest] occurs at higher elevations in the drier climates of southern BC and southwestern Alberta. CM020c [Humid Rocky Mountain High Montane & Subalpine Forest] occurs over much of the range of M020 in BC and west-central Alberta at higher elevations in more humid climates.

IVC Geographic Range: This macrogroup is found throughout the Rocky Mountains, from western Texas and southern New Mexico north into southern Alberta and central British Columbia, the isolated highlands of South Dakota, west into the scattered mountain ranges of the Colorado Plateau, Great Basin and Mojave Desert, and into the eastern slopes of the Sierra Nevada, Cascades, and small areas of Olympic Peninsula.

IVC Nations: CA,MX,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, ND, NM, NV, ON, OR, SD, SK, TX, UT, WA, WY, YT

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: *Picea glauca* and *P. engelmannii* are closely related wind-pollinated species that hybridize extensively within most of the Canadian range of M020. Genetically, most individual trees have some degree of hybridization in this area. *P. glauca* is adapted to (generally) low-elevation boreal and subarctic environments, while *P. engelmannii* is adapted to high elevation environments south of the boreal zone. The fertile hybrids (*P. engelmannii x glauca*) are ecologically similar to the parent species but are typically dominant at intermediate elevations. In the context of M020, *P. engelmannii* is considered the main spruce species in the high montane and subalpine forests described by subtypes CM020b [Dry Rocky Mountain High Montane & Subalpine Forest] & CM020c [Humid Rocky Mountain High Montane & Subalpine Forest], and *P. engelmannii x glauca* is the main species in the mid-elevation montane forests of CM020a [Dry Rocky Mountain Mid-Montane Forest]. *P.*

glauca occurs at the lowest elevations (approximately <1100 mASL) of CM020a in Alberta and in the Cypress Hills. In the data summaries on pp 10 and 11, species records for *Picea* spp. are reported accordingly, except *P. glauca* records are pooled with those of *P. engelmannii x glauca* for CM020a.

Abies lasiocarpa here refers to both *A. lasiocarpa* (subalpine fir) and *A. bifolia* (Rocky Mountain alpine fir), as well as their hybrids, as recognized by VASCAN.

Pseudotsuga menziesii here refers to variety *glauca* (Rocky Mountain Douglas-fir).

Pinus contorta here refers to variety *latifolia* (lodgepole pine).

"Montane" vegetation occurs in mountainous terrain below the elevational treeline. The term "subalpine" is applied to the transitional band between the treed "montane" and the non-treed "alpine" elevational zones. The vegetation of M020 occurs at mid- to high elevations in the mountains of the North American Western Cordillera, including forests and woodlands of "mid-montane", "high montane" and "subalpine" vegetation zones. Often, lower elevations in this mountainous region are dominated by vegetation that is described in M501 [Central Rocky Mountain Dry Lower Montane - Foothill Forest] or M500 [Central Rocky Mountain Mesic Lower Montane Forest]; these are termed "lower montane" forests and woodlands by the CNVC. Although valleys and lower slopes in some mountainous areas are occupied by vegetation of M020, we employ these terms to describe the typical elevational sequence of vegetation in the Canadian Western Cordillera.

Groups in Canada:

- **G220 Rocky Mountain Lodgepole Pine Forest & Woodland []**
- **G219 Rocky Mountain Subalpine Dry-Mesic Spruce - Fir Forest []**
- **G218 Rocky Mountain Subalpine Moist-Mesic Spruce - Fir Forest []**
- **G222 Rocky Mountain Subalpine-Montane Aspen Forest []**
- **G345 Central Rocky Mountain White Spruce Forest []**
- **G223 Central Rocky Mountain Whitebark Pine - Subalpine Larch Forest & Woodland []**
- **G101 Rocky Mountain Limber Pine Subalpine-Montane Woodland []**

CNVC Concept Author: D. Meidinger, W. MacKenzie, K. Baldwin, USNVC
CNVC Concept Date: 2015-04-01
CNVC Description Author: D. Meidinger and K. Baldwin
CNVC Description Date: 2017-07-01
IVC Primary Concept Source: R.F. Daubenmire (1943)
IVC Description Author: M.S. Reid, K.A. Schulz, and M.E. Hall
IVC Description Date: 2015-05-14
IVC Acknowledgments:

G220 Rocky Mountain Lodgepole Pine Forest & Woodland

[ ]

IVC Colloquial Name: Rocky Mountain Lodgepole Pine Forest & Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group occupies upper montane to subalpine elevations of the Rocky Mountains, north into the Canadian Rockies and east into mountain "islands" of north-central Montana. Parent materials are typically well-drained, gravelly, coarse-textured, acidic, and are rarely formed from calcareous parent materials. Other stands occur over excessively well-drained pumice deposits, glacial till and alluvium on valley floors where there is cold-air accumulation, warm and droughty shallow soils over fractured quartzite bedrock, and shallow moisture-deficient soils with a significant component of volcanic ash. In these conditions where other conifers cannot become established, stands of *Pinus contorta* may persist for longer periods. These forests are dominated by *Pinus contorta* with shrub, grass, or barren understories. Sometimes there are intermingled mixed conifer/*Populus tremuloides* stands, with the latter occurring with inclusions of deeper, typically fine-textured soils. The shrub stratum may be conspicuous to absent; common species include *Arctostaphylos uva-ursi, Artemisia tridentata, Juniperus communis, Ceanothus velutinus, Linnaea borealis, Mahonia repens, Purshia tridentata, Spiraea betulifolia, Spiraea douglasii, Shepherdia canadensis, Vaccinium scoparium, Vaccinium cespitosum, Vaccinium membranaceum, Symphoricarpos albus*, and *Ribes* spp. Common herbaceous species include *Festuca idahoensis, Elymus elymoides, Calamagrostis rubescens, Carex geyeri, Carex pensylvanica*, and *Carex rossii*.

IVC Dynamics: *Pinus contorta* is an aggressively colonizing, shade-intolerant conifer which usually occurs in lower subalpine forests in the major ranges of the western United States. Establishment is episodic and linked to stand-replacing disturbances, primarily fire. The incidence of serotinous cones varies within and between varieties of *Pinus contorta*, being most prevalent in Rocky Mountain populations. Closed, serotinous cones appear to be strongly favored by fire, and allow rapid colonization of

fire-cleared substrates (Burns and Honkala 1990a). Hoffman and Alexander (1980, 1983) report that in stands where *Pinus contorta* exhibits a multi-aged population structure, with regeneration occurring, there is typically a higher proportion of trees bearing nonserotinous cones. The dominance of *Pinus contorta* in associations in this group is related to fire history and topo-edaphic conditions (Pfister et al. 1977, Hoffman and Alexander 1980, Steele et al. 1981, Mauk and Henderson 1984). Following stand-replacing fires, *Pinus contorta* will rapidly colonize and develop into dense stands of even-aged trees. These stands, while frequently persistent for more than 100 years, may succeed to spruce-fir forests or woodlands. Most (but not all) forests in this group are early- to mid-successional forests which developed following fires.

Some *Pinus contorta* forest associations occur, and will persist, on sites that are too extreme for other conifers to establish. These include excessively well-drained pumice deposits (Volland 1976), glacial till and alluvium on valley floors where there is cold-air accumulation (Steele et al. 1981), warm and droughty shallow soils over fractured quartzite bedrock (Mauk and Henderson 1984), well-drained to xeric stabilized sand dunes (Jenny et al. 1969, Kumler 1969), and shallow moisture-deficient soils with a significant component of volcanic ash (Cooper et al. 1987). Some *Pinus contorta* forests can be persistent for hundreds of years, a result of a lack of seed source or the competitive exclusion of other conifer species (Moir 1969a, Pfister et al. 1977, Despain 1973b, Hoffman and Alexander 1983, Cooper et al. 1987), or the frost tolerance of *Pinus contorta* seedlings and mature trees, which allows the development of monotypic stands in frost-prone areas (Steele et al. 1981, Burns and Honkala 1990a).

IVC Environment: This group occupies upper montane to subalpine elevations of the Rocky Mountains, north into the Canadian Rockies and east into mountain "islands" of north-central Montana. Elevations range from just over 900 m in the northeastern Cascades to well over 3100 m in the Uinta Mountains in Utah and the southern Colorado Rockies.

Climate: Temperature regimes are extreme throughout this region and frequent growing season frosts occur. Annual precipitation in these montane and subalpine habitats ranges from less than 40 cm to over 150 cm, usually with the majority falling as snow. Late-melting snowpacks provide the majority of growing season moisture.

Soil/substrate/hydrology: Stands typically occur over well-drained, gravelly, coarse-textured, acidic, and rarely formed from calcareous parent materials occasionally with inclusions of deeper, typically fine-textured soils. Other stands occur over excessively well-drained pumice deposits, glacial till and alluvium on valley floors where there is cold-air accumulation, warm and droughty shallow soils over fractured quartzite bedrock, and shallow moisture-deficient soils with a significant component of volcanic ash.

DISTRIBUTION

IVC Geographic Range: This group occurs at upper montane to subalpine elevations of the Rocky Mountains, from Colorado north into the Canadian Rockies, west across Idaho into the eastern Cascades in Washington, the Blue Mountains in Oregon, and east onto mountain "islands" of north-central Montana.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA?, CO, ID, MT, NV, OR, UT, WA, WY, YT

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3366 *Pinus contorta* Rocky Mountain Forest Alliance** [Lodgepole Pine Rocky Mountain Forest Alliance] []
  This alliance is characterized by forests dominated by *Pinus contorta* and occurs in the upper montane and subalpine zones of the Rocky Mountains and the eastern Cascade Range.
- **A4079 *Pinus contorta* Rocky Mountain Woodland Alliance** [Lodgepole Pine Rocky Mountain Woodland Alliance] []
  This woodland alliance is characterized by open-canopy woodlands dominated by *Pinus contorta* and is found in mainly montane and subalpine zones of the northern Rocky Mountains and eastern Cascade Range, but extends into the southern Rocky Mountains.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D.G. Despain (1973b)
IVC Description Author: M.E. Hall
IVC Description Date: 2013-05-30
IVC Acknowledgments: D. Tart

A3366 Lodgepole Pine Rocky Mountain Forest Alliance

[ ]
Pinus contorta Rocky Mountain Forest Alliance
Rocky Mountain-East Cascadian Lodgepole Pine Forest

IVC Scientific Name: *Pinus contorta* Rocky Mountain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is found in the upper montane and subalpine zones of southern Rocky Mountains, north to the Canadian Rocky Mountains and west into the Cascade Range. Forests included in this alliance are characterized by a closed to open tree canopy that is dominated (>90% cover) by the conifer *Pinus contorta*. Stands may be even-aged or multi-aged depending on geographic location, edaphic characteristics, and how the stands were established following wildfire. Shrub and herbaceous layers may be present or absent depending on tree canopy. Other tree species such as *Abies lasiocarpa, Picea engelmannii, Pinus albicaulis, Pinus flexilis, Populus tremuloides, Pseudotsuga menziesii, Tsuga heterophylla*, or *Tsuga mertensiana* may be present to abundant as seedlings and saplings, or as trees, but with low abundance. On warmer sites, *Abies grandis, Thuja plicata*, and *Tsuga heterophylla* may be also present. Associated shrub and herbaceous species vary across the range of this alliance. Common subalpine and montane shrub species include *Arctostaphylos nevadensis, Arctostaphylos patula, Arctostaphylos uva-ursi, Ceanothus velutinus, Linnaea borealis, Mahonia repens, Purshia tridentata, Ribes* spp., *Spiraea betulifolia, Spiraea douglasii, Shepherdia canadensis, Symphoricarpos albus, Vaccinium cespitosum, Vaccinium membranaceum*, and *Vaccinium scoparium*. Herbaceous cover is very sparse. The cover of the herbaceous stratum can be dominated by either graminoids or perennial forbs and tends to vary inversely with shrub cover. Important graminoids include *Achnatherum occidentale, Carex pensylvanica, Carex geyeri, Carex rossii, Calamagrostis rubescens, Danthonia californica*, and *Elymus glaucus*. Important forbs are *Arnica cordifolia, Chimaphila umbellata, Orthilia secunda, Osmorhiza berteroi, Pedicularis racemosa, Thalictrum* spp., and *Xerophyllum tenax*. Elevations range from just over 900 m in the eastern Cascades to well over 3100 m in the Rocky Mountains. This alliance occurs in a broad array of habitats.

IVC Dynamics: *Pinus contorta* is aggressively colonizing and shade-intolerant. Establishment is episodic and linked to stand-replacing disturbances, primarily fire. The incidence of serotinous cones varies within and among varieties of *Pinus contorta*, being most prevalent in Rocky Mountain populations. Closed, serotinous cones appear to be strongly favored by fire and allow rapid colonization of fire-cleared substrates (Burns and Honkala 1990a). Hoffman and Alexander (1980, 1983) report that in stands where *Pinus contorta* exhibits a multi-aged population structure, with regeneration occurring, there is typically a higher proportion of trees bearing nonserotinous cones. Chappell et al. (1997) report that where these forests are found on pumice, *Pinus contorta* dominance is maintained by periodic disturbance from both fires and insect infestations. Without fires and insects, stands will become dense forests and quite barren. Unlike most *Pinus contorta* forests, most of these stands are not seral to another tree species (Chappell et al. 1997). Fire is infrequent in coastal stands, but shifting sand substrates and wind-borne salt spray act to discourage competition and provide suitable conditions for perpetuation of *Pinus contorta* (Jenny et al. 1969, Kumler 1969, Chappell et al. 1997).

IVC Environment: *Pinus contorta* occupies the broadest array of habitats of any coniferous species in the western United States, and forests dominated by this species occur in widely varying ecological settings. This includes upland plant associations found in the montane and subalpine zone of the Rocky Mountains and eastern Cascades. Elevations range from just over 900 m in the Cascades to well over 3100 m in the Rockies. Temperature regimes are extreme throughout this region and frequent growing-season frosts occur. Annual precipitation in these montane and subalpine habitats ranges from less than 40 cm to over 150 cm, usually with the majority falling as snow. Late-melting snowpacks provide the majority of growing-season moisture, particularly in the Cascades. The dominance of *Pinus contorta* in associations in this alliance is related to fire history and topo-edaphic conditions (Pfister et al. 1977, Hoffman and Alexander 1980, Steele et al. 1981, Mauk and Henderson 1984). Following stand-replacing fires, *Pinus contorta* will rapidly colonize and develop into dense stands of even-aged trees. Over time, many of these stands can succeed to dominance by other more shade-tolerant conifer species. Most forests in this alliance are early- to mid-successional forests which developed following fires.

Some *Pinus contorta* forest associations occur, and will persist, on sites that are too extreme for other conifers to establish. These include excessively well-drained pumice deposits (Volland 1976), glacial till and alluvium on valley floors where there is

cold air accumulation (Steele et al. 1981), warm and droughty shallow soils over fractured quartzite bedrock (Mauk and Henderson 1984), well-drained to xeric stabilized sand dunes (Jenny et al. 1969, Kumler 1969), and shallow moisture-deficient soils with a significant component of volcanic ash (Cooper et al. 1987). Some *Pinus contorta* forests can be persistent for hundreds of years, a result of a lack of seed source or the competitive exclusion of other conifer species (Moir 1969a, Pfister et al. 1977, Despain 1983, Hoffman and Alexander 1983, Cooper et al. 1987), or the frost tolerance of *Pinus contorta* seedlings and mature trees, which allows the development of monotypic stands in frost-prone areas (Steele et al. 1981, Burns and Honkala 1990a). Soils supporting these forests are typically well-drained, gravelly, and have textures ranging from silty to sands and gravels. They are acidic and rarely are formed from calcareous parent materials.

DISTRIBUTION

IVC Geographic Range: These forests occur from the southern Rocky Mountains north to the Canadian Rocky Mountains, east to the Big Horn Mountains of Wyoming and west to the eastern Cascade Range of Washington and Oregon.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA?, CO, ID, MT, NV?, OR, UT, WA, WY, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000153 *Pinus contorta / Linnaea borealis* Forest** [Lodgepole Pine / Twinflower Forest] []
  G5 (1996-02-01) AB, MT, OR, WY
- **CEGL002733 *Pinus contorta / Vaccinium vitis-idaea - Arctostaphylos uva-ursi / Pleurozium schreberi* - (*Cladonia* spp.) Forest** [Lodgepole Pine / Lingonberry - Kinnikinnick / Schreber's Big Red-stem Moss - (Cup Lichen species) Forest] []
  G4 (2004-10-13) AB, BC, YT
- **CEGL000168 *Pinus contorta / Vaccinium cespitosum* Forest** [Lodgepole Pine / Dwarf Bilberry Forest] []
  G5 (1996-02-01) AB, CO, ID, MT, OR, UT, WY
- **CEGL002731 *Pinus contorta - Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi* Forest** [Lodgepole Pine - Black Spruce / Lingonberry / Schreber's Big Red-stem Moss Forest] []
  G4 (2004-10-13) AB, BC, YT
- **CEGL005916 *Pinus contorta / Clintonia uniflora* Forest** [Lodgepole Pine / Bride's Bonnet Forest] []
  G5 (2004-03-02) AB, ID, MT, OR, WA
- **CEGL005928 *Pinus contorta / Menziesia ferruginea* Forest** [Lodgepole Pine / Rusty Menziesia Forest] []
  G3G4 (2004-04-05) AB?, ID, MT
- **CEGL000164 *Pinus contorta / Spiraea betulifolia* Forest** [Lodgepole Pine / Shinyleaf Meadowsweet Forest] []
  G3G4 (1996-02-01) AB, ID, MT, WY
- **CEGL005923 *Pinus contorta / Vaccinium cespitosum / Clintonia uniflora* Forest** [Lodgepole Pine / Dwarf Bilberry / Bride's Bonnet Forest] []
  G4? (2004-03-02) AB, ID?, MT, WA
- **CEGL005913 *Pinus contorta / Vaccinium membranaceum / Xerophyllum tenax* Forest** [Lodgepole Pine / Thinleaf Huckleberry / Common Beargrass Forest] []
  G4G5 (2004-03-02) AB, ID, MT, OR?, WA
- **CEGL000174 *Pinus contorta / Vaccinium scoparium / Calamagrostis rubescens* Forest** [Lodgepole Pine / Grouse Whortleberry / Pinegrass Forest] []
  G3Q (1996-02-01) BC, ID, MT, OR, WA, WY
- **CEGL005922 *Pinus contorta / Menziesia ferruginea / Clintonia uniflora* Forest** [Lodgepole Pine / Rusty Menziesia / Bride's Bonnet Forest] []
  G4G5 (2004-03-02) AB, ID, MT, OR?, WA?
- **CEGL005924 *Pinus contorta / Vaccinium scoparium / Xerophyllum tenax* Forest** [Lodgepole Pine / Grouse Whortleberry / Common Beargrass Forest] []
  G3G4 (2004-03-03) AB, ID, MT, WA, WY?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: F.H. Eyre (1980)
IVC Description Author: M.E. Hall
IVC Description Date: 2019-01-08
IVC Acknowledgments:

A4079 Lodgepole Pine Rocky Mountain Woodland Alliance

[ ]
Pinus contorta Rocky Mountain Woodland Alliance
Rocky Mountain Lodgepole Pine Woodland

IVC Scientific Name: *Pinus contorta* Rocky Mountain Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This woodland alliance includes upland plant associations found mainly in the montane and subalpine zones of the northern Rocky Mountains and eastern Cascade Range, but some associations extend into the southern Rocky Mountains. *Pinus contorta* is usually the only mature tree in these woodlands, but occasionally other conifers will be present. A short-shrub layer is usually present, but is often patchy and rarely has substantial cover. Important shrubs and dwarf-shrubs include *Amelanchier alnifolia, Arctostaphylos patula, Arctostaphylos uva-ursi, Artemisia tridentata, Juniperus communis, Mahonia repens, Paxistima myrsinites, Purshia tridentata*, and *Ribes cereum*. The herbaceous layer is typically sparse and has low species richness. Cespitose graminoids or forbs tolerant of dry conditions are dominant. Diagnostic of this widespread woodland alliance is the dominance of *Pinus contorta* in a relatively open tree canopy (<60% cover) and the lack of significant *Abies lasiocarpa* regeneration. Sites include canyons, ridges, swales, plateaus, toeslopes, basins, flats, and benches. Slopes and aspects are not consistent. Soils are variable, but tend to be coarse-textured and well-drained. The open tree canopy is related to unusually dry or cold topo-edaphic situations such as excessively well-drained pumice deposits, shallow rocky soils with little water-holding capacity often on warm aspects, and well-drained to xeric stabilized sand dunes.

IVC Dynamics: In *Pinus contorta* forests, establishment is episodic and linked to stand-replacing disturbances. The reproductive and seral dynamics of *Pinus contorta* woodlands are less well-described. Chappell et al. (1997) report that *Pinus contorta* woodlands on very deep Mazama pumice deposits in central Oregon are maintained by periodic disturbances from wildfire and insect infestations. Without fires and insects, stands become more closed-canopy forests and quite barren. The incidence of serotinous cones varies within and among varieties of *Pinus contorta*, being most prevalent in Rocky Mountain populations. Closed, serotinous cones appear to be strongly favored by fire, and allow rapid colonization of fire-cleared substrates (Burns and Honkala 1990a).

IVC Environment: *Pinus contorta* occupies the broadest array of habitats of any coniferous species in the western United States. This alliance occurs in the montane and subalpine zones of the Rocky Mountains and eastern Cascade Range with elevations ranging from just over 1200 m in the Cascades to over 3050 m in the Rockies. Temperature regimes are extreme throughout this region and frequent growing-season frosts occur. Annual precipitation in these montane and subalpine habitats ranges from less than 40 cm to over 150 cm annually, usually with the majority falling as snow. Late-melting snowpacks provide the majority of growing-season moisture, particularly in the Cascades. The dominance of *Pinus contorta* in associations in this alliance is related to fire history and topo-edaphic conditions (Pfister et al. 1977, Steele et al. 1983, Mauk and Henderson 1984, Hess and Alexander 1986). Following stand-replacing fires, *Pinus contorta* will rapidly colonize and dominate sites. Most woodlands in this alliance are early- to mid-successional, having developed following fires. However, the persistence of these woodland associations is related to their occurrence on unusually dry or cold topo-edaphic situations. These include excessively well-drained pumice deposits in central Oregon (Volland 1976), obsidian-sand benchlands of alluvial origin in the Yellowstone area of Montana (Pfister et al. 1977), warm and droughty soils with gravelly loam textures (Mauk and Henderson 1984, Hess and Alexander 1986), and well-drained to xeric stabilized sand dunes (Alpert 1984). Slopes and aspects are variable, and can include moderately steep to very steep ridge and canyon slopes, gentle to moderate slopes, ridges and swales, plateaus, butte toeslopes, basins, flats, and benches.

DISTRIBUTION

IVC Geographic Range: Associations of this alliance occur mainly in the montane and subalpine zones of the northern Rocky Mountains and eastern Cascade Range, although some associations extend into the southern Rocky Mountains.
IVC Nations: CA,US
IVC States/Provinces: AB, CO, ID, MT, NV?, OR, UT, WA?, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005915 *Pinus contorta / Heracleum maximum* Woodland** [Lodgepole Pine / Common Cow-parsnip Woodland] []
  G3? (2004-03-02) AB, MT
- **CEGL005921 *Pinus contorta / Clintonia uniflora - Xerophyllum tenax* Woodland** [Lodgepole Pine / Bride's Bonnet - Common Beargrass Woodland] []
  G4G5 (2004-03-02) AB, ID, MT, OR?, WA?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: F.H. Eyre (1980)
IVC Description Author: M. E. Hall
IVC Description Date: 2014-01-08
IVC Acknowledgments:

G219 Rocky Mountain Subalpine Dry-Mesic Spruce - Fir Forest

[ ]

IVC Colloquial Name: Rocky Mountain Subalpine Dry-Mesic Spruce - Fir Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Engelmann spruce and subalpine fir forests comprise a substantial part of the subalpine forests of the Cascades and Rocky Mountains from southern British Columbia east into Alberta, and south into New Mexico and the Intermountain West region. They also occur on mountain "islands" of north-central Montana. They are the matrix forests of the subalpine zone, with elevations ranging from 1275 m in its northern distribution to 3355 m in the south (4100-11,000 feet). Despite their wide distribution, the tree canopy characteristics are remarkably similar, with *Picea engelmannii* and *Abies lasiocarpa* dominating either mixed or alone. *Pseudotsuga menziesii* may persist in occurrences of this group for long periods without regeneration. *Pinus contorta* is common in many occurrences, and patches of pure *Pinus contorta* are not uncommon, as well as mixed conifer/*Populus tremuloides* stands. In some areas, such as Wyoming, *Picea engelmannii*-dominated forests are on limestone or dolomite, while nearby codominated spruce-fir forests are on granitic or volcanic rocks. Upper elevation examples may have more woodland physiognomy, and *Pinus albicaulis* or *Pinus flexilis* can be a seral component. Relatively xeric understory species are diagnostic of this group and may include *Amelanchier alnifolia, Juniperus communis, Mahonia repens, Physocarpus malvaceus, Shepherdia canadensis, Vaccinium myrtillus*, or *Vaccinium scoparium*. In the Bighorn Mountains, *Artemisia tridentata* is a common shrub. These forests often represent the highest elevation forests in an area. Sites within this group are cold year-round, and precipitation is predominantly in the form of snow, which may persist until late summer. Snowpacks are deep and late-lying, and summers are cool. Frost is possible almost all summer and may be common in restricted topographic basins and benches. Disturbance includes occasional blowdown, insect outbreaks and stand-replacing fire. Mean return interval for stand-replacing fire is 222 years as estimated in southeastern British Columbia.

IVC Dynamics: *Picea engelmannii* can be very long-lived, reaching 500 years of age. *Abies lasiocarpa* decreases in importance relative to *Picea engelmannii* with increasing distance from the region of Montana and Idaho where maritime air masses influence the climate. Disturbance includes occasional blowdown, insect outbreaks and fire. Fire is an important disturbance factor, but fire regimes have a long return interval and so are often stand-replacing. Mean return interval for stand-replacing fire is 222 years as estimated in southeastern British Columbia. *Picea engelmannii* can rapidly recolonize and dominate burned sites, or can succeed other seral species such as *Pinus contorta* or *Populus tremuloides*. Due to great longevity, *Pseudotsuga menziesii* may persist in occurrences of this group for long periods without regeneration. Old-growth characteristics in *Picea engelmannii* forests will include treefall and windthrow gaps in the canopy, with large downed logs, rotting woody material, tree seedling establishment on logs or on mineral soils unearthed in root balls, and snags [citations?].

IVC Environment: Engelmann spruce and subalpine fir forests comprise a substantial part of the subalpine forests of the Cascades and Rocky Mountains from southern British Columbia east into Alberta, and south into New Mexico and the Intermountain West region. They also occur on mountain "islands" of north-central Montana. They are the matrix forests of the subalpine zone, with elevations ranging from 1275 m in its northern distribution to 3355 m in the south (4100-11,000 feet). They often represent the highest elevation forests in an area. Sites within this group are cold year-round, and precipitation is predominantly in the form of snow, which may persist until late summer. Snowpacks are deep and late-lying, and summers are cool. Frost is possible almost all summer and may be common in restricted topographic basins and benches. In some areas, such as Wyoming, these forests are on limestone or dolomite, while nearby forests are on granitic or volcanic rocks. Stands found at upper treeline in many areas of the Rockies, including the central and northern ranges in Colorado and the Medicine Bow and Bighorn ranges of Wyoming, are more typically islands or ribbons of trees, sometimes with a krummholz form, with open-meadow areas in a mosaic. These patterns are controlled by snow deposition and wind-blown ice. *Climate:* Sites within this group are cold year-round, and precipitation is predominantly in the form of snow, which may persist until late summer. Snowpacks are deep and late-lying, and summers are cool. Frost is possible almost all summer and may be common in restricted topographic basins and benches.

DISTRIBUTION

IVC Geographic Range: This group is found in the eastern Cascades and throughout the Rocky Mountains from southern interior British Columbia east into Alberta, south into New Mexico and the Intermountain West region. This type tends to be very limited in the northern Oregon Cascades.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CO, ID, MT, NM, NV, OR, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.4.24:P, 12.1.1.79:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range extensive, area of occupancy moderate, and threats moderate. However, in the southern parts of its range, threats from beetles, drought, and fire are of concern.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: F.H. Eyre (1980)

IVC Description Author: K.A. Schulz

IVC Description Date: 2013-10-08

IVC Acknowledgments: D. Tart

G218 Rocky Mountain Subalpine Moist-Mesic Spruce - Fir Forest

[ ]

IVC Colloquial Name: Rocky Mountain Subalpine Moist-Mesic Spruce - Fir Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This is a high-elevation group of the Rocky Mountains and eastern Cascades dominated by *Picea engelmannii* and *Abies lasiocarpa*. It extends westward into the northeastern side of Mount Rainier in Washington, and as far east as mountain

"islands" of north-central Montana. *Picea engelmannii* is generally more important in southern forests than those in the Pacific Northwest. Occurrences are typically found in locations with cold-air drainage or ponding, or where snowpacks linger late into the summer, such as north-facing slopes and high-elevation ravines. They can extend down in elevation below the subalpine zone in places where cold-air ponding occurs; northerly and easterly aspects predominate. These forests are found on gentle to very steep mountain slopes, high-elevation ridgetops and upper slopes, plateaulike surfaces, basins, alluvial terraces, well-drained benches, and inactive stream terraces. In the northern Rocky Mountains of northern Idaho and Montana, *Tsuga mertensiana* occurs as small to large patches within the matrix of this mesic spruce-fir group and only in the most maritime of environments (the coldest and wettest of the more Continental subalpine fir forests). In parts of the northern Cascades, the climate is more maritime than typical for this group, but due to the lower snowfall in these rainshadow areas, summer drought may be more significant than snowpack in limiting tree regeneration in burned areas. *Picea engelmannii* is rare in these areas. *Populus tremuloides* is a common codominant tree in many disturbed stands. Moisture-loving understory species are diagnostic of this group and may include shrubs *Cornus canadensis, Ledum glandulosum* (rare), *Menziesia ferruginea, Phyllodoce empetriformis, Rhododendron albiflorum, Rubus parviflorus, Salix* spp. and *Vaccinium membranaceum*. The understory may also be dominated by mesic herbaceous species such as *Actaea rubra, Calamagrostis canadensis, Clintonia uniflora, Erigeron eximius, Gymnocarpium dryopteris, Luzula glabrata var. hitchcockii, Maianthemum stellatum, Rubus pedatus, Saxifraga bronchialis, Thalictrum* spp., *Tiarella* spp., and *Valeriana sitchensis*. Disturbances include occasional blowdown, insect outbreaks (30-50 years), mixed-severity fire, and stand-replacing fire (every 150-500 years). The more summer-dry climatic areas also have occasional high-severity fires.

IVC Dynamics: Disturbances include occasional blowdown, insect outbreaks (30-50 years), mixed-severity fire, and stand-replacing fire (every 150-500 years). The more summer-dry climatic areas also have occasional high-severity fires.

IVC Environment: Occurrences are typically found at high elevations in locations with cold-air drainage or ponding, or where snowpacks linger late into the summer, such as north-facing slopes and high-elevation ravines. They can extend down in elevation below the subalpine zone in places where cold-air ponding occurs; northerly and easterly aspects predominate. These forests are found on gentle to very steep mountain slopes, high-elevation ridgetops and upper slopes, plateaulike surfaces, basins, alluvial terraces, well-drained benches, and inactive stream terraces. *Climate:* Sites within this group are cold year-round, and precipitation is predominantly in the form of snow, which may persist until late summer. Snowpacks are deep and late-lying, and summers are cool. Frost is possible almost all summer and may be common in restricted topographic basins and benches. Occurrences are typically found in locations with ponding, or where snowpacks linger late into the summer, such as north-facing slopes and high-elevation ravines. They can extend down in elevation below the subalpine zone in places where cold-air ponding occurs; northerly and easterly aspects predominate.

DISTRIBUTION

IVC Geographic Range: This group is found at high elevations of the Rocky Mountains, extending west into the northeastern side of Mount Rainier in Washington, and as far east as mountain "islands" of north-central Montana.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CA?, CO, ID, MT, NM, NV, OR, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 7.1.7.2:P, 7.1.8.1:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.8.12:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range extensive, area of occupancy moderate, and threats moderate. However, in the southern parts of its range, threats from beetles, drought, and fire are of concern.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3614 *Abies lasiocarpa - Picea engelmannii* Rocky Mountain Moist Forest Alliance** [Subalpine Fir - Engelmann Spruce Rocky Mountain Moist Forest Alliance] []
  These upper montane and subalpine forests and woodlands of the northern Rocky Mountains are dominated by *Abies lasiocarpa* and/or *Picea engelmannii*.

- **A3616 *Abies lasiocarpa - Picea engelmannii* Rocky Mountain Talus & Scree Woodland Alliance** [Subalpine Fir - Engelmann Spruce Rocky Mountain Talus & Scree Woodland Alliance] []
  These woodlands of the subalpine Rocky Mountains are associated with talus and scree substrates and dominated by *Abies lasiocarpa* and/or *Picea engelmannii*.
- **A0422 *Abies lasiocarpa - Populus tremuloides* Rocky Mountain Moist Forest Alliance** [Subalpine Fir - Quaking Aspen Rocky Mountain Moist Forest Alliance] []
  This mixed evergreen-deciduous forest alliance is codominated by *Populus tremuloides* and *Abies lasiocarpa* and has been described from mountain slopes and plateaus in the Rocky Mountains from Alberta, Canada, south to Montana, Wyoming, Colorado, and west into Utah.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: F.H. Eyre (1980)
IVC Description Author: K.A. Schulz
IVC Description Date: 2013-10-08
IVC Acknowledgments: D. Tart

A3614 Subalpine Fir - Engelmann Spruce Rocky Mountain Moist Forest Alliance

[ ]
Abies lasiocarpa - Picea engelmannii Rocky Mountain Moist Forest Alliance
Rocky Mountain Subalpine Fir - Engelmann Spruce Moist Forest

IVC Scientific Name: *Abies lasiocarpa - Picea engelmannii* Rocky Mountain Moist Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of upper montane and subalpine conifer-dominated forests and woodlands of the Rocky Mountains. *Abies lasiocarpa* and *Picea engelmannii* dominate the canopy either singly or together. Some sites are codominated by *Populus tremuloides* depending on stand age. Associates vary geographically. Common associated conifers can include *Larix occidentalis, Picea pungens, Pinus albicaulis, Pinus contorta*, and *Pseudotsuga menziesii*. Understories are highly variable across the range of this alliance and can be dominated by grasses, dry sedges, ferns, mesic forbs or shrubs (typically ericaceous). Dominant shrubs may include *Menziesia ferruginea, Rhododendron albiflorum, Spiraea betulifolia, Symphoricarpos albus, Vaccinium cespitosum*, and *Vaccinium scoparium*. Important herbaceous species may include *Actaea rubra, Clintonia uniflora, Coptis occidentalis, Cornus canadensis, Galium triflorum, Gymnocarpium dryopteris, Linnaea borealis, Luzula glabrata var. hitchcockii, Maianthemum stellatum, Senecio triangularis, Streptopus amplexifolius, Thalictrum occidentale*, and *Xerophyllum tenax*. Elevations range from 970-3200 m. Sites where these forest and woodlands are found include gentle to very steep mountain slopes, high-elevation ridgetops and upper slopes, basins, alluvial terraces, well-drained benches, and inactive stream terraces.
IVC Dynamics: *Abies lasiocarpa* forests develop on sites with limited, short growing seasons and relatively deep winter snowpacks. Tree growth is very slow in these habitats, and forests are rapidly colonized by faster growing shade-intolerant species, such as *Pseudotsuga menziesii, Pinus contorta*, or *Populus tremuloides* following fire, clearcut logging, or windthrow disturbance. *Abies lasiocarpa* is among the most shade-tolerant trees in the Rocky Mountains, but seedlings compete poorly in greater than 50% full sunlight (Burns and Honkala 1990a). In Oregon and Washington, many communities are bottomland, moist, upper montane forests that rarely burn. Fire is important in many of the more open sites, as well as those on steep slopes. Snow avalanches occur frequently at upper elevations, and can result in a mosaic of varying stand ages on sites affected by this disturbance type.

Picea engelmannii can be very long-lived, reaching 500 years of age. *Abies lasiocarpa* decreases in importance relative to *Picea engelmannii* with increasing distance from the region of Montana and Idaho where maritime air masses influence the climate. Fire is an important disturbance factor, but fire regimes have a long return interval and so are often stand-replacing. *Picea engelmannii* can rapidly recolonize and dominate burned sites, or can succeed to other species such as *Pinus contorta* or *Populus tremuloides*. Due to great longevity, *Pseudotsuga menziesii* may persist in stands of this alliance for long periods without regeneration. Old-growth characteristics in *Picea engelmannii* forests will include treefall and windthrow gaps in the canopy, with large downed logs, rotting woody material, tree seedling establishment on logs or on mineral soils unearthed in root balls, and snags.
IVC Environment: These upper montane or subalpine forests and woodlands occur in many of the mountainous areas of the middle to northern Rocky Mountains where they are often the matrix forests of the subalpine zone. They occur above the warmer and

drier montane forests of the West, which are typically mixed-coniferous forests. Average temperatures are fairly uniform across the alliance's range, with mean July and January temperatures of 12° and -10°C, respectively (Burns and Honkala 1990a). Snowpacks can be deep, but often melt quickly, and summers are cool. Summer frosts are characteristic, especially on sites where cold air pools. Elevations range from 1300-1950 m in the eastern Cascades, and increase with decreasing latitude from roughly 2200 m in central Idaho to over 3500 m in Colorado. Sites where these forests are found include gentle to very steep mountain slopes, high-elevation ridgetops and upper slopes, plateau-like surfaces, basins, alluvial terraces, well-drained benches, and inactive stream terraces. All aspects and slopes are represented, but northerly and easterly aspects predominate. Southerly aspects are found only at higher elevations than where these forests occur in a given region. In some locations where there is cold-air drainage, these forests may extend down in elevation into the montane zone, where they will occupy dry stream terraces, toeslopes, or mesic sites with cooler temperature regimes such as northern aspects. Parent materials and soils are variable across the distribution of the alliance. Parent materials include ash, tuff, lava, basalt, granitics, quartzite, dolomite, rhyolite, and other sedimentary rock types. Stands can also occur on colluvium or alluvium. Soils are typically not deep, poorly developed, and can have significant amounts of rock and gravel in the profile. Subalpine soils, such as found associated with these forests, often show evidence of podzolization processes, especially in the north, and poorly decomposed organic layers are common.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the subalpine zones of the central and northern Rocky Mountains and eastern Cascade Range.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA?, CO, ID, MT, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005914** ***Abies lasiocarpa - Picea engelmannii / Vaccinium scoparium / Xerophyllum tenax*** **Forest** [Subalpine Fir - Engelmann Spruce / Grouse Whortleberry / Common Beargrass Forest] []
  G4G5 (2004-03-11) AB, ID, MT
- **CEGL000319** ***Abies lasiocarpa - Picea engelmannii / Menziesia ferruginea*** **Forest** [Subalpine Fir - Engelmann Spruce / Rusty Menziesia Forest] []
  G5 (1996-02-01) AB, BC, ID, MT, OR, WA, WY
- **CEGL005897** ***Abies lasiocarpa - Picea engelmannii / Menziesia ferruginea / Streptopus amplexifolius*** **Woodland** [Subalpine Fir - Engelmann Spruce / Rusty Menziesia / Clasping Twisted-stalk Woodland] []
  G3G4 (2004-02-10) AB, ID, MT, WA?
- **CEGL005917** ***Abies lasiocarpa - Picea engelmannii / Vaccinium membranaceum / Xerophyllum tenax*** **Forest** [Subalpine Fir - Engelmann Spruce / Thinleaf Huckleberry / Common Beargrass Forest] []
  GNR. AB, ID, MT, OR?, WA, WY
- **CEGL005918** ***Abies lasiocarpa - Picea engelmannii / Vaccinium cespitosum / Clintonia uniflora*** **Forest** [Subalpine Fir - Engelmann Spruce / Dwarf Bilberry / Bride's Bonnet Forest] []
  G3G4 (2004-03-11) AB?, MT
- **CEGL005896** ***Abies lasiocarpa - Picea engelmannii / Menziesia ferruginea / Luzula glabrata*** **Woodland** [Subalpine Fir - Engelmann Spruce / Rusty Menziesia / Smooth Woodrush Woodland] []
  G4? (2004-02-10) AB, ID, MT, WA?
- **CEGL000315** ***Abies lasiocarpa - Picea engelmannii / Linnaea borealis*** **Forest** [Subalpine Fir - Engelmann Spruce / Twinflower Forest] []
  G5 (1996-02-01) AB, ID, MT, OR, UT?, WA, WY
- **CEGL008286** ***Abies lasiocarpa*** **-** **(*Picea engelmannii*) /** ***Rhododendron albiflorum*** **Forest** [Subalpine Fir - (Engelmann Spruce) / Cascade Azalea Forest] []
  Abies lasiocarpa-dominant subalpine woodlands and forests with codominant Picea engelmannii above thick Rhododendron albiflorum (found in the coast-interior transition zone of the East Cascades). GNR. BC?, WA
- **CEGL005898** ***Abies lasiocarpa - Picea engelmannii / Xerophyllum tenax - Luzula glabrata*** **Woodland** [Subalpine Fir - Engelmann Spruce / Common Beargrass - Smooth Woodrush Woodland] []
  G4G5 (2004-02-10) AB, ID, MT, WA

- **CEGL005893** ***Abies lasiocarpa - Picea engelmannii / Menziesia ferruginea / Clintonia uniflora*** **Forest** [Subalpine Fir - Engelmann Spruce / Rusty Menziesia / Bride's Bonnet Forest] []
  G4G5 (2004-02-10) AB, ID, MT, OR?, WA?
- **CEGL005920** ***Abies lasiocarpa - Picea engelmannii / Streptopus amplexifolius - Luzula glabrata*** **Woodland** [Subalpine Fir - Engelmann Spruce / Clasping Twisted-stalk - Smooth Woodrush Woodland] []
  G2G3 (2004-03-11) AB, ID?, MT
- **CEGL005895** ***Abies lasiocarpa - Picea engelmannii / Menziesia ferruginea / Xerophyllum tenax*** **Forest** [Subalpine Fir - Engelmann Spruce / Rusty Menziesia / Common Beargrass Forest] []
  G4G5 (2004-02-10) AB, ID, MT, OR, WA
- **CEGL005892** ***Abies lasiocarpa - Picea engelmannii / Clintonia uniflora - Xerophyllum tenax*** **Forest** [Subalpine Fir - Engelmann Spruce / Bride's Bonnet - Common Beargrass Forest] []
  G4G5 (2004-02-10) AB, ID, MT, OR?, WA
- **CEGL000317** ***Abies lasiocarpa - Picea engelmannii / Luzula glabrata*** **Woodland** [Subalpine Fir - Engelmann Spruce / Smooth Woodrush Woodland] []
  G5 (1996-02-01) AB, ID, MT, WA, WY
- **CEGL002613** ***Abies lasiocarpa / Rhododendron albiflorum / Senecio triangularis*** **Woodland** [Subalpine Fir / Cascade Azalea / Arrowleaf Ragwort Woodland] []
  G3G4 (2000-12-11) BC?, WA
- **CEGL005894** ***Abies lasiocarpa - Picea engelmannii / Menziesia ferruginea - Vaccinium scoparium*** **Forest** [Subalpine Fir - Engelmann Spruce / Rusty Menziesia - Grouse Whortleberry Forest] []
  G2G4 (2004-02-10) AB, BC, ID, MT, OR?, WA?
- **CEGL005919** ***Abies lasiocarpa - Picea engelmannii / Vaccinium scoparium / Thalictrum occidentale*** **Forest** [Subalpine Fir - Engelmann Spruce / Grouse Whortleberry / Western Meadowrue Forest] []
  G3G4 (2004-03-11) AB, ID?, MT, WY?
- **CEGL005908** ***Populus tremuloides - Abies lasiocarpa - Picea engelmannii / Streptopus amplexifolius*** **Forest** [Quaking Aspen - Subalpine Fir - Engelmann Spruce / Clasping Twisted-stalk Forest] []
  G2G3 (2004-02-09) AB, MT
- **CEGL005912** ***Abies lasiocarpa - Picea engelmannii / Clintonia uniflora*** **Forest** [Subalpine Fir - Engelmann Spruce / Bride's Bonnet Forest] []
  G5 (1996-02-01) AB, ID, MT, OR, WA
- **CEGL002327** ***Abies lasiocarpa var. lasiocarpa / Vaccinium membranaceum / Brachythecium*** **spp. Woodland** [Subalpine Fir / Thinleaf Huckleberry / Ragged Moss species Woodland] []
  G3 (2004-06-03) BC
- **CEGL002323** ***Picea x albertiana / Spiraea douglasii var. douglasii*** **Woodland** [Western White Spruce / Rose Spirea Woodland] []
  G3 (2004-06-03) BC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: F.H. Eyre (1980)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A3616 Subalpine Fir - Engelmann Spruce Rocky Mountain Talus & Scree Woodland Alliance

[ ]

Abies lasiocarpa - Picea engelmannii Rocky Mountain Talus & Scree Woodland Alliance

Rocky Mountain Subalpine Fir - Engelmann Spruce Talus & Scree Woodland

IVC Scientific Name: *Abies lasiocarpa - Picea engelmannii* Rocky Mountain Talus & Scree Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These upper montane or subalpine conifer woodlands are found scattered throughout the Rocky Mountains within cool and relatively dry climate regimes. In mature stands, the association is characterized by *Abies lasiocarpa* as the dominant tree species, often with *Picea engelmannii*. In seral stands, other conifers can be important or even dominant, but *Abies*

lasiocarpa is always present in the regeneration layer. Other tree associates include *Callitropsis nootkatensis, Larix* spp., *Pinus albicaulis, Pinus contorta, Picea glauca, Pseudotsuga menziesii*, and *Tsuga* spp. Stands have sparse shrub layers, typically a reflection of dry conditions related to poorly developed soils, and may include species such as *Acer circinatum, Holodiscus dumosus, Juniperus communis, Ribes* spp., *Salix brachycarpa*, and *Salix glauca*. The herbaceous layer is generally sparse. Important forbs include species of *Arnica, Fragaria, Lupinus, Pedicularis*, and *Thalictrum*. Graminoids are rarely important in these woodlands. These woodlands are found on scree and talus slopes where marginal growing conditions produce an open tree canopy. Parent materials and soils are variable across the distribution of the alliance.

IVC Dynamics:

IVC Environment: These upper montane or subalpine woodlands are found scattered throughout the Rocky Mountains in cool and relatively dry climate regimes. These woodlands occur on droughty, well-drained substrates such as scree and talus slopes on southerly or westerly slopes and ridgetops. Snowpacks can be deep, and summers are cool. Summer frosts are characteristic, especially in sites where cold air pools. Elevations range from roughly 2200 m in central Idaho to over 3200 m in Utah, Colorado and New Mexico. In some locations where there is cold-air drainage, these woodlands extend down in elevation into the montane zone. Soils are typically shallow, poorly developed, with significant amounts of rock and gravel in the profile.

DISTRIBUTION

IVC Geographic Range: The distribution of this alliance is poorly documented. It has been documented primarily from the southern Rocky Mountains of Colorado, Wyoming and New Mexico with occurrences known also from the northern Rocky Mountains in Glacier-Waterton International Peace Park in Montana and Alberta, Canada.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ?, CO, MT, NM, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005823 *Abies lasiocarpa - Picea engelmannii / Valeriana sitchensis* Woodland** [Subalpine Fir - Engelmann Spruce / Sitka Valerian Woodland] []
  G2? (2004-03-11) AB, MT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M.S. Reid and D. Sarr, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-01-08

IVC Acknowledgments:

A0422 Subalpine Fir - Quaking Aspen Rocky Mountain Moist Forest Alliance

[ ]

Abies lasiocarpa - Populus tremuloides Rocky Mountain Moist Forest Alliance

Rocky Mountain Moist Subalpine Fir - Aspen Forest

IVC Scientific Name: *Abies lasiocarpa - Populus tremuloides* Rocky Mountain Moist Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The mixed coniferous and deciduous tree canopy is open to moderately closed and is dominated by *Populus tremuloides* and *Abies lasiocarpa*. Several other species of conifers may be scattered within the stands, including *Abies concolor, Picea engelmannii, Picea pungens, Pinus contorta, Pinus flexilis*, and *Pseudotsuga menziesii*. Younger stands typically have dense *Populus tremuloides*, with *Abies lasiocarpa* or other conifers mixed in. As the stands age in this typically seral forest association, *Populus tremuloides* is slowly reduced until conifers become dominant. Mixed stands must have at least 25% relative tree cover

of both aspen (deciduous) and conifers. The understory is most often composed of a short-shrub layer often dominated by *Symphoricarpos oreophilus*. Other shrubs may include *Amelanchier alnifolia, Mahonia repens, Paxistima myrsinites, Physocarpus malvaceus*, and *Rosa woodsii*. The herbaceous layer is variable and may compete with shrub species for understory dominance or in some stands be dominant over shrubs. It is a mixture of graminoids and forbs. Characteristic herbaceous species may include *Delphinium x occidentale, Eucephalus engelmannii, Heracleum maximum, Osmorhiza occidentalis, Pedicularis racemosa, Rudbeckia occidentalis, Thalictrum fendleri*, and *Valeriana occidentalis*. Stands included in this mixed evergreen-deciduous forest alliance have been described from mountain slopes and plateaus in the Rocky Mountains from Alberta, Canada, south to Montana, Wyoming, Colorado and west into Utah. They occur on gentle to steep slopes on all aspects, but are most common on cooler and more mesic, north and east aspects. Soils are derived from alluvium and colluvium from sedimentary, metamorphic and igneous parent materials.

IVC Dynamics: Stems of *Populus tremuloides* are thin-barked and readily killed by fire. It is a fire-adapted species that generally needs fire or some other stand-replacing disturbance to establish and maintain dominance in a forest. These mixed forests are seral and in the absence of disturbance will slowly convert to late-successional forests dominated by *Abies lasiocarpa* or *Picea engelmannii* (Mueggler 1988).

IVC Environment: Stands included in this mixed evergreen-deciduous forest alliance have been described from mountain slopes and plateaus in the Rocky Mountains from Alberta, Canada, south to Montana, Wyoming and Colorado and west into Utah. Elevations range from 2200 to 3500 m. Climate is temperate with cold winters. Mean annual precipitation is typically greater than 50 cm. Sites occur on gentle to steep slopes on all aspects, but are most common on north and east aspects. Soils are derived from alluvium and colluvium from sedimentary, metamorphic and igneous parent materials.

DISTRIBUTION

IVC Geographic Range: Forests included in this alliance are scattered in the Rocky Mountains of Alberta, Canada, Montana, Idaho, Wyoming, Colorado and Utah.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, ID, MT, UT, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005911 *Populus tremuloides* - Conifer / *Spiraea betulifolia - Symphoricarpos albus* Forest** [Quaking Aspen - Conifer / Shinyleaf Meadowsweet - Common Snowberry Forest] []
  G3? (2004-02-09) AB?, MT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-01-08

IVC Acknowledgments:

G222 Rocky Mountain Subalpine-Montane Aspen Forest

[ ]

IVC Colloquial Name: Rocky Mountain Subalpine-Montane Aspen Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This widespread group is more common in the southern and central Rocky Mountains but occurs in the montane and subalpine zones throughout much of the western U.S., south into northern Mexico and north into Canada. An eastern extension occurs along the Rocky Mountains foothill front, in mountain "islands" in Montana (Big Snowy and Highwood mountains), and

the Black Hills of South Dakota. In California, this group is in the Sierra Nevada adjacent to the Great Basin. Large stands are found in the Inyo and White mountains, while small stands occur on the Modoc Plateau. Elevations generally range from 1525 to 3050 m (5000-10,000 feet), but occurrences can be found at lower elevations in some regions. Distribution of this group is primarily limited by adequate soil moisture required to meet its high evapotranspiration demand. Secondarily, it is limited by the length of the growing season or low temperatures. These are upland forests and woodlands dominated by *Populus tremuloides* without a significant conifer component (<25% relative tree cover). The understory structure may be complex with multiple shrub and herbaceous layers, or simple with just an herbaceous layer. The herbaceous layer may be dense or sparse, dominated by graminoids and/or forbs. Associated shrub species include *Symphoricarpos* spp. (*Symphoricarpos oreophilus* being the most widespread and *Symphoricarpos albus* and *Symphoricarpos mollis* having limited distribution), *Rubus parviflorus, Amelanchier alnifolia, Prunus virginiana*, and *Arctostaphylos uva-ursi*.

IVC Dynamics: Occurrences in this group often originate from, and are likely maintained by, stand-replacing disturbances such as avalanche, crownfire, disease and windthrow, or clearcutting by man or flooding by beaver. The stems of these thin-barked, clonal trees are easily killed by surface fires, but they can quickly and vigorously resprout in densities of up to 30,000 stems per hectare (Knight 1994). The stems are relatively short-lived (100-150 years), and the occurrences often succeed to longer-lived conifer forest if undisturbed. Occurrences are favored by fire in the conifer zone (Mueggler 1988). With adequate disturbance, a clone may live many centuries. Although *Populus tremuloides* produces abundant seeds, seedling survival is rare because the long moist conditions required to establish them are rare in the habitats where they occur. Superficial soil drying will kill seedlings (Knight 1994).

IVC Environment: Topography is variable; sites range from level to steep slopes. Aspect varies according to the limiting factors. Occurrences at high elevations are restricted by cold temperatures and are found on warmer southern aspects. At lower elevations, occurrences are restricted by lack of moisture and are found on cooler north aspects and mesic microsites.

Climate: Climate is temperate with a relatively long growing season, typically cold winters and deep snow. Mean annual precipitation is greater than 38 cm (15 inches) and typically greater than 51 cm (20 inches), except in semi-arid environments where occurrences are restricted to mesic microsites such as seeps or where large snow drifts develop. Distribution of this group is primarily limited by adequate soil moisture required to meet its high evapotranspiration demand (Mueggler 1988). Secondarily, its range is limited by the length of the growing season or low temperatures (Mueggler 1988).

Soil/substrate/hydrology: The soils are typically deep and well-developed with rock often absent from the soil. Soil texture ranges from sandy loam to clay loam. Parent materials are variable and may include sedimentary, metamorphic or igneous rocks, but it appears to grow best on limestone, basalt, and calcareous or neutral shales (Mueggler 1988).

DISTRIBUTION

IVC Geographic Range: This group is more common in the southern and central Rocky Mountains but occurs in the montane and subalpine zones throughout much of the western U.S., south into northern Mexico and north into Canada. An eastern extension occurs along the Rocky Mountains foothill front, in mountain "islands" in Montana (Big Snowy and Highwood mountains), and the Black Hills of South Dakota. In California, this group is in the Sierra Nevada adjacent to the Great Basin. Large stands are found in the Inyo and White mountains, while small stands occur on the Modoc Plateau. Very small occurrences may be found in a few scattered locations of the Trans-Pecos of Texas.

IVC Nations: CA,MX,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, ND, NM, NV, ON, OR, SD, SK, TX, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.11.78:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 9.4.3.26:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.1.14:P, 12.1.1.79:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G4 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3367 *Betula papyrifera* Rocky Mountain Forest & Woodland Alliance** [Paper Birch Rocky Mountain Forest & Woodland Alliance] []

  This forest and woodland alliance is found in Alberta, Montana, Washington, and Wyoming and dominated by the successional species *Betula papyrifera*.

- **A2036 *Populus tremuloides* Rocky Mountain Forest & Woodland Alliance** [Quaking Aspen Rocky Mountain Forest & Woodland Alliance] []
  This alliance is widespread in the southern, central and northern Rocky Mountains, west to the Sierra Nevada and east to the Black Hills and defined by a canopy dominated by *Populus tremuloides*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: F.H. Eyre (1980)
IVC Description Author: M.E. Hall
IVC Description Date: 2013-06-05
IVC Acknowledgments:

A3367 Paper Birch Rocky Mountain Forest & Woodland Alliance

[ ]
Betula papyrifera Rocky Mountain Forest & Woodland Alliance
Rocky Mountain Paper Birch Forest & Woodland

IVC Scientific Name: *Betula papyrifera* Rocky Mountain Forest & Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This forest and woodland alliance is found in Montana, Washington, and Wyoming. It is composed of early-successional forests and woodlands that occur on north-facing slopes and rocky, cut-over areas. This alliance is a provisional type, developed to account for *Betula papyrifera* stands in the Rockies that have not been adequately studied or classified.
IVC Dynamics:
IVC Environment: This alliance occurs on north-facing slopes and rocky, cut-over areas of the northern Rocky Mountains.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Rocky Mountains of Alberta, Montana, Washington, and Wyoming.
IVC Nations: CA,US
IVC States/Provinces: AB, MT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.E. Hall, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A2036 Quaking Aspen Rocky Mountain Forest & Woodland Alliance

[ ]

Populus tremuloides Rocky Mountain Forest & Woodland Alliance
Rocky Mountain Aspen Forest & Woodland

IVC Scientific Name: *Populus tremuloides* Rocky Mountain Forest & Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is widespread in the montane and subalpine zones Rocky Mountains and adjacent regions, including the Sierra Nevada and Black Hills. Stands are found on a variety of landscape positions, but are consistently in mesic habitats. Stands in this alliance often originate following disturbance. The dominant species of the canopy is *Populus tremuloides*. Scattered conifer trees such as *Pseudotsuga menziesii* and species of *Pinus, Picea*, and *Abies* may also be present. Common shrubs include *Acer glabrum, Amelanchier alnifolia, Artemisia tridentata, Juniperus communis, Prunus virginiana, Rosa woodsii, Shepherdia canadensis, Symphoricarpos oreophilus*, and the dwarf-shrubs *Mahonia repens* and *Vaccinium myrtillus*. The herbaceous layer may be lush and diverse. Common graminoids may include *Bromus carinatus, Calamagrostis rubescens, Carex siccata, Carex geyeri, Carex rossii, Elymus glaucus, Elymus trachycaulus, Festuca thurberi*, and *Hesperostipa comata*. Associated forbs may include *Achillea millefolium, Eucephalus engelmannii, Delphinium x occidentale, Geranium viscosissimum, Heracleum sphondylium, Ligusticum filicinum, Lupinus argenteus, Osmorhiza berteroi, Pteridium aquilinum, Rudbeckia occidentalis, Thalictrum fendleri, Valeriana occidentalis, Wyethia amplexicaulis*, and many others. Elevations generally range from 1525 to 3050 m (5000-10,000 feet), but occurrences can be found at lower elevations in some regions. Topographic positions are variable, but occurrences tend to occupy cooler, moist aspects.

IVC Dynamics: Stands in this alliance often originate and are likely maintained by stand-replacing disturbances such as crown fire, disease and windthrow, or cutting by man or beaver. The stems of these thin-barked, clonal trees are easily killed by surface fires, but they can quickly and vigorously resprout in densities of up to 30,000 stems per hectare (Knight 1993). The stems are relatively short-lived (100-150 years), and the stand will succeed to longer-lived conifer forest if undisturbed. Stands are favored by fire in the conifer zone (Mueggler 1988). With adequate disturbance a clone may live many centuries. Although *Populus tremuloides* produces abundant seeds, seedling survival is rare because of the long moist conditions required to establish are rare in the habitats that it occurs in. Superficial soil drying will kill seedlings (Knight 1994).

IVC Environment: Sites include variable topographic positions with slopes ranging from level to steep with variable aspects, with occurrences on warmer aspects at higher elevations and cooler aspects are lower elevations. The soils are typically deep and well-developed with rock often absent from the soil. Soil texture ranges from sandy loam to clay loam. Parent materials are variable and may include sedimentary, metamorphic or igneous rocks, but this vegetation appears to grow best on limestone, basalt, and calcareous or neutral shales (Mueggler 1988).

DISTRIBUTION

IVC Geographic Range: This alliance is more common in the southern and central Rocky Mountains, but occurs in the montane and subalpine zones throughout much of the western U.S., south into northern Mexico and north into Canada. An eastern extension occurs along the Rocky Mountains foothill front, in mountain "islands" in Montana (Big Snowy and Highwood mountains), the Black Hills of South Dakota and also west to the Sierra Nevada.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, ND, NM, NV, ON, OR, SD, SK, TX?, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000564 *Populus tremuloides / Amelanchier alnifolia* Forest** [Quaking Aspen / Saskatoon Serviceberry Forest] []
  G4 (1994-02-23) CO, MT, ON, WY?
- **CEGL000602 *Populus tremuloides / Rubus parviflorus* Forest** [Quaking Aspen / Thimbleberry Forest] []
  G2 (1998-11-30) AB, ID, MT, UT, WY
- **CEGL000595 *Populus tremuloides / Heracleum maximum* Forest** [Quaking Aspen / Common Cow-parsnip Forest] []
  G3 (2000-12-10) AB, MT, SK?
- **CEGL005849 *Populus tremuloides / Urtica dioica* Forest** [Quaking Aspen / Stinging Nettle Forest] []
  G2G3 (2004-03-03) AB, MT
- **CEGL000575 *Populus tremuloides / Calamagrostis rubescens* Forest** [Quaking Aspen / Pinegrass Forest] []
  G5? (1996-02-01) AB?, ID, MT, NV?, OR?, UT, WA, WY

- **CEGL000583 *Populus tremuloides / Corylus cornuta* Forest** [Quaking Aspen / Beaked Hazelnut Forest] []
  G3 (1996-02-01) CO, ND, SD, SK, WY
- **CEGL005848 *Populus tremuloides / Symphoricarpos occidentalis* Forest** [Quaking Aspen / Western Snowberry Forest] []
  GNR. AB

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-01-08
IVC Acknowledgments:

G345 Central Rocky Mountain White Spruce Forest

[ ]

IVC Colloquial Name: Central Rocky Mountain White Spruce Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group is found in lower montane regions of western Montana, southwestern Alberta and southeastern British Columbia, with outliers in mountains of the northwestern Great Plains, especially the Black Hills of Wyoming and South Dakota. This forest group is limited to sideslopes and depressions, often adjoining cool, riparian zones, where snow persists well into the growing season. Soils vary widely from deep to quite shallow. *Picea glauca* is the characteristic conifer, but other trees can include *Pinus ponderosa, Pinus contorta, Picea engelmannii x glauca* hybrids, *Pseudotsuga menziesii, Populus tremuloides*, and *Betula papyrifera*. Undergrowth shrubs typically include *Arctostaphylos uva-ursi, Elaeagnus commutata, Juniperus communis, Linnaea borealis, Shepherdia canadensis, Symphoricarpos albus*, and *Vaccinium scoparium*. Common forbs and graminoids include *Fragaria virginiana, Oxytropis* spp., *Linnaea borealis, Leymus innovatus, Lathyrus ochroleucus, Hedysarum alpinum*, and Asteraceae spp. Disturbance regimes are not well-documented for this group, but likely include periodic windthrow as well as fire spreading from adjacent, drier forests and woodlands.
IVC Dynamics:
IVC Environment: In the main part of its range, this forest group is limited to sideslopes and depressions, likely adjoining riparian zones, where snow is well-retained. Soils vary widely from deep to shallow. In the Black Hills, these forests occur as small or large patches at cooler higher elevations, on level or gently sloping areas, from about 1740 to 2135 m (5700-7000 feet) elevation; at lower elevations, they are restricted to north-facing slopes within the ponderosa pine matrix.

DISTRIBUTION

IVC Geographic Range: This group is found in lower montane regions of western Montana, southwestern Alberta and southeastern British Columbia, with outliers in higher mountains of the northwestern Great Plains, especially the Black Hills of Wyoming and South Dakota, and possibly the Bighorn Mountains of Wyoming. In Albert and British Columbia, this group occurs north through Banff National Park to Jasper National Park, and in the British Columbia portion of the Rockies, these occur in the Columbia Trench north to at least Kootenay and Yoho national parks.
IVC Nations: CA,US
IVC States/Provinces: AB, BC, MT, SD, WY
IVC Omernik Ecoregions: 6.2.10.17:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G2 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3624 *Picea glauca - Pseudotsuga menziesii* Rocky Mountain Forest Alliance** [White Spruce - Douglas-fir Rocky Mountain Forest Alliance] []
  This forest alliance occurs in the montane zone of the central Rocky Mountains, from southwestern Alberta and southeastern British Columbia to western Montana, and is dominated by *Picea glauca* or *Picea x albertiana* hybrids.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Hoffman and Alexander (1987); Meidinger and Pojar (1991); Natural Regions Committee (2006)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2013-06-06
IVC Acknowledgments: Lorna Allen, Peter Achuff, Del Meidinger

A3624 White Spruce - Douglas-fir Rocky Mountain Forest Alliance

[ ]
Picea glauca - Pseudotsuga menziesii Rocky Mountain Forest Alliance
Rocky Mountain White Spruce - Douglas-fir Forest

IVC Scientific Name: *Picea glauca - Pseudotsuga menziesii* Rocky Mountain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This forest alliance occurs in the montane zone of the central Rocky Mountains, from southwestern Alberta and southeastern British Columbia to western Montana, and possibly Wyoming. Forests are dominated by *Picea glauca* or *Picea x albertiana*. Associates vary geographically. Common associated conifers can include *Pseudotsuga menziesii, Pinus contorta*, and *Abies lasiocarpa*. The shrub layer is often absent, but when present is often dominated by species of *Vaccinium* spp., including *Vaccinium scoparium*. Other common shrub species may include *Cornus canadensis, Juniperus communis, Linnaea borealis, Ribes* spp., *Shepherdia canadensis, Spiraea betulifolia*, or *Symphoricarpos albus*. The herbaceous layer is often dominated by perennial forbs. Graminoids are generally sparse.
IVC Dynamics:
IVC Environment: This forest alliance is limited to lower montane and foothill settings on sideslopes and depressions, likely adjoining riparian zones, where snow is well-retained. Soils vary widely from deep to shallow.

DISTRIBUTION

IVC Geographic Range: This forest alliance occurs in the montane zone of the central Rocky Mountains, from southwestern Alberta and southeastern British Columbia to western Montana, and possibly Wyoming.
IVC Nations: CA,US
IVC States/Provinces: AB, BC, MT, WY?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by Lorna Allen, Peter Achuff, and Del Meidinger.

G223 Central Rocky Mountain Whitebark Pine - Subalpine Larch Forest & Woodland

[ ]

IVC Colloquial Name: Central Rocky Mountain Whitebark Pine - Subalpine Larch Forest & Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group of the Northern Rockies is typically a high-elevation mosaic of stunted tree clumps, open woodlands, with herb- or dwarf-shrub-dominated openings, occurring above upper subalpine closed forest ecosystems and below alpine communities. The climate is typically very cold and snowy in winter and relatively dry and cool in summer. The upper and lower elevational limits, due to climatic variability and differing topography, vary considerably; in interior British Columbia, this group occurs between 1400 and 2200 m elevation, and in northwestern Montana, it occurs up to 2400 m. Landforms include ridgetops, mountain slopes, glacial trough walls and moraines, talus slopes, landslides and rockslides, cirque headwalls and basins. Some sites have little snow accumulation because of high winds and sublimation. In this harsh, often windswept environment, trees are typically stunted and flagged from damage associated with wind, blowing snow and ice crystals, especially at the upper elevations of the type. The stands or patches often originate when *Pinus albicaulis*, and in some communities *Picea engelmannii*, colonize a sheltered site such as the lee side of a rock. *Abies lasiocarpa* can then colonize in the shelter of either species. These high-elevation coniferous woodlands are dominated by *Pinus albicaulis* and *Abies lasiocarpa*, or *Larix lyallii*. The undergrowth is usually somewhat depauperate, but some stands support a near sward of heath plants, such as *Phyllodoce empetriformis, Vaccinium myrtillus*, and *Vaccinium scoparium*, that may be present to codominant. The herbaceous layer is sparse under dense shrub canopies or may be dense where the shrub canopy is open or absent. Common species include *Ligusticum grayi*(?), *Arnica latifolia, Xerophyllum tenax, Carex rossii, Carex geyeri*, and *Luzula glabrata var. hitchcockii*. Major disturbances are windthrow and snow avalanches. Fire is known to occur infrequently in this group, at least where woodlands are present; lightning damage to individual trees is common, but sparse canopies and rocky terrain limit the spread of fire.

IVC Dynamics: *Pinus albicaulis* is a slow-growing, long-lived conifer that is common at higher elevations in the upper subalpine zone. It typically occurs in a mosaic of tree islands and meadows where it often colonizes sites and creates habitat for less hardy tree species. In lower subalpine forests, it is a seral species, establishing after a large disturbance such as stand-replacing fire or avalanche, or it is restricted to dry, rocky ridges where it competes well with shade-tolerant tree species. Without disturbance, it will be overtopped in 100-120 years by faster growing, shade-tolerant species such as *Abies lasiocarpa, Picea engelmannii, Pseudotsuga menziesii*, and *Tsuga mertensiana*. Although crownfires and high-intensity surface fires kill *Pinus albicaulis*, it tolerates low-intensity surface fires that will kill the shade-tolerant understory. Fire intervals range from 30-300 years.

Birds and small mammals often eat and cache the large, wingless pine seeds and are responsible for the dispersal of this species. Most important is the Clark's nutcracker, which can transport the seeds long distances and cache them on exposed windswept and burned-over sites. This results in the regeneration of pines in clumps from forgotten caches (Eyre 1980, Steel et al. 1983, Burns and Honkala 1990a, Schmidt and McDonald 1990).

Pests include the mountain pine beetle (*Dendroctonus ponderosae*), which has killed many mature trees in the past, during epidemics where populations of the beetle build up in lower elevation *Pinus contorta* stands, then move up into the *Pinus albicaulis* (Steel et al. 1983, Burns and Honkala 1990a, Schmidt and McDonald 1990). The exotic pathogen white pine blister rust (*Cronartium ribicola*) is attacking and killing *Pinus albicaulis* trees in many parts of the interior northwestern U.S. It is especially destructive in more mesic habitats that favor infection of its alternate host *Ribes* spp. *Pinus albicaulis* is very susceptible to this disease, and the only real hope is propagating individuals that have high genetic resistance to blister rust (Steel et al. 1983, Burns and Honkala 1990a, Schmidt and McDonald 1990, Tomback et al. 2001).

Larix lyallii is a very slow-growing, long-lived tree, with individuals attaining up to 1000 years in age (Richards 1981). It is generally intolerant of shade from other trees, but extreme environmental conditions limit competition. Reproduction is typically by seed and is most favorable on moist mineral soil. Seedling growth is initially very slow and accelerates after an extensive root system is established. Major disturbances to stands of this group are windthrow and snow avalanches. Lightning damage to individual trees is common, but sparse canopies and rocky terrain serve to limit the spread of fire.

IVC Environment: This subalpine group typically occurs at elevations of 1800-2700 m and occasionally up to 3000 m. Occurrences occupy warmer southern and western aspects on mid to upper slopes, shoulder slopes, ridges, and exposed high-elevation benches. These sites are often subject to desiccating winds, heavy snowpack, and extreme diurnal temperate fluctuations. Substrates include a variety of igneous, metamorphic, and sedimentary geologic formations. Soils are well- to excessively

drained and can include coarse sand, silt and clay loams. *Climate:* The climate is typically very cold and snowy in winter and relatively dry in summer. Yearly snow accumulations are often over 3 m in the northern Cascades and 2-3 m in the Rockies. Some sites have little snow accumulation because of high winds and sublimation. In this harsh, often windswept environment, trees are often stunted and flagged from damage associated with wind and blowing snow and ice crystals, especially at the upper elevations of the type. *Soil/substrate/hydrology:* Where *Larix lyallii* is dominant, soils are poorly developed and almost exclusively of fractured granitic or quartzite rocks which have not been previously colonized by other vascular plants. The majority of sites where *Larix lyallii* occurs are in areas which experienced heavy alpine glaciation less than 12,000 years ago.

DISTRIBUTION

IVC Geographic Range: This group occurs in the northern Rocky Mountains, west into the eastern Cascade Range and eastern Washington and Oregon, and east into the mountain "islands" of central Montana. It also occurs in the Canadian Rockies of Alberta and eastern British Columbia.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA, ID, MT, NV, OR, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G4 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A0631 *Larix lyallii* Woodland Alliance** [Subalpine Larch Woodland Alliance] []
  Vegetation within this alliance is defined by short-statured canopies of *Larix lyallii* found scattered through high-altitude habitats of the northern Rocky Mountains from central Idaho through northwestern Montana to the vicinity of Lake Louise, Alberta, Canada.
- **A3368 *Pinus albicaulis* Forest & Woodland Alliance** [Whitebark Pine Forest & Woodland Alliance] []
  These high-elevation forests and woodlands are dominated by *Pinus albicaulis* or codominated by *Abies lasiocarpa* and occur near treeline in the interior northwestern U.S. and adjacent southwestern Canada.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: F.H. Eyre (1980)

IVC Description Author: M.E. Hall and M.S. Reid

IVC Description Date: 2013-06-10

IVC Acknowledgments:

A0631 Subalpine Larch Woodland Alliance

[ ]

Larix lyallii Woodland Alliance

Subalpine Larch Woodland

IVC Scientific Name: *Larix lyallii* Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation within this alliance is found scattered through high-altitude habitats of the northern Rocky Mountains from central Idaho through northwestern Montana to the vicinity of Lake Louise, Alberta, Canada. A second, smaller distribution occurs on the eastern slope of the northern Cascades, from near Wenatchee, Washington, north into the mountains of southern

British Columbia. *Larix lyallii* often occurs in pure stands, sometimes with variable amounts of *Abies lasiocarpa* also present to codominant. Other conifers that may be present include *Pinus albicaulis* or *Picea engelmannii*. These latter species are often at their upper elevational limits when found in stands of this alliance. In the Cascade Range, this alliance may grade into forests of *Tsuga mertensiana*. Understories are diverse in form, due to a variety of habitats within the range of this alliance. Common shrubs throughout the range of *Larix lyallii*-dominated woodlands include *Phyllodoce empetriformis, Vaccinium deliciosum*, and *Vaccinium scoparium*. *Arnica latifolia* and *Luzula glabrata var. hitchcockii* are common, widespread herbaceous associates. Adjacent vegetation is often alpine tundra or permanent snowfields at the upper elevation margin and coniferous forest (usually *Tsuga mertensiana*-dominated in the Cascades, *Abies lasiocarpa*-dominated in the northern Rockies) at the lower margin. At similar elevations, stands of *Pinus albicaulis* may occur on adjacent south-facing slopes or ridges with lower snow accumulations and seasonal soil drought. Stands usually occur above the upper limits of other trees on north-facing cirques or slopes where snowfields lie until June or July. Elevation ranges from 2000-2800 m, and frost may occur any time of the year. The climate is very snowy and moist with yearly snow accumulations of over 3 m in the northern Cascades and 2-3 m in the Rockies. Abrasion by wind-driven snow is characteristic and leads to stunted or flagged trees in most stands. Soils are poorly developed and almost exclusively of fractured granitic or quartzite rocks which have not been previously colonized by other vascular plants. The majority of sites where stands of this alliance occur are in areas which experienced heavy alpine glaciation less than 12,000 years ago.

IVC Dynamics: *Larix lyallii* is a very slow-growing, long-lived tree, with individuals attaining up to 1000 years in age, and may outlive several generations of *Abies lasiocarpa*. It is generally intolerant of shade from other trees, but extreme environmental conditions limit competition in upper elevation stands. At lower elevations, shade-tolerant *Abies lasiocarpa* assumes canopy dominance in the absence of disturbance. For *Larix lyallii*, reproduction is typically by seed and is most favorable on moist mineral soil. Seedling growth is initially very slow and accelerates after an extensive root system becomes established. Major disturbances to stands of this alliance are typically windthrow and snow avalanches. Lightning damage to individual trees is common, but sparse canopies, cool, moist habitats, and rocky terrain serve to limit the spread of fire in upper elevation stands. Lower elevation stands may be colonized by *Pinus contorta* after fire.

IVC Environment: These forests and woodlands occur in high-elevation treeline habitats of the northern Rockies and northeastern Cascade Range extending into Canada. Stands of this alliance usually occur above the upper limits of other trees on north-facing cirques or slopes where snowfields lie until June or July. Elevation ranges from 2000-2800 m, and frost may occur any time of the year. It occurs on slopes of all degrees of inclination, with moderate to steep (30-70%) lee slopes (east- and north-facing) predominating. The climate is very snowy and moist with yearly snow accumulations of over 3 m in the northern Cascades and 2-3 m in the Rockies. Abrasion by wind-driven snow is characteristic and leads to stunted or flagged trees in most stands. Soils are poorly developed and almost exclusively of fractured granitic or quartzite rocks which have not been previously colonized by other vascular plants. The majority of sites where stands of this alliance occur are in areas which experienced heavy alpine glaciation less than 12,000 years ago.

DISTRIBUTION

IVC Geographic Range: Vegetation within this alliance is found scattered through high-altitude habitats of the northern Rocky Mountains from central Idaho through northwestern Montana to the vicinity of Lake Louise, Alberta, Canada. A second, smaller distribution occurs on the eastern slope of the northern Cascade Range, from near Wenatchee, Washington, north into the mountains of southern British Columbia.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, ID, MT, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000951** ***Larix lyallii / Vaccinium scoparium / Luzula glabrata*** **Woodland** [Subalpine Larch / Grouse Whortleberry / Smooth Woodrush Woodland] []
  G2G3 (1998-11-30) AB?, ID?, MT, WA
- **CEGL005884** ***Larix lyallii / Vaccinium membranaceum / Luzula glabrata*** **Woodland** [Subalpine Larch / Thinleaf Huckleberry / Smooth Woodrush Woodland] []
  G2G3 (2004-01-14) AB, ID?, MT, WA
- **CEGL000521** ***Larix lyallii - Abies lasiocarpa*** **Forest [Placeholder]** [Subalpine Larch - Subalpine Fir Forest] []
  G4 (1996-02-01) AB?, BC?, ID, MT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Sarr, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A3368 Whitebark Pine Forest & Woodland Alliance

[ ]
Pinus albicaulis Forest & Woodland Alliance
Whitebark Pine Forest & Woodland

IVC Scientific Name: *Pinus albicaulis* Forest & Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This subalpine forest and woodland alliance occurs locally in the mountains of the interior northwestern U.S. and adjacent southwestern Canada from the central and northern Rocky Mountains, Klamath Mountains and Cascade Range. These forests are characterized by a coniferous tree canopy, 10-20 m tall, that is dominated by *Pinus albicaulis* or codominated by *Abies lasiocarpa*. Other tree associates, if present, vary by geography and elevation zones. Species include *Picea engelmannii* in more mesic stands, *Pinus contorta* and *Pseudotsuga menziesii* in the lower subalpine, *Tsuga mertensiana* in the Cascades, and *Pinus flexilis* in southern stands. A sparse shrub layer may be present consisting of juvenile trees and other woody species such as *Juniperus communis, Ribes montigenum, Shepherdia canadensis, Symphoricarpos oreophilus*, and *Vaccinium scoparium*. The herbaceous layer is typically sparse, but ranges from nearly absent to a moderately dense cover of graminoids with scattered forbs. Characteristic species include *Achillea millefolium, Antennaria microphylla, Arnica* spp., *Carex geyeri, Carex rossii, Festuca idahoensis, Poa nervosa, Potentilla diversifolia, Solidago multiradiata*, and *Xerophyllum tenax*. Elevations range from 1750-3400 m depending on latitude and geography. Landforms include ridgetops, mountain slopes, glacial trough walls and moraines, landslides and rockslides, and cirque headwalls and basins. Sites may be nearly level to steep-sloping on all aspects. Subalpine stands typically occur where disturbance such as avalanche or fire has temporarily reduced more shade-tolerant tree species, whereas at treeline they are found in mesic, protected pockets away from the extremely harsh environmental conditions. Substrates are generally lithic, well-drained, coarse-textured soils such as shallow, gravelly sands or loams derived from colluvium, glacial till and residuum.

IVC Dynamics: *Pinus albicaulis* is a slow-growing, long-lived conifer that is common at higher elevations in the upper subalpine zone. It typically occurs in a mosaic of tree islands and meadows where it often colonizes sites and creates habitat for less hardy tree species. In lower subalpine forests, it is a seral species, establishing after a large disturbance such as stand-replacing fire or avalanche, or it is restricted to dry, rocky ridges where it competes well with shade-tolerant tree species. Without disturbance it will be overtopped in 100-120 years by faster growing, shade-tolerant species such as *Abies lasiocarpa, Picea engelmannii, Pseudotsuga menziesii*, and *Tsuga mertensiana*. Although crown fires and hot surface fires kill *Pinus albicaulis*, it tolerates low-intensity surface fires that will kill the shade-tolerant understory. Fire intervals range from 30-300 years.

Birds and small mammals often eat and cache the large, wingless pine seeds and are responsible for the dispersal of this species. Most important is the Clark's nutcracker, which can transport the seeds long distances and cache them on exposed windswept and burned-over sites. This results in the regeneration of pines in clumps from forgotten caches (Eyre 1980, Steele et al. 1983, Burns and Honkala 1990a, Schmidt and McDonald 1990).

Pests include the mountain pine beetle (*Dendroctonus ponderosae*), which has killed many mature trees in the past, during epidemics where populations of the beetles build up in lower elevation *Pinus contorta* stands, then move up into the *Pinus albicaulis* stands (Steele et al. 1983, Burns and Honkala 1990a, Schmidt and McDonald 1990). The exotic pathogen white pine blister rust (*Cronartium ribicola*) is attacking and killing *Pinus albicaulis* trees in many parts of the interior northwestern U.S. It is especially destructive in more mesic habitats that favor infection of its alternate host *Ribes* spp. *Pinus albicaulis* is very susceptible to this disease, and the only real hope is propagating individuals that have high genetic resistance to blister rust (Steel et al. 1983, Burns and Honkala 1990a, Schmidt and McDonald 1990).

IVC Environment: Forests included in this subalpine alliance occur locally in the Rocky Mountains in Wyoming, Montana, Idaho and adjacent Canada west to the Cascade Range in Oregon and Washington. Elevations range from 1750-3400 m depending on latitude and geography. Climate is mostly semiarid, temperate continental with maritime influences in the Cascades and western Rocky Mountains. Winter temperatures range from very cold in the Rocky Mountains to moderately cold in the

Cascades. Mean annual precipitation ranges from 60-180 cm occurring mostly in the winter. Snowpack is often deep, especially in the western ranges and may linger into summer. Some sites have little snow accumulation because of high winds and sublimation. Summers are cool and typically dry from July to September. Stands typically occur below the subalpine forest where disturbance such as avalanche or fire has temporarily reduced more shade-tolerant tree species, or in protected areas at treeline. Above the continuous forestline, these woodlands occur as a mosaic of tree islands or patches separated by subalpine meadow or rock outcrops. Landforms include ridgetops, mountain slopes, glacial trough walls and moraines, landslides and rockslides, and cirque headwalls and basins. Sites may be nearly level to steep-sloping, on all aspects. Some stands occur at treeline in mesic, protected pockets away from the extremely harsh environmental conditions. Substrates are generally lithic, well-drained, coarse-textured soils such as shallow, gravelly sands or loams derived from colluvium, glacial till and residuum from a variety of volcanic, igneous, sedimentary and metamorphic rocks. Parent materials include basalt, gneiss, granite, andesite, sandstone, and limestone. Soils may be calcareous and alkaline, but are more typically non-calcareous and acidic. Calcareous soils are more common in more mesic northern stands.

DISTRIBUTION

IVC Geographic Range: This alliance occurs intermittently throughout the northern and central Rocky Mountains and in the Cascade Range. Stands are reported from Idaho, Montana, Oregon, Wyoming and Montana, north to British Columbia and Alberta, Canada, and south to northern Nevada.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA, ID, MT, NV, OR, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005838** ***Pinus albicaulis - Abies lasiocarpa / Vaccinium scoparium / Xerophyllum tenax*** **Woodland** [Whitebark Pine - Subalpine Fir / Grouse Whortleberry / Common Beargrass Woodland] []
  G3? (2004-02-10) AB, ID, MT, WA?
- **CEGL005840** ***Pinus albicaulis - (Picea engelmannii) / Dryas octopetala*** **Woodland** [Whitebark Pine - (Engelmann Spruce) / Eight-petal Mountain-avens Woodland] []
  G2G3 (2009-07-17) AB, MT?
- **CEGL005837** ***Pinus albicaulis - Abies lasiocarpa / Vaccinium membranaceum / Xerophyllum tenax*** **Woodland** [Whitebark Pine - Subalpine Fir / Thinleaf Huckleberry / Common Beargrass Woodland] []
  G3? (2004-02-10) AB, ID, MT, WA?
- **CEGL000751** ***Abies lasiocarpa - Pinus albicaulis / Arctostaphylos uva-ursi*** **Woodland** [Subalpine Fir - Whitebark Pine / Kinnikinnick Woodland] []
  G2Q (2000-12-11) BC?, WA
- **CEGL000752** ***Abies lasiocarpa - Pinus albicaulis / Vaccinium scoparium*** **Woodland** [Subalpine Fir - Whitebark Pine / Grouse Whortleberry Woodland] []
  G5? (1996-02-01) AB?, ID, MT, OR, WA?, WY
- **CEGL005839** ***Pinus albicaulis - Abies lasiocarpa / Vaccinium scoparium / Luzula glabrata*** **Woodland** [Whitebark Pine - Subalpine Fir / Grouse Whortleberry / Smooth Woodrush Woodland] []
  G3? (2004-02-10) AB, ID, MT, WA, WY?
- **CEGL005836** ***Pinus albicaulis - Abies lasiocarpa / Menziesia ferruginea / Xerophyllum tenax*** **Woodland** [Whitebark Pine - Subalpine Fir / Rusty Menziesia / Common Beargrass Woodland] []
  G3? (2004-02-10) AB, ID, MT
- **CEGL000131** ***Pinus albicaulis / Vaccinium scoparium*** **Forest** [Whitebark Pine / Grouse Whortleberry Forest] []
  G4 (1996-02-01) AB?, ID, MT, OR, WY
- **CEGL002326** ***Abies lasiocarpa var. lasiocarpa - Pinus albicaulis / Juniperus communis*** **Woodland** [Subalpine Fir - Whitebark Pine / Common Juniper Woodland] []
  G3 (2006-09-05) BC, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: B.C. Johnston (1987); C. Chappell et al. (1997)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-01-08
IVC Acknowledgments:

G101 Rocky Mountain Limber Pine Subalpine-Montane Woodland

[ ]

IVC Colloquial Name: Rocky Mountain Limber Pine Subalpine-Montane Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This woodland group is found throughout the Rocky Mountains and extends west into the Colorado Plateau, isolated ranges in the Mojave Desert and Great Basin into eastern Sierra Nevada. Stands are characterized by an open tree canopy (<25% cover) that is often patchy with heights ranging from 1-2 m (krummholz) to over 15 m tall that is dominated by *Pinus flexilis* (without bristlecone pines). Other trees such as *Juniperus scopulorum, Picea engelmannii, Pinus contorta, Pinus monophyla, Pinus ponderosa, Pseudotsuga menziesii, Populus tremuloides*, or *Abies concolor* are occasionally present to codominant, but do not dominate. Understory layers, if present, are sparse to moderately dense and composed of xeric shrubs, graminoids and cushion plants. *Arctostaphylos patula, Arctostaphylos uva-ursi, Artemisia arbuscula, Artemisia nova, Artemisia tridentata, Cercocarpus ledifolius, Jamesia americana, Juniperus communis, Mahonia repens, Purshia tridentata, Rhus trilobata, Ribes montigenum, Shepherdia canadensis, Symphoricarpos oreophilus* or *Vaccinium* spp. may form an open shrub layer in some stands. Herbaceous layers are often sparse but are highly variable. The most common species are graminoids such as *Achnatherum hymenoides (= Oryzopsis hymenoides), Bouteloua gracilis, Calamagrostis purpurascens, Carex rossii, Festuca arizonica, Festuca campestris, Festuca idahoensis, Koeleria macrantha, Leucopoa kingii (= Festuca kingii), Muhlenbergia montana, Poa fendleriana*, and *Pseudoroegneria spicata*. Scattered forbs are frequently present. Stands occur on dry, rocky ridges and slopes near upper treeline above the matrix spruce-fir forest and extends down to the lower montane zone. Sites are harsh, exposed to desiccating winds, with rocky substrates and a short growing season that limit plant growth. Elevations range from 2400-3670 m, extending down to 1385 m in northern latitudes. Soils are typically well-drained, shallow, skeletal and coarse-textured such as gravelly, sandy loams or loams. but may include alkaline clays. Stands grow best on calcareous soils derived from limestone or sandstone, but parent material is variable and includes a variety of igneous, sedimentary, and metamorphic rocks. Exposed bedrock is common, and many stands have over 50% bare soil.

IVC Dynamics: *Pinus flexilis* are slow-growing, long-lived trees that are intolerant of shade and may live 1000 years and attain 18 m in height. Natural regeneration of *Pinus flexilis* appears to be associated with caching of the large wingless seeds, primarily by Clark's nutcracker (*Nucifraga columbiana*) (Lanner and Vander Wall 1980). Birds and small mammals often eat and cache the large, wingless pine seeds. Most important is the Clark's nutcracker, which can transport the seeds long distances and cache them on exposed windswept sites (Lanner and Vander Wall 1980). This results in the regeneration of pines in clumps from forgotten caches (Eyre 1980, Steele et al. 1983). Germination and rooting will sometimes be restricted to crevices in rock.

Although some of the conifers that are typically codominant in *Pinus flexilis* stands are late-successional species, they are not likely to displace *Pinus flexilis*. This is because most of these stands occur on harsh sites where *Pinus flexilis* is more competitive than most other conifer species. These stands are generally considered to be topographic or edaphic "climax" stands (Cooper 1975, Eyre 1980). Because *Pinus flexilis* occurs over a broad range of elevations, it can also be important as a post-fire seral species on drier sites in the Rocky Mountains (Cooper 1975, Peet 1988). Stands are also vulnerable to fungi, parasites, and insect attacks, including mountain pine beetle infestations and blister rust infection.

Fires seldom destroy these woodlands due to the sparse nature of the canopy cover of trees and abundant bare ground. Peet (1978, 1981) notes that *Pinus aristata* is dominant at higher elevations in much of the southern Rocky Mountains, where *Pinus flexilis* is restricted to lower elevations. This is attributed to apparent competitive exclusion because *Pinus flexilis* is dominant at high elevations in northern Colorado, Wyoming and Montana.

IVC Environment: This woodland group is found throughout the Rocky Mountains and extends west into the Colorado Plateau, isolated ranges in the Mojave Desert and Great Basin into eastern Sierra Nevada. Stands occur on dry, rocky ridges and slopes near upper treeline above the matrix spruce-fir forest and extends down to the lower montane zone. Sites are harsh, exposed to desiccating winds, with rocky substrates and a short growing season that limit plant growth. Higher elevation occurrences are found well into the subalpine-alpine transition on wind-blasted, mostly west-facing slopes and exposed south ridges, although stands occur on all aspects. Elevations range from 2400-3670 m, extending down to 1385 m in northern latitudes. Steep slopes and often low ground cover often result in high rates of surface erosion.

Climate: Climate is semi-arid, cold temperate with cool summers. Annual precipitation patterns and amounts vary with latitude, but locally the sites are typically xeric on exposed, windswept rocky slopes and ridges.

Soil/substrate/hydrology: Soils are typically well-drained, shallow, skeletal and coarse-textured such as gravelly, sandy loams or loams. but may include alkaline clays. Stands grow best on calcareous soils derived from limestone or sandstone, but parent material is variable and includes a variety of igneous, sedimentary, and metamorphic rocks. Depending on the stand, bedrock may include a mixture of andesite, basalt, breccia, conglomerate dolomite, granite, gneiss, lava, limestone, quartzite, rhyolite, schist, sandstone, serpentine, shale, or tuff. Exposed bedrock is common and many stands have over 50% bare soil. Soil pH is typically neutral or slightly alkaline, but ranges from acidic to alkaline.

DISTRIBUTION

IVC Geographic Range: This group is found throughout the Rocky Mountains from Alberta, Canada south to north-central New Mexico and west to the Colorado Plateau, isolated ranges in the Mojave Desert and Great Basin to the Eastern Sierra Nevada.
IVC Nations: CA,US
IVC States/Provinces: AB, CA, CO, ID, MT, NM, NV, OR, UT, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A0540 *Pinus flexilis* Rocky Mountain Woodland Alliance** [Limber Pine Rocky Mountain Woodland Alliance] []
  This woodland alliance occurs intermittently from timberline to lower montane and foothill zones throughout much of the Rocky Mountains as well as disjunct populations in surrounding regions with stands solely dominated or codominated by the evergreen needle-leaved tree *Pinus flexilis*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Triepke et al. (2021)
IVC Description Author: K. Schulz
IVC Description Date:
IVC Acknowledgments:

A0540 Limber Pine Rocky Mountain Woodland Alliance

[ ]
Pinus flexilis Rocky Mountain Woodland Alliance
Rocky Mountain Limber Pine Woodland

IVC Scientific Name: *Pinus flexilis* Rocky Mountain Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Woodlands included in this alliance occur intermittently from timberline to lower montane zones throughout much of the Rocky Mountains on escarpments and other geographic breaks. The vegetation is characterized by an open canopy typically 3-10 m tall, but individuals may reach 15 m. Stands are solely dominated or codominated by the evergreen needle-leaved tree *Pinus flexilis*. Other trees species that may be present to codominant vary by geography and elevation zones throughout the woodland's range and include *Pinus albicaulis, Picea engelmannii, Populus tremuloides*, or *Pseudotsuga menziesii* in the subalpine, and *Pinus contorta, Pinus ponderosa*, or *Pseudotsuga menziesii* in the montane zone. The understory vegetation is typically sparse because sites are dry and have a large cover of rock. A sparse shrub layer may be present that includes tall shrubs such as *Artemisia tridentata, Cercocarpus ledifolius, Jamesia americana, Rhus trilobata*, and *Shepherdia canadensis*. *Arctostaphylos uva-ursi, Juniperus communis, Mahonia repens, Ribes cereum*, and *Yucca glauca* are the most frequent low shrubs. The herbaceous layer often dominates the understory and is composed primarily of graminoids such as *Achnatherum hymenoides, Bouteloua gracilis, Calamagrostis purpurascens, Carex rossii, Festuca idahoensis, Festuca campestris, Leucopoa kingii*, and *Koeleria macrantha*. Sites are typically xeric on exposed, windswept rocky slopes and ridges from montane to subalpine. Elevations range from 1385-3350 m. These open woodlands occur on all aspects, but are most common on dry south-

and west-facing slopes. Soils are typically shallow, skeletal and coarse-textured, such as gravelly, sandy loams or loams, but may include alkaline clays. Exposed bedrock is common and many stands have over 50% bare soil.

IVC Dynamics: Although some of the conifers that are typically codominant in *Pinus flexilis* stands are late-successional species, they are not likely to displace *Pinus flexilis*. This is because most of these stands occur on harsh sites where *Pinus flexilis* is more competitive than most other conifer species. These stands are generally considered to be topographic or edaphic "climax" stands (Cooper 1975, Eyre 1980). Because *Pinus flexilis* occurs over a broad range of elevations, it can also be important as a post-fire seral species on drier sites in the Rocky Mountains (Cooper 1975, Peet 1988). Peet (1978a) reported apparent competitive displacement with *Pinus flexilis* in Colorado. He noted that *Pinus flexilis* may dominate xeric sites from low to high elevations, except where *Pinus aristata* or *Pinus albicaulis* occur. Birds and small mammals often eat and cache the large, wingless pine seeds. Most important is the Clark's nutcracker, which can transport the seeds long distances and cache them on exposed windswept sites (Lanner and Vander Wall 1980). This results in the regeneration of pines in clumps from forgotten caches (Eyre 1980, Steele et al. 1983).

IVC Environment: Woodlands included in this alliance occur intermittently from subalpine to lower montane zones throughout much of the Rocky Mountains. They occur on windswept mid to upper portions of steep to moderate slopes and ridgetops. Elevations range from 1385-3050 m. Climate is semiarid, cold temperate. Annual precipitation patterns and amounts are variable, but locally the sites are typically xeric on exposed, windswept rocky slopes and ridges. These open woodlands occur on all aspects, but are most common on dry south- and west-facing slopes. Soils are typically shallow, skeletal and coarse-textured, such as gravelly, sandy loams or loams, but may include alkaline clays. Stands grow best on calcareous soils derived from limestone or sandstone, but parent material is variable and includes a variety of igneous, sedimentary, and metamorphic rocks. Depending on the stand, bedrock may include a mixture of andesite, basalt, lava, limestone, dolomite, granite, gneiss, quartzite, rhyolite, schist, sandstone, serpentine, or shale. Exposed bedrock is common and many stands have over 50% bare soil. Soil pH is typically neutral or slightly alkaline, but ranges from acidic to alkaline.

DISTRIBUTION

IVC Geographic Range: Communities of this alliance occur from the southern Rocky Mountains north to the Canadian Rocky Mountains, west into the Great Basin and Columbia Plateau and east into the Wyoming Basins.

IVC Nations: CA,US

IVC States/Provinces: AB, CA, CO, ID, MT, NM, NV, OR, UT, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000807 *Pinus flexilis / Juniperus communis* Woodland** [Limber Pine / Common Juniper Woodland] []
  G5 (1996-02-01) AB, CA?, CO, ID, MT, NV, OR, UT, WY
- **CEGL000802 *Pinus flexilis / Arctostaphylos uva-ursi* Woodland** [Limber Pine / Kinnikinnick Woodland] []
  G4 (1994-02-23) AB, CO, MT, NM
- **CEGL000806 *Pinus flexilis / Festuca campestris* Woodland** [Limber Pine / Rough Fescue Woodland] []
  G3 (1996-02-01) AB, MT
- **CEGL005416 *Pinus flexilis / Festuca arizonica - Muhlenbergia montana* Woodland** [Limber Pine / Arizona Fescue - Mountain Muhly Woodland] []
  GNR. AB, CO, MT, NM
- **CEGL000815 *Pinus flexilis* Scree Woodland** [Limber Pine Scree Woodland] []
  G3Q (1996-02-01) AB, MT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-01-08

IVC Acknowledgments:

M890 Rocky Mountain Intermontane Subboreal Forest

Forêts subboréales intermontagneuses des Rocheuses

IVC Colloquial Name: Rocky Mountain Intermontane Subboreal Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M890 describes the upland subboreal forests and woodlands of the intermontane plateau areas of central British Columbia. Forest canopies can be evergreen coniferous, cold-deciduous broad-leaved, or a conifer - broad-leaved mixture. Stand-replacing fires and insect infestations are the most widespread forms of natural disturbance throughout the range of M890. Dominant tree species are interior spruce (*Picea engelmannii x glauca*), subalpine fir (*Abies lasiocarpa*) and lodgepole pine (*Pinus contorta* var. *latifolia*). Rocky Mountain Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) co-occurs in warmer locations. Black spruce (*Picea mariana*) sometimes occurs, primarily on poor sites with cold soils. Trembling aspen (*Populus tremuloides*) and paper birch (*Betula papyrifera*) commonly occur following disturbance and often dominate near settlements and in agricultural areas. Understories vary from dense, species-rich shrub and herb conditions to poorly developed shrub and herb layers with continuous feathermoss and/or lichen ground cover. Understory species diversity is generally high. Common understory shrubs include prickly rose (*Rosa acicularis*), shiny-leaved meadowsweet (*Spiraea lucida*), bracted honeysuckle (*Lonicera involucrata*), mountain huckleberry (*Vaccinium membranaceum*), squashberry (*Viburnum edule*), bristly black currant (*Ribes lacustre*) and soapberry (*Shepherdia canadensis*). Typical herb/dwarf shrub species include bunchberry (*Cornus canadensis*), twinflower (*Linnaea borealis*), one-sided wintergreen (*Orthilia secunda*), fireweed (*Chamerion angustifolium)* and arnicas (*Arnica* spp.). The most common moss species are red-stemmed feathermoss (*Pleurozium schreberi*), knight's plume moss (*Ptilium crista-castrensis*) and stairstep moss (*Hylocomium splendens*).

M890 occurs within a subhumid, mostly continental, temperate climate, with short, warm summers and cool, snowy winters. Local climatic effects significantly modify seasonal temperature extremes and annual precipitation in some portions of the range. As a result, mean annual temperatures (-0.5°C to 4.5°C) and precipitation (<350 mm to >1500 mm) are highly variable throughout the range. Up to half of the annual precipitation falls as snow. M890 forests occupy the lower elevations of the plateaux and lowlands of the southern interior system of the Cordilleran physiographic region, from the valley bottoms to the lower boundary of the high montane zone in surrounding mountain ranges (approximately 450-1500 mASL). Regional geologic and topographic features produce an array of local site conditions. All parts of the range experienced Pleistocene glaciation; soils are mostly Luvisols and Brunisols developed in glacial surficial materials.

Three subtypes distinguish regional variation within this Macrogroup. Subtype CM890a [Cool Dry Rocky Mountain Subboreal Forest] characterizes the lodgepole pine dominated forests that prevail in the dry, cool climate of the southwestern portion of the range. CM890b [Warm Rocky Mountain Subboreal Forest] characterizes the mixed lodgepole pine - interior spruce - Douglas-fir forests that occur in warmer areas of the central and southeastern portions of the range. CM890c [Cool Humid Rocky Mountain Subboreal Forest] characterizes the subalpine fir - interior spruce forests that occur in moist to wet climates primarily of the northern portion of the range.

IVC Geographic Range:

IVC Nations: CA,US?

IVC States/Provinces:

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: M890 describes the low elevation subboreal forests and woodlands of the plateau landscapes of central British Columbia. These forests are characterized by general dominance of *Pinus contorta, Picea engelmannii x glauca, Abies lasiocarpa* and *Populus tremuloides* on circum-mesic sites. They are transitional to upland Cordilleran boreal forests, described in M496 [West-Central North American Boreal Forest], which occur to the north and east of the M890 range. *Picea glauca* replaces *P. engelmannii x glauca* on circum-mesic sites in M496 forests and *P. mariana* is more prevalent in upland stands. Understories in M890 include species with more southerly distributions (e.g., *Spiraea lucida* and *Rubus parviflorus*).

Low elevation forests of warmer continental climates adjacent to the range of M890 that are dominated by *Thuja plicata* and *Tsuga heterophylla* are described by M500 [Central Rocky Mountain Mesic Lower Montane Forest]. Low elevation forests in drier climates south of the range of M890 that have more extensive *Pseudotsuga menziesii* forests are described by M501 [Central Rocky Mountain Dry Lower Montane - Foothill Forest]. Low elevation forests of maritime temperate climates near the Pacific coast are described by M024 [Vancouverian Coastal Rainforest]. Higher elevation forests within (and surrounding) the range of M890 that are characterized by *Picea engelmannii,* are described by M020 [Rocky Mountain Subalpine - High Montane Forest].

Abies lasiocarpa here refers to both *A. lasiocarpa* (subalpine fir) and *A. bifolia* (Rocky Mountain alpine fir), as well as their hybrids, as recognized by VASCAN.

Pseudotsuga menziesii here refers to variety *glauca* (Rocky Mountain Douglas-fir).

Pinus contorta here refers to variety *latifolia* (lodgepole pine).

Groups in Canada:

CNVC Concept Author: D. Meidinger, W. MacKenzie, K. Baldwin
CNVC Concept Date: 2015-04-01
CNVC Description Author: D. Meidinger and K. Baldwin
CNVC Description Date: 2017-07-01
IVC Primary Concept Source: Faber-Langendoen et al. (2012)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

M024 Vancouverian Coastal Rainforest

Forêts pluviales côtières de la région floristique de Vancouver

IVC Colloquial Name: Vancouverian Coastal Rainforest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M024 describes the low to mid-elevation coastal forests of Pacific maritime temperate climates in western North America. The Canadian expression includes forests of the southern and central British Columbia (BC) coast. Most of these forests are rainforests comprising stands of large trees that are hundreds of years old. Canopies are typically evergreen coniferous, although cold-deciduous broad-leaved species are sometimes present in the tree stratum following disturbance. Stand-replacing fires occur occasionally in drier parts of the range, otherwise gap dynamics driven by pathogens, insects and windthrow is the prevailing disturbance regime. Western hemlock (*Tsuga heterophylla*) is the characteristic tree species. In Canada, other common trees include Pacific silver fir (*Abies amabilis*), western red cedar (*Thuja plicata*), coast Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), Sitka spruce (*Picea sitchensis*), yellow-cypress (*Callitropsis nootkatensis*), grand fir (*Abies grandis*), red alder (*Alnus rubra*) and big-leaved maple (*Acer macrophyllum*). Shore pine (*Pinus contorta* var. *contorta*) is dominant on some very dry sites. Western white pine (*Pinus monticola*) and mountain hemlock (*Tsuga mertensia*) occur occasionally. The understory is typically dominated by broad-leaved shrubs, conifer regeneration, ferns and a well-developed moss layer. Common shrubs include oval-leaved blueberry (*Vaccinium ovalifolium*), red huckleberry (*V. parvifolium*), salal (*Gaultheria shallon*), false azalea (*Menziesia ferruginea*) and, in drier climate areas, Cascade barberry (*Berberis nervosa*). Deer fern (*Blechnum spicant*) is the most widespread herb; others include foamflowers (*Tiarella* spp.) and western sword fern (*Polystichum munitum*). Lanky moss (*Rhytidiadelphus loreus*), stairstep moss (*Hylocomium splendens*) and Oregon beaked moss (*Kindbergia oregana*) predominate in the moss layer.

In Canada, M024 forests occur between sea level and approximately 1000 mASL in a maritime temperate climate, with cool summers, mild winters and high annual precipitation. Mean annual precipitation varies between approximately 1200 and 4300 mm, the majority falling as rain in winter months; snow is only a minor proportion and localized within the range. Mean annual temperatures vary from approximately 3°to 10° C, depending mostly on latitude and elevation; soils typically don't freeze in winter. Growing degree days above 5° C (GDD) vary between approximately 1000 and 2200 across the Canadian range. All parts of the Canadian range experienced Pleistocene glaciation; soils are mostly Podzols developed in glacial surficial materials. Mor humus forms predominate.

Three subtypes characterize regional variation in the Canadian range of M024. CM024a [Drier Vancouverian Rainforest] primarily occurs in drier climatic areas where there is a history of fire. Coast Douglas-fir co-dominates in the canopy. Conversely, CM024c [Northern Vancouverian Rainforest] describes the Canadian expression of Pacific coastal rainforests at the northern edge of their global range. These forests are dominated by western hemlock and Sitka spruce and notable for the absence of Pacific silver fir and coast Douglas-fir. CM024b [Typic Vancouverian Rainforest] is the predominant condition occurring over most of the Canadian range.

IVC Geographic Range: These forests cover nearly 30° of latitude (about 36° to 62°N latitude), extending from the Gulf of Alaska to northern California but lying within 60-120 km of the Pacific coast. Areas occupied include southeastern Alaska, much of the coastal mountain ranges of British Columbia, Washington, and Oregon, the western slope of the Cascade Range and maritime lowlands of western California.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: M024 describes low elevation rainforests found in the wet maritime temperate climates of the Pacific coast of North America. Drier maritime climate forests and woodlands, lacking *Tsuga heterophylla* and dominated by *Pseudotsuga menziesii* var. *menziesii*, often with *Quercus garryana* and/or *Arbutus menziesii*, are included in M886 [Southern Vancouverian Dry Foothill Forest & Woodland]. Higher elevation montane and subalpine forests and woodlands contiguous with the range of M024 are characterized by M025 [Vancouverian Subalpine - High Montane Forest]. Lower elevation forests and woodlands of continental temperate climates east of the Coast Mountains are described by M890 [Rocky Mountain Intermontane Subboreal Forest], M501 [Central Rocky Mountain Dry Lower Montane - Foothill Forest] or M500 [Central Rocky Mountain Mesic Lower Montane Forest]. Higher elevation montane and subalpine forests of continental temperate climates on the eastern side of the Coast Mountains are described by M020 [Rocky Mountain Subalpine - High Montane Forest].

Pseudotsuga menziesii here refers to variety *menziesii* (coast Douglas-fir).

Vaccinium ovalifolium here includes *V. alaskaense* (Alaska blueberry), according to VASCAN.

The term "rainforest" is used sensu Alaback (1991):

1) greater than 1400 mm annual precipitation, 10% or more occurring during the summer months;

2) cool frequently overcast summers, July isotherm < 16° C;
3) fire infrequent, and not an important evolutionary factor;
4) dormant season caused by low temperatures, may be accompanied by transient snow.

Groups in Canada:

- **G205 Vancouverian Dry Coastal Beach Pine Forest & Woodland []**
- **G240 North Pacific Maritime Coast Douglas-fir - Western Hemlock Rainforest [Forêts maritimes de douglas de Menzies et de pruches de l'Ouest du nord du Pacifique]**
- **G241 North Pacific Maritime Pacific Silver Fir - Western Hemlock Rainforest [Forêts maritimes de sapins blancs et de pruches de l'Ouest du nord du Pacifique]**
- **G751 North Pacific Western Hemlock - Sitka Spruce - Western Red Cedar Rainforest [Forêts de pruches de l'Ouest, d'épinettes de Sitka et de cèdre de l'Ouest du nord du Pacifique]**
- **G237 North Pacific Red Alder - Big-leaved Maple - Coast Douglas-fir Rainforest [Forêts d'aulnes rouges, d'érables grandifoliés et de douglas de Menzies du nord du Pacifique]**
- **G750 North Pacific Maritime Western Hemlock - Sitka Spruce Rainforest [Forêts maritimes de pruches de l'Ouest et d'épinettes de Sitka du nord du Pacifique]**

CNVC Concept Author: D. Meidinger, W. MacKenzie, K. Baldwin, USNVC
CNVC Concept Date: 2015-04-01
CNVC Description Author: D. Meidinger and K. Baldwin
CNVC Description Date: 2017-08-01
IVC Primary Concept Source: V.J. Krajina (1965)
IVC Description Author: G. Kittel, D. Meidinger and D. Faber-Langendoen
IVC Description Date: 2015-05-14
IVC Acknowledgments:

G205 Vancouverian Dry Coastal Beach Pine Forest & Woodland

[ ]

IVC Colloquial Name: Vancouverian Dry Coastal Beach Pine Forest & Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group consists of old, stabilized sand dunes covered in forests or woodlands of *Pinus contorta var. contorta*. It occurs on long stabilized sand dunes in Washington, Oregon into northernmost California in the coastal areas. It may occur in British Columbia but this needs to be confirmed.
IVC Dynamics:
IVC Environment: Along the Pacific Coast, it occupies well-stabilized sand dunes.

DISTRIBUTION

IVC Geographic Range: This group occurs along the coastal dunes and coastal mountains of northern California, Oregon and Washington. It may occur in British Columbia but this needs to be confirmed.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3717 *Pinus contorta var. contorta* Sand Dune Woodland Alliance** [Beach Pine Sand Dune Woodland Alliance] []
  This conifer woodland alliance is dominated by *Pinus contorta var. contorta*. Stands include dense and tall ericaceous shrublands where *Gaultheria shallon, Morella californica, Rhododendron occidentale*, and *Vaccinium ovatum* dominate. It occurs on stabilized to semi-stabilized dunes along the coast of Oregon and northern California.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: C. Chappell, in Faber-Langendoen et al. (2011)
IVC Description Author: C. Chappell, D. Meidinger and G. Kittel
IVC Description Date: 2015-05-15
IVC Acknowledgments: R.J. Cole and R. Crawford

A3717 Beach Pine Sand Dune Woodland Alliance

[ ]
Pinus contorta var. contorta Sand Dune Woodland Alliance
Beach Pine Sand Dune Woodland

IVC Scientific Name: *Pinus contorta var. contorta* Sand Dune Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This conifer woodland alliance is dominated by *Pinus contorta var. contorta*. These woodlands include areas with dense and tall ericaceous shrublands where *Gaultheria shallon, Morella californica, Rhododendron occidentale*, and *Vaccinium ovatum* dominate. More open areas have *Arctostaphylos columbiana* or *Arctostaphylos uva-ursi* in the understory, usually with dense lichen cover on much of the sand, and barely stabilized dunes with *Fragaria chiloensis, Lupinus littoralis, Pteridium aquilinum*, and some *Poa macrantha* present. Stands occur on stabilized to semi-stabilized dunes along the coast of Oregon and northern California. This alliance is best represented in natural conditions in the Oregon Dunes National Recreation Area (NRA), where small but numerous extensive stands of open pine occur.
IVC Dynamics: Fire is infrequent in coastal stands, but shifting sand substrates and wind-borne salt spray act to discourage competition and provide suitable conditions for perpetuation of *Pinus contorta* (Jenny et al. 1969, Kumler 1969, Chappell et al. 1997).
IVC Environment: This alliance is found on coastal wooded sand dunes, where it occurs on all aspects on dry, partially-stabilized sand ridges, slopes, and flats, between open sand and the forest edge. Stands also occur on dry deflation plains. Requirements here seem to be minimal sand movement and well-drained, exposed sites. Soils supporting these woodlands are acidic and rarely are formed from calcareous parent materials.

DISTRIBUTION

IVC Geographic Range: This alliance is found along the coast of Oregon and northern California.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003375 *Pinus contorta var. contorta - Pseudotsuga menziesii / Cladonia* spp. Forest** [Beach Pine - Douglas-fir / Cup Lichen species Forest] []
  G2 (2002-10-28) BC?, WA

- **CEGL002842 *Pinus contorta var. contorta / Gaultheria shallon / Cladonia* spp. Woodland** [Beach Pine / Salal / Cup Lichen species Woodland] []
  G3G5 (2005-09-19) BC
- **CNVC00008 *Pinus contorta var. contorta / Gaultheria shallon - Vaccinium alaskaense / Cladina* spp.** [Beach Pine / Salal - Alaska Blueberry / Reindeer Lichen species] [Pin tordu côtier / Salal - Airelle d'Alaska / Cladonie]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

G240 North Pacific Maritime Coast Douglas-fir - Western Hemlock Rainforest

Forêts maritimes de douglas de Menzies et de pruches de l'Ouest du nord du Pacifique

IVC Colloquial Name: North Pacific Maritime Douglas-fir - Western Hemlock Rainforest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM024a Drier Vancouverian Rainforest
CNVC Concept: The CNVC concept CG0240 appears to be the same as this IVC concept (G240), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept: This group includes much of the major coastal mesic to dry lowland forests dominated by evergreen needle-leaved trees of the Pacific Northwest. Overstory canopy is generally dominated by *Pseudotsuga menziesii* with *Tsuga heterophylla* and/or *Thuja plicata*, but *Pseudotsuga menziesii* may simply be present. *Acer macrophyllum* and *Alnus rubra* sometimes occur in the subcanopy and, if in the upper canopy, not more than 10% cover. Stands occur on dry well-drained as well as subirrigated soils. Well-drained site understory species typically include *Gaultheria shallon, Mahonia nervosa, Rhododendron macrophyllum, Linnaea borealis, Achlys triphylla*, and/or *Vaccinium ovatum*. Intermediate moisture (mesic) locations often have *Acer circinatum* and *Polystichum munitum* (especially on rich-nutrient sites) with one or more of the evergreen shrubs. Moist sites are dominated by *Polystichum munitum, Oxalis oregana, Rubus spectabilis*, and/or *Oplopanax horridus*. Indicator canopy species include *Tsuga heterophylla* and *Pseudotsuga menziesii* with a lack (or very low cover) of *Abies amabilis*. Understory indicator species include *Polystichum munitum, Achlys triphylla, Gaultheria shallon*, and *Mahonia nervosa*; in other words, stands without *Picea sitchensis* and understory species more commonly found in greater abundance close to the coast, such as *Blechnum spicant, Anemone deltoidea*, and *Maianthemum dilatatum*, and without wetland indicator species, such as *Lysichiton americanus*. Geographic distribution is from western Washington, northwestern Oregon, eastern Vancouver Island and mainland southern Coast Mountains in British Columbia. These forests occur on uplands on moist to dry moisture microhabitat conditions within the Western Hemlock Zone of the Pacific Northwest. Elevation ranges from sea level to 1067 m (3500 feet) in Oregon, 610 m (2000 feet) in northern Washington, and to 700 m (2275 feet) in British Columbia. Topography ranges from relatively flat glacial tillplains to steep mountainous terrain.
IVC Dynamics: Stands originated from infrequent stand-replacing fires (perhaps every 150-200 years) that would occur only in the driest microsites, as well as from windthrow gaps. Stand-maintaining surface fires, both aboriginal and lightning-caused, were more frequent (perhaps every 50-100 years) (Agee 1993, Brown and Hebda 1999) prior to European settlement. Surface fires likely maintained a moderately open overstory. Gap dynamics in old forests result in multi-aged stand structure (BCCDC unpubl. data 2013). Unless growing in wind-protected conditions, windthrow and breakage tend to keep these forests from becoming or remaining very old. *Tsuga heterophylla*, one of the leading tree species, is vulnerable to wind breakage and also to uprooting given the shallow soils. If wind exposure is limited, then stand replacement is more gradual, through the process of the mortality of individuals or small numbers of canopy trees. Where windthrow is not pervasive, the age composition of these potentially old edaphic climax forests is uneven. With the exception of those geographic areas in the rainshadow of the Vancouver Ranges or the Olympic Mountains, where summer-dry conditions prevail, fire is not a viable disturbance factor. Although fire is by no means common or frequent, those sites in locations most vulnerable to fire tend to have a major component of *Pseudotsuga menziesii* in their canopies. Hemlock dwarf mistletoe (*Arceuthobium tsugense*) is a moderate threat to *Tsuga heterophylla* (Dorner and Wong 2003, Cadrin and Wolowicz 2005). Within mature and old forests, small gaps result from the death of single trees or small groups of trees due to root-rots, bark beetles or windthrow.

IVC Environment: *Climate:* Climate is relatively mild and moist to wet. Mean annual precipitation is mostly 90-254 cm (35-100 inches) (but as low as 50 cm [20 inches] in the extreme rainshadow) falling predominantly as winter rain. Snowfall ranges from rare to regular, but not persistent, and summers are relatively dry. Elevation ranges from sea level to 1067 m (3500 feet) in Oregon, to 610 m (2000 feet) in northern Washington, and to 700 m (2275 feet) in British Columbia.

Soil/substrate/hydrology: Topography ranges from relatively flat glacial tillplains to steep mountainous terrain. Soils range from dry to subirrigated. Typical soils for *Polystichum* sites would be deep, fine- to moderately coarse-textured, with some subsurface seepage or richer parent material, and for *Oplopanax* sites, soils typically have an impermeable layer at a moderate depth.

DISTRIBUTION

IVC Geographic Range: This group encompasses lowland forests of western Washington, northwestern Oregon, eastern Vancouver Island, and the southern Coast Mountains in British Columbia. In southwestern Oregon and northwestern California, it becomes local and more small-patch in nature. It occurs throughout low-elevation western Washington, except on extremely dry sites and in the hypermaritime zone near the outer coast where it is rare. In Oregon, it occurs on the western slopes of the Cascades, around the margins of the Willamette Valley, and in the Coast Ranges. In British Columbia, it occurs commonly on the eastern (leeward) side of Vancouver Island, and rarely on the windward side, and in the southern Coast Mountains. It also extends to the east side of the Coast Mountains in British Columbia and the Cascades in Washington and Oregon, where a few more continental understory species may also be present. Stands in northern California (East side of the Klamath Mountains) with western hemlock and Douglas-fir with *Chamaecyparis lawsoniana* that are east of the range of redwood, also have *Arbutus*, tan oak and other Mediterranean species present [see Sawyer et al. (2009) and Keeler-Wolf (1990a)].

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.11.78:P, 7.1.7.2:P, 7.1.8.1:P, 7.1.9.3:P

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G3 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline moderate to high, and threats high.

CLASSIFICATION REVIEW

CNVC Elcode: CG0240

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3378 *Tsuga heterophylla - Pseudotsuga menziesii / Cornus unalaschkensis* Mesic Forest Alliance** [Western Hemlock - Douglas-fir / Western Cordilleran Bunchberry Mesic Forest Alliance] []
  This alliance occurs in all the maritime-influenced regions of the Pacific Northwest, from north coastal California to the northern coast of Vancouver Island, British Columbia. Throughout the range of this alliance, much of the annual precipitation occurs as rain. Where snow does occur, it can generally be melted by rain during warm winter storms. In all settings, this alliance occurs where environmental conditions are moderated by the marine influence, with moderate drought and frost. The overstory canopy is dominated by *Pseudotsuga menziesii* and *Tsuga heterophylla*. Understory species such as *Mahonia nervosa, Vaccinium membranaceum*, and *Gaultheria shallon* are intolerant of drought.
- **A3379 *Tsuga heterophylla - Pseudotsuga menziesii / Holodiscus discolor* Dry Forest Alliance** [Western Hemlock - Douglas-fir / Oceanspray Dry Forest Alliance] []
  This is a dry-mesic conifer-dominated forest alliance that is characterized by a mixed overstory canopy of *Tsuga heterophylla* and *Pseudotsuga menziesii*. Other common tree associates include *Abies amabilis, Abies grandis, Picea sitchensis*, and *Thuja plicata*. A subcanopy of *Acer macrophyllum* and/or *Taxus brevifolia* may also be present. It occurs at low elevations (0-1500 m) within the maritime-influenced region of the Pacific Northwest on the lower slopes of the coastal ranges that feature high precipitation, long frost-free periods, and low fire frequencies.
- **A3377 *Tsuga heterophylla - Pseudotsuga menziesii / Rubus spectabilis* Mesic Forest Alliance** [Western Hemlock - Douglas-fir / Salmonberry Mesic Forest Alliance] []
  This is a wet-mesic coniferous forest alliance characterized by a mixed canopy of *Tsuga heterophylla* and *Pseudotsuga menziesii* and can have a complex, multi-tiered structure of multiple age classes. *Thuja plicata* may codominate with *Pseudotsuga* and *Tsuga* on valley bottom sites with poorly drained soils, and *Tsuga heterophylla* is generally the dominant regenerating tree

species. It occurs at low elevations (0-1500 m) in all the maritime-influenced regions of the Pacific Northwest, from north coastal California to the northern end of Vancouver Island, British Columbia.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: F.H. Eyre (1980)
IVC Description Author: G. Kittel, D. Meidinger and D. Faber-Langendoen
IVC Description Date: 2015-11-09
IVC Acknowledgments: D. Meidinger, R. Crawford, and J. Sawyer

A3378 Western Hemlock - Douglas-fir / Western Cordilleran Bunchberry Mesic Forest Alliance

[ ]

Tsuga heterophylla - Pseudotsuga menziesii / Cornus unalaschkensis Mesic Forest Alliance

Western Hemlock - Douglas-fir / Western Cordilleran Bunchberry Mesic Forest

IVC Scientific Name: *Tsuga heterophylla - Pseudotsuga menziesii / Cornus unalaschkensis* Mesic Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This is a heavily forested alliance. The overstory canopy is dominated by *Pseudotsuga menziesii* and *Tsuga heterophylla*. Understory species such as *Mahonia nervosa, Vaccinium membranaceum*, and *Gaultheria shallon* are intolerant of drought. Other common tree associates include *Thuja plicata, Abies amabilis*, and *Abies grandis*. Rarely, *Picea sitchensis* may appear, and *Callitropsis nootkatensis* has been documented with up to 28% cover, but neither are typically present. Shrub species are variable and include *Acer circinatum, Chimaphila umbellata, Gaultheria shallon, Linnaea borealis, Mahonia nervosa, Menziesia ferruginea, Vaccinium alaskaense*, and *Vaccinium parvifolium*. The herbaceous layer is highly variable. The following species each occur in about one-third of documented stands: *Achlys triphylla, Blechnum spicant, Clintonia uniflora, Cornus unalaschkensis, Goodyera oblongifolia, Polystichum munitum, Tiarella trifoliata*, and *Trillium ovatum*. This alliance occurs in all the maritime-influenced regions of the Pacific Northwest, from north coastal California to the northern coast of Vancouver Island, British Columbia. Throughout the range of this alliance, much of the annual precipitation occurs as rain. Where snow does occur, it can generally be melted by rain during warm winter storms. In all settings, this alliance occurs where environmental conditions are moderated by the marine influence, with moderate drought and frost. Stands of the alliance generally occur on all slopes and aspects, on well-drained mesic sites that do not become very dry by summer's end. The associations in this alliance are found throughout the range. Although associations may be more moist in the north and more mesic in the south, all are generally in the mid-range of moisture settings, and are never considered consistently very dry or very wet by local ecologists. Soils typically remain moist year-round, but are not subirrigated or saturated. The diagnostic characteristic of this alliance is an overstory of both *Pseudotsuga menziesii* and *Tsuga heterophylla*, with an understory that is neither wet nor dry throughout the growing season.

IVC Dynamics: These forests have a high- or moderate-severity fire regime with natural return intervals of 100-600 years. *Pseudotsuga menziesii* colonizes vigorously and is favored with logging and/or fire disturbance to these forests. With increasing time since disturbance, *Tsuga heterophylla* or *Thuja plicata* become more abundant in the canopy, due to their ability to regenerate under closed-canopy conditions. At drier sites, *Pseudotsuga menziesii* is able to regenerate under the relatively open canopy. Logging often results in conversion to deciduous or mixed forest with *Alnus rubra* or *Acer macrophyllum*.

IVC Environment: Throughout the range of this alliance, much of the annual precipitation occurs as rain. Where snow does occur, it can generally be melted by rain during warm winter storms. In all settings, this alliance occurs where environmental conditions are moderated by the marine influence, with moderate drought and frost. Stands of the alliance generally occur on all slopes and aspects, on well-drained mesic sites that do not become very dry by summer's end. The associations in this alliance are found throughout the range. Although associations may be more moist in the north and more mesic in the south, all are generally in the mid-range of moisture settings, and are never considered consistently very dry or very wet by local ecologists. Soils typically remain moist year-round, but are not subirrigated or saturated.

DISTRIBUTION

IVC Geographic Range: This alliance occurs from north coastal California to the northern coast of Vancouver Island, British Columbia.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008237** ***Abies lasiocarpa - Pseudotsuga menziesii / Mahonia nervosa*** **Forest** [Subalpine Fir - Douglas-Fir / Cascade Barberry Forest] []
  Forests codominated by *Abies lasiocarpa*, at the low end of that species' elevation range, with a low shrub layer dominated by *Mahonia nervosa* and *Achlys triphylla* frequently dominating the herb layer. GNR. OR?, WA
- **CEGL002828** ***Pseudotsuga menziesii - Tsuga heterophylla - Thuja plicata / Chimaphila umbellata / Rhytidiopsis robusta*** **Forest** [Douglas-fir - Western Hemlock - Western red-cedar / Pipsissewa / Pipecleaner Moss Forest] []
  G2G3 (2005-09-19) BC
- **CEGL002845** ***Pseudotsuga menziesii - (Abies grandis, Thuja plicata) / Mahonia nervosa - Gaultheria shallon*** **Forest** [Douglas-fir - (Grand Fir, Western Red-cedar) / Cascade Barberry - Salal Forest] []
  G2 (2006-01-30) BC, WA
- **CEGL008272** ***Pseudotsuga menziesii / Acer circinatum / Mahonia nervosa*** **Forest** [Douglas-fir / Vine Maple / Cascade Barberry Forest] []
  Early seral forests dominated by *Pseudotsuga menziesii*, with little *Tsuga heterophylla*, and with *Acer circinatum* and *Mahonia nervosa* in the understory.
- An early seral type that likely develops into *Pseudotsuga menziesii - Tsuga heterophylla* / *Mahonia nervosa* (CEGL005541). *T. heterophylla* <10%, often on south aspects. GNR. BC?, OR, WA
- **CEGL002835** ***Tsuga heterophylla - Pseudotsuga menziesii - Thuja plicata / Achlys triphylla - Gymnocarpium dryopteris*** **Forest** [Western Hemlock - Douglas-fir - Western red-cedar / Sweet After Death - Western Oakfern Forest] []
  G2 (2005-09-19) BC
- **CEGL005541** ***Pseudotsuga menziesii - Tsuga heterophylla / Mahonia nervosa*** **Forest** [Douglas-fir - Western Hemlock / Cascade Barberry Forest] []
  G4 (2015-02-06) BC?, OR, WA
- **CEGL005538** ***Pseudotsuga menziesii - Tsuga heterophylla / Gaultheria shallon - Mahonia nervosa*** **Forest** [Douglas-fir - Western Hemlock / Salal - Cascade Barberry Forest] []
  G4 (2015-02-06) BC, OR, WA
- **CEGL008270** ***Pseudotsuga menziesii*** **-** **(*Thuja plicata - Abies grandis*) /** ***Vaccinium membranaceum*** **Forest** [Douglas-Fir - (Western Red-Cedar - Grand Fir) / Thinleaf Huckleberry Forest] []
  Mid-elevation *Pseudotsuga menziesii* forests near and west of the Cascade Crest with a *Vaccinium membranaceum*-dominated shrub layer. GNR. BC?, WA
- **CNVC00002** ***Pseudotsuga menziesii - Pinus contorta*** **(*Tsuga heterophylla*) /** ***Vaccinium membranaceum / Arctostaphylos uva-ursi*** [Douglas-Fir - Lodgepole Pine (Western Hemlock) / Thinleaf Huckleberry / Bearberry] [Douglas de Menzies - Pin tordu latifolié (Pruche de l'Ouest) / Airelle à feuilles membraneuses / Raisin d'ours]
  GNR.
- **CNVC00074** ***Pseudotsuga menziesii - Tsuga heterophylla - Thuja plicata / Mahonia nervosa / Polystichum munitum - Achlys triphylla*** [Douglas-Fir - Western Hemlock - Western Red-Cedar / Cascade Barberry / Western Swordfern - Sweet After Death] [Douglas de Menzies - Pruche de l'Ouest - Thuya géant / Mahonia à nervures saillantes / Fougère épée - Achlyde à trois folioles]
  GNR.
- **CNVC00075** ***Pseudotsuga menziesii - Tsuga heterophylla - Thuja plicata / Rubus spectabilis / Polystichum munitum - Athyrium filix-femina*** [Douglas-Fir - Western Hemlock - Western Red-Cedar / Salmonberry / Western Swordfern - Common Ladyfern] [Douglas de Menzies - Pruche de l'Ouest - Thuya géant / Ronce remarquable / Fougère épée - Athyrie fougère-femelle]
  GNR.
- **CNVC00030** ***Pseudotsuga menziesii - Tsuga heterophylla*** **(*Thuja plicata*) /** ***Paxistima myrsinites - Vaccinium membranaceum / Rhytidiopsis robusta*** [Douglas-Fir - Western Hemlock (Western Red-Cedar) / Oregon Boxleaf - Thinleaf Huckleberry / Pipecleaner Moss] [Douglas de Menzies - Pruche de l'Ouest (Thuya géant) / Pachistima myrte - Airelle à feuilles membraneuses / Rhytidiopsis robuste]
  GNR.
- **CNVC00043** ***Pseudotsuga menziesii - Tsuga heterophylla*** **(*Thuja plicata*) /** ***Gaultheria shallon - Vaccinium parvifolium*** [Douglas-Fir - Western Hemlock (Western Red-Cedar) / Salal - Red Huckleberry] [Douglas de Menzies - Pruche de l'Ouest (Thuya géant) / Salal - Airelle à petites feuilles]
  GNR.

- **CNVC00039** ***Pseudotsuga menziesii - Tsuga heterophylla / Gaultheria shallon - Mahonia nervosa*** [Douglas-Fir - Western Hemlock / Salal - Cascade Barberry] [Douglas de Menzies - Pruche de l'Ouest / Salal - Mahonia à nervures saillantes]
  GNR.
- **CNVC00188** ***Pseudotsuga menziesii - Tsuga heterophylla / Gaultheria shallon - Vaccinium parvifolium / Niphotrichum canescens - Cladina*** **spp.** [Douglas-Fir - Western Hemlock / Salal - Red Huckleberry / Grey Rock Moss - Reindeer Lichen species] [Douglas de Menzies - Pruche de l'Ouest / Salal - Airelle à petites feuilles / Racomitre blanchâtre - Cladonie]
  GNR.
- **CNVC00070** ***Pseudotsuga menziesii - Tsuga heterophylla / Gaultheria shallon / Polystichum munitum*** [Douglas-Fir - Western Hemlock / Salal / Western Swordfern] [Douglas de Menzies - Pruche de l'Ouest / Salal / Fougère épée]
  GNR.
- **CNVC00014** ***Pseudotsuga menziesii*** **(*Abies grandis* -Thuja *plicata*) / *Mahonia nervosa - Gaultheria shallon*** [Douglas-Fir (Grand Fir -Thuja *plicata*) / Cascade Barberry - Salal] [Douglas de Menzies (Sapin grandissime - Thuya géant) / Mahonie nervuré - Salal]
  GNR.
- **CNVC00010** ***Thuja plicata - Pseudotsuga menziesii - Abies grandis / Mahonia nervosa / Polystichum munitum - Achlys triphylla*** [Western Red-Cedar - Douglas-Fir - Grand Fir / Cascade Barberry / Western Swordfern - Sweet After Death] [Thuya géant - Douglas de Menzies - Sapin grandissime / Mahonia à nervures saillantes / Fougère épée - Achlyde à trois folioles]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3379 Western Hemlock - Douglas-fir / Oceanspray Dry Forest Alliance

[ ]
Tsuga heterophylla - Pseudotsuga menziesii / Holodiscus discolor Dry Forest Alliance
Western Hemlock - Douglas-fir / Oceanspray Dry Forest

IVC Scientific Name: *Tsuga heterophylla - Pseudotsuga menziesii / Holodiscus discolor* Dry Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These coniferous forests are characterized by a mixed overstory canopy of *Tsuga heterophylla* and *Pseudotsuga menziesii*. Other common tree associates include *Abies amabilis, Abies grandis, Picea sitchensis*, and *Thuja plicata*. A subcanopy of *Acer macrophyllum*, and/or *Taxus brevifolia* may also be present. The moderately dense shrub layer is commonly composed of *Amelanchier alnifolia, Acer circinatum, Chimaphila menziesii, Chimaphila umbellata, Gaultheria shallon, Holodiscus discolor, Linnaea borealis, Mahonia nervosa, Paxistima myrsinites, Rosa gymnocarpa, Rubus ursinus*, and *Vaccinium parvifolium*. The herbaceous layer is dominated by drought-tolerant and shade-tolerant forbs and ferns, including *Achlys triphylla, Calamagrostis rubescens, Goodyera oblongifolia, Oxalis oregana, Orthilia secunda*, and *Pteridium aquilinum*. An upper tree canopy dominated by *Tsuga heterophylla* and *Pseudotsuga menziesii* and dry-site conditions are diagnostic of this alliance. This coniferous forest alliance occurs at low elevations (0-1500 m) within the maritime-influenced region of the Pacific Northwest, from north coastal California to the northern coast of Vancouver Island, British Columbia. Stands are best represented on the lower slopes of the coastal ranges that feature high precipitation, long frost-free periods, and low fire frequencies. Throughout the range of this alliance, much of the annual precipitation occurs as rain. Where snow does occur, it can generally be melted by rain during warm winter storms. In all settings, this alliance occurs where environmental conditions are moderated by the marine influence, with moderate drought and frost. Stands of the alliance generally occur on steeper slopes and warmer aspects, on well-drained sites, and are quite dry throughout the year. The associations in this alliance are found throughout the range and represent the driest forested stands of the North Pacific Maritime Douglas-fir - Western Hemlock Rainforest Group (G240). The associations are recognized as consistently the driest expressions of these forests throughout their range by local ecologists.
IVC Dynamics:
IVC Environment: This coniferous forest alliance occurs at low elevations (0-1500 m) within the maritime-influenced region of the Pacific Northwest, from north coastal California to the northern coast of Vancouver Island, British Columbia. Stands are best represented on the lower slopes of the coastal ranges that feature high precipitation, long frost-free periods, and low fire

frequencies. Throughout the range of this alliance, much of the annual precipitation occurs as rain. Where snow does occur, it can generally be melted by rain during warm winter storms. In all settings, this alliance occurs where environmental conditions are moderated by the marine influence, with moderate drought and frost. Stands of the alliance generally occur on steeper slopes and warmer aspects, on well-drained sites, and are quite dry throughout the year. The associations in this alliance are recognized as consistently the driest expressions of these forests throughout their range by local ecologists.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northern California Coast Ranges north to the northern end of Vancouver Island, British Columbia.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002792** ***Pseudotsuga menziesii / Racomitrium canescens*** **Woodland** [Douglas-fir / Silver Moss Woodland] []
  G2G3 (2005-06-02) BC
- **CEGL008246** ***Betula papyrifera*** **- (*Thuja plicata*) /** ***Acer circinatum / Mahonia nervosa*** **Forest** [Paper Birch - (Western Red-Cedar) / Vine Maple / Cascade Barberry Forest] []
  Seral forests codominated by *Betula papyrifera* and *Thuja plicata* or *Pseudotsuga menziesii* in a dense canopy with *Acer circinatum* and *Mahonia nervosa* dominating shrub layers beneath. GNR. BC?, WA
- **CEGL008238** ***Pseudotsuga menziesii / Acer circinatum*** **- (*Holodiscus discolor*) Woodland** [Douglas-Fir / Vine Maple - (Oceanspray) Woodland] []
  Talus woodlands dominated by an open canopy of *Pseudotsuga menziesii* and an open shrub layer of *Acer circinatum* and other tall shrubs. GNR. BC?, OR, WA
- **CEGL005532** ***Pseudotsuga menziesii / Gaultheria shallon - Vaccinium parvifolium*** **Forest** [Douglas-fir / Salal - Red Huckleberry Forest] []
  G3G4 (2015-02-06) BC, CA, OR, WA
- **CEGL005539** ***Pseudotsuga menziesii - Tsuga heterophylla / Gaultheria shallon - Vaccinium parvifolium*** **Forest** [Douglas-fir - Western Hemlock / Salal - Red Huckleberry Forest] []
  GNR. BC, CA, OR, WA
- **CEGL005531** ***Pseudotsuga menziesii / Gaultheria shallon - Holodiscus discolor*** **Forest** [Douglas-fir / Salal - Oceanspray Forest] []
  GNR. BC, CA, OR, WA
- **CNVC00071** ***Pseudotsuga menziesii*** **(*Tsuga heterophylla*) /** ***Holodiscus discolor / Polystichum munitum*** [Douglas-Fir (Western Hemlock) / Oceanspray / Western Swordfern] [Douglas de Menzies (Pruche de l'Ouest) / Holodisque discolore / Fougère épée]
  GNR.
- **CEGL002321** ***Pseudotsuga menziesii / Acer glabrum var. douglasii / Hylocomium splendens*** **Woodland** [Douglas-fir / Douglas Maple / Splendid Feathermoss Woodland] []
  G2 (2004-06-03) BC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3377 Western Hemlock - Douglas-fir / Salmonberry Mesic Forest Alliance

[ ]

Tsuga heterophylla - Pseudotsuga menziesii / Rubus spectabilis Mesic Forest Alliance
Western Hemlock - Douglas-fir / Salmonberry Mesic Forest

IVC Scientific Name: *Tsuga heterophylla - Pseudotsuga menziesii / Rubus spectabilis* Mesic Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These forests are characterized by a mixed canopy of *Tsuga heterophylla* and *Pseudotsuga menziesii* and can have a complex, multi-tiered structure of multiple age classes. *Thuja plicata* may codominate with *Pseudotsuga* and *Tsuga* on valley bottom sites with poorly drained soils, and *Tsuga heterophylla* is generally the dominant regenerating tree species. Other common tree associates include *Abies amabilis, Abies grandis, Alnus rubra, Picea sitchensis*, and *Taxus brevifolia*. Understory species are generally intolerant of drought. The shrub layer is commonly composed of *Acer circinatum, Cornus sericea, Gaultheria shallon, Mahonia nervosa, Menziesia ferruginea, Oplopanax horridus*, and/or *Rubus spectabilis*. The herbaceous layer is dominated by ferns, including *Athyrium filix-femina, Blechnum spicant, Gymnocarpium dryopteris, Polystichum munitum*, and /or *Pteridium aquilinum*. Moisture-loving forbs include *Oxalis oregana, Achlys triphylla*, and *Tiarella trifoliata*. This coniferous forest alliance occurs at low elevations (0-1500 m) in all the maritime-influenced regions of the Pacific Northwest, from north coastal California to the northern end of Vancouver Island, British Columbia. Throughout the range of this alliance, much of the annual precipitation occurs as rain. Where snow does occur, it can generally be melted by rain during warm winter storms. In all settings, this alliance occurs where environmental conditions are moderated by the marine influence, with moderate drought and frost. Stands are best represented on lower slopes of the coastal ranges of the Pacific Northwest with high precipitation, long frost-free periods, and low fire frequencies. Stands of the alliance generally occur on very moist, water-receiving slopes, usually north-facing or otherwise protected sites that are subirrigated but well-drained. Soils remain wet year-round, but are not saturated, and are not wetland or riparian in nature. Diagnostic of this alliance is an upper tree canopy dominated by *Tsuga heterophylla* and *Pseudotsuga menziesii* and moist, well-drained sites.

IVC Dynamics: This alliance has a low fire frequency that increases from north to south across its range.

IVC Environment: This coniferous forest alliance occurs at low elevations (0-1500 m) in all the maritime-influenced regions of the Pacific Northwest. Throughout the range of this alliance, much of the annual precipitation occurs as rain. Where snow does occur, it can generally be melted by rain during warm winter storms. In all settings, this alliance occurs where environmental conditions are moderated by the marine influence, with moderate drought and frost. Stands are best represented on lower slopes of the coastal ranges with high precipitation, long frost-free periods, and low fire frequencies. Stands of the alliance generally occur on very moist, water-receiving slopes, usually north-facing or otherwise protected sites that are subirrigated but well-drained. Soils remain wet year-round, but are not saturated, and are not wetland or riparian in nature.

DISTRIBUTION

IVC Geographic Range: This alliance occurs from north coastal California to the northern end of Vancouver Island, British Columbia.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005575** ***Tsuga heterophylla - Pseudotsuga menziesii - Abies amabilis / Vaccinium parvifolium / Achlys triphylla*** **Forest** [Western Hemlock - Douglas-fir - Pacific Silver Fir / Red Huckleberry / Sweet After Death Forest] []
  GNR. BC, CA?, OR, WA
- **CEGL005536** ***Pseudotsuga menziesii - Tsuga heterophylla / Gaultheria shallon / Polystichum munitum*** **Forest** [Douglas-fir - Western Hemlock / Salal / Western Swordfern Forest] []
  G4G5 (2015-02-06) BC, OR, WA
- **CEGL005542** ***Pseudotsuga menziesii - Tsuga heterophylla / (Acer circinatum) / Polystichum munitum*** **Forest** [Douglas-fir - Western Hemlock / (Vine Maple) / Western Swordfern Forest] []
  G4 (2015-02-06) BC, CA?, OR, WA
- **CEGL005576** ***Tsuga heterophylla - (Pseudotsuga menziesii, Thuja plicata) / Polystichum munitum - Athyrium filix-femina*** **Forest** [Western Hemlock - (Douglas-fir, Western Red-cedar) / Western Swordfern - Common Ladyfern Forest] []
  G3G4 (2015-02-05) BC, CA?, OR, WA

- **CEGL005543** ***Pseudotsuga menziesii - Tsuga heterophylla / Mahonia nervosa - Polystichum munitum*** **Forest** [Douglas-fir - Western Hemlock / Cascade Barberry - Western Swordfern Forest] []
  G4 (2015-02-07) BC, CA?, OR, WA
- **CEGL005540** ***Pseudotsuga menziesii - Tsuga heterophylla / Holodiscus discolor / Polystichum munitum*** **Forest** [Douglas-fir - Western Hemlock / Oceanspray / Western Swordfern Forest] []
  GNR. BC, OR, WA
- **CNVC00031** ***Pseudotsuga menziesii - Tsuga heterophylla*** **(*Thuja plicata*) /** ***Hylocomium splendens*** **(*Rhytidiadelphus triquetrus*)** [Douglas-Fir - Western Hemlock (Western Red-Cedar) / Splendid Feathermoss (Rough Gooseneck Moss)] [Douglas de Menzies - Pruche de l'Ouest (Thuya géant) / Hypne éclatante (Hypne triquètre)]
  GNR.
- **CNVC00009** ***Tsuga heterophylla - Pseudotsuga menziesii - Abies amabilis / Hylocomium splendens*** [Western Hemlock - Douglas-Fir - Pacific Silver Fir / Splendid Feathermoss] [Pruche de l'Ouest - Douglas de Menzies - Sapin gracieux / Hypne éclatante]
  GNR.
- **CNVC00006** ***Tsuga heterophylla - Pseudotsuga menziesii - Thuja plicata / Achlys triphylla - Gymnocarpium dryopteris*** [Western Hemlock - Douglas-Fir - Western Red-Cedar / Sweet After Death - Western Oakfern] [Pruche de l'Ouest - Douglas de Menzies - Thuya géant / Achlyde à trois folioles - Gymnocarpe du chêne]
  GNR.
- **CNVC00019** ***Thuja plicata - Pseudotsuga menziesii - Tsuga heterophylla / Acer circinatum / Polystichum munitum*** [Western Red-Cedar - Douglas-Fir - Western Hemlock / Vine Maple / Western Swordfern] [Thuya géant - Douglas de Menzies - Pruche de l'Ouest / Érable circiné / Fougère épée]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

G241 North Pacific Maritime Pacific Silver Fir - Western Hemlock Rainforest

Forêts maritimes de sapins blancs et de pruches de l'Ouest du nord du Pacifique

IVC Colloquial Name: North-Central Pacific Maritime Silver Fir - Western Hemlock Rainforest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM024b Typic Vancouverian Rainforest
CNVC Concept: The CNVC concept CG0241 appears to be the same as this IVC concept (G241), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept: This forested group occurs in the Pacific Northwest mountains primarily west of the Cascade Crest. *Tsuga heterophylla* and/or *Abies amabilis* dominate the canopy of late-seral stands, and *Callitropsis nootkatensis* can be codominant, especially at higher elevations or moister sites. *Thuja plicata* is also common and sometimes codominates in British Columbia. Major dominant understory species are *Vaccinium alaskaense, Blechnum spicant*, and/or *Rubus pedatus*. In drier settings, *Pseudotsuga menziesii* is usually also common. *Abies procera* forests (usually mixed with silver fir) are included in this group, as well as stands where *Abies lasiocarpa* can occur as a codominant on the east side of the Cascades. Dry-setting understory species may include *Achlys triphylla, Mahonia nervosa, Xerophyllum tenax, Vaccinium membranaceum*, and/or *Rhododendron macrophyllum*. This group occurs at mid-montane elevations in dry to moist maritime, some hypermaritime and some submaritime climatic zones from northwestern Oregon, coastal British Columbia to extreme southeastern Alaska. It generally occurs in an elevational band above *Pseudotsuga menziesii - Tsuga heterophylla* and hypermaritime zone forests and below *Tsuga mertensiana* forests. It is known to occur on windward and leeward sides of Vancouver Island and on the Olympic Peninsula. In the Cascade Range of northern Washington (north of Snoqualmie River) and in the Coast Mountains of mainland British Columbia, it occurs in the wettest portions, including inland to the mountain crest. A somewhat variable winter snowpack that typically lasts for 2-4 months is characteristic. The climatic zone within which it occurs is sometimes referred to as the "rain-on-snow" zone because of the common occurrence of major winter rainfall on an established snowpack.
IVC Dynamics: Fire regime is significantly different at regional scale between dry and mesic stands of this forest. Mesic stands occur within a very wet climate that is more coastal, less continental, with cooler summers, and warmer winters on average. The

major disturbance process within these coastal mesic forests are small-scale gap dynamics where windthrow is common, causing gap creation that starts the successional process. These mesic stands rarely, if ever, burn and are dominated by trees that run from 700 to over 1000 years in age. In British Columbia, coastal rainforests may burn an average of once every 2000 years. Extreme, stand-replacing fires are infrequent to absent, with return intervals of several hundred or more years.

In drier stands, the dominant natural process is stand-replacing fires which occur on average every 200-500 years. Where old-growth does exist, it is mostly "young old-growth" 200-500 years in age. Natural-origin stands less than 200 years old are also common. Mixed-severity fires occur in the drier more interior and often southern parts of this group, so that forest structure, patch size and proportions can be different from northern, more mesic stands. In Oregon, there are more mixed-severity fires.

IVC Environment: *Climate:* This forested group occurs at mid-montane elevations in dry to moist maritime and some submaritime climatic zones from northwestern Oregon, coastal British Columbia to extreme southeastern Alaska. It generally occurs in an elevational band above *Pseudotsuga menziesii - Tsuga heterophylla* and hypermaritime zone forests and below *Tsuga mertensiana* forests. It is known to occur on windward and leeward sides of Vancouver Island and on the Olympic Peninsula. In the Cascade Range of northern Washington (north of Snoqualmie River) and in the Coast Mountains of mainland British Columbia, it occurs in the wettest portions but does not extend all the way inland to the mountain crest. A somewhat variable winter snowpack that typically lasts for 2-4 months is characteristic. The climatic zone within which it occurs is sometimes referred to as the "rain-on-snow" zone because of the common occurrence of major winter rainfall on an established snowpack.

DISTRIBUTION

IVC Geographic Range: This forested group occurs only in the Pacific Northwest mountains, primarily west of the Cascade Crest. It dominates mid-montane dry to mesic maritime and some submaritime climatic zones from northwestern British Columbia to northwestern Oregon. In the Olympic Mountains, this group occurs on the leeward side of the mountains only. In British Columbia and the Washington Cascades, it occurs on both windward and leeward sides of the mountains. It occurs very sporadically in the Willapa Hills of southwestern Washington and in the northern Oregon Coast Range. This type may also occur on the east side of the Oregon Cascades north of 45°N latitude (Mount Hood National Forest - Hood River and Barlow ranger districts, and possibly the northern edge of Warm Springs Reservation in part of the McQuinn Strip). It is restricted in Washington's eastern Cascades to a few miles of the crest, primarily between the upper Naches drainage and Lake Wenatchee, finally dwindling to scattered stands in the upper Methow drainage in the northern Cascades (Lillybridge et al 1995). It may also extend north to about 56°N latitude in southeastern Alaska. *Abies amabilis* has a limited distribution in Alaska, and is confined to the extreme southern mainland and a few islands south of 56°N latitude.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA?, OR, WA

IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 7.1.7.2:P, 7.1.8.1:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Elcode: CG0241

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3386 *Abies amabilis - Tsuga heterophylla / Achlys triphylla* Forest Alliance** [Pacific Silver Fir - Western Hemlock / Sweet After Death Forest Alliance] []
  This is an alliance of montane forests of the Pacific Northwest dominated by *Abies amabilis*, and mixed with *Tsuga heterophylla* and/or *Pseudotsuga menziesii*. They occur above lowland forests and below subalpine parklands. These forests have a characteristic elevation (approximately 800-1500 m in the Cascades and 0-1200 m in the Olympic Mountains).
- **A3387 *Abies amabilis - Tsuga heterophylla / Vaccinium membranaceum* Cold Forest Alliance** [Pacific Silver Fir - Western Hemlock / Thinleaf Huckleberry Cold Forest Alliance] []
  These are tall evergreen forests dominated by a mix of *Abies amabilis* and *Tsuga heterophylla* often with *Pseudotsuga menziesii*, but the latter may be absent. These forests occupy a broad elevational band in the Cascades, extending from approximately 1000-1500 m elevation. In the Olympic Mountains and northward through British Columbia, elevations range from approximately 1000-1200 m.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: F.H. Eyre (1980)
IVC Description Author: G. Kittel, D. Meidinger and D. Faber-Langendoen
IVC Description Date: 2015-11-09
IVC Acknowledgments:

A3386 Pacific Silver Fir - Western Hemlock / Sweet After Death Forest Alliance

[ ]
Abies amabilis - Tsuga heterophylla / Achlys triphylla Forest Alliance
Pacific Silver Fir - Western Hemlock / Sweet After Death Forest

IVC Scientific Name: *Abies amabilis - Tsuga heterophylla / Achlys triphylla* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This is a typically mixed conifer forest alliance with *Tsuga heterophylla* codominant with *Abies amabilis* in the overstory; *Pseudotsuga menziesii* may be present in the canopy depending on site history. *Abies amabilis* is the most shade-tolerant conifer and is dominant in all age classes. *Callitropsis nootkatensis* may be frequent in the upper elevations of the alliance and is occasionally codominant. Associated shrubs are primarily ericaceous. *Acer circinatum, Gaultheria shallon, Mahonia nervosa, Rhododendron macrophyllum, Rubus pedatus*, or *Vaccinium alaskaense* dominate the shrub layer when present, and *Blechnum spicant* and *Vaccinium alaskaense* are strong indicators for direct maritime climate. The herbaceous layer is generally dominated by shade-tolerant species, often with strong maritime indicators, including *Achlys californica, Achlys triphylla, Blechnum spicant, Cornus unalaschkensis, Maianthemum stellatum, Polystichum munitum, Streptopus lanceolatus var. curvipes, Tiarella trifoliata var. unifoliata*, and many others. An upper tree canopy that is dominated or codominated by *Abies amabilis* is diagnostic of this forest alliance. The elevational range for this alliance is 800-1500 m in the Cascades, and sea level to 1200 m in the Olympic Mountains northward through British Columbia. Stands typically occupy moderate to steep middle and upper mountain slopes and are often contiguous with low-elevation *Tsuga heterophylla* and/or *Pseudotsuga menziesii* forests and higher subalpine forests of *Tsuga mertensiana* and *Callitropsis nootkatensis*.
IVC Dynamics: These forests have a high- and moderate-severity fire regime with natural return intervals of 100-600 years. *Pseudotsuga menziesii* colonizes vigorously and is favored with logging and/or fire disturbance to these forests. With increasing time since disturbance, *Tsuga heterophylla* or *Thuja plicata* become more abundant in the canopy, due to their ability to regenerate under closed-canopy conditions. Logging often results in conversion to deciduous or mixed forest with *Alnus rubra* or *Acer macrophyllum*. Much of the landscape in Oregon and Washington where this alliance is found is now composed of structurally simple *Pseudotsuga menziesii* plantations. In outer coastal areas, windthrow during intense winter storms is the most frequent form of stand replacement.
IVC Environment: The elevational range for this alliance is 800-1500 m in the Cascades, and sea level to 1200 m in the Olympic Mountains northward through British Columbia. Stands typically occupy moderate to steep middle and upper mountain slopes and are often contiguous with low-elevation *Tsuga heterophylla* and/or *Pseudotsuga menziesii* forests and higher subalpine forests of *Tsuga mertensiana* and *Callitropsis nootkatensis*.

DISTRIBUTION

IVC Geographic Range: This alliance is found in coastal mountains of British Columbia, Washington, Oregon and possibly Alaska.
IVC Nations: CA,US
IVC States/Provinces: AK, BC, CA?, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002831** ***Tsuga heterophylla - Abies amabilis / Tiarella trifoliata var. unifoliata - Achlys triphylla - Rubus pedatus*** **Forest** [Western Hemlock - Pacific Silver Fir / Oneleaf Foamflower - Sweet After Death - Strawberry-leaf Raspberry Forest] []
  G2 (2005-09-19) BC
- **CEGL007323** ***Tsuga heterophylla - Callitropsis nootkatensis / Rhytidiadelphus loreus*** **Forest** [Western Hemlock - Alaska-cedar / Gooseneck Moss Forest] []
  GNR. BC
- **CEGL005567** ***Tsuga heterophylla - Abies amabilis - Pseudotsuga menziesii / Gaultheria shallon*** **Forest** [Western Hemlock - Pacific Silver Fir - Douglas-fir / Salal Forest] []
  GNR. BC, OR, WA
- **CEGL005577** ***Tsuga heterophylla - Thuja plicata / Gaultheria shallon / Blechnum spicant*** **Forest** [Western Hemlock - Western Red-cedar / Salal / Deer Fern Forest] []
  G4G5 (2015-02-07) AK, BC, WA
- **CEGL005549** ***Tsuga heterophylla - (Abies amabilis) / Gaultheria shallon / Blechnum spicant*** **Forest** [Western Hemlock - (Pacific Silver Fir) / Salal / Deer Fern Forest] []
  GNR. WA
- **CEGL007319** ***Tsuga heterophylla - Abies amabilis - (Thuja plicata) / Vaccinium alaskaense / Blechnum spicant*** **Forest** [Western Hemlock - Pacific Silver Fir - (Western Red-cedar) / Alaska Blueberry / Deer Fern Forest] []
  G4 (2017-01-13) BC, WA
- **CEGL008232** ***Abies amabilis - Tsuga heterophylla / (Orthilia secunda - Chimaphila menziesii)*** **Forest** [Pacific Silver Fir - Western Hemlock / (Sidebells Wintergreen - Little Prince's-Pine) Forest] []
  Dark, dense (often "dog hair") stands of *Tsuga heterophylla* and/or *Thuja plicata*, often w/ *Pseudotsuga menziesii* and an exceedingly sparse understory. GNR. BC?, OR?, WA
- **CNVC00034** ***Tsuga heterophylla - Abies amabilis - Pseudotsuga menziesii / Achlys triphylla / Rhytidiopsis robusta*** [Western Hemlock - Pacific Silver Fir - Douglas-Fir / Sweet After Death / Pipecleaner Moss] [Pruche de l'Ouest - Sapin gracieux - Douglas de Menzies / Achlyde à trois folioles / Rhytidiopsis robuste]
  GNR.
- **CNVC00027** ***Tsuga heterophylla - Abies amabilis / Vaccinium alaskaense / Blechnum spicant / Rhytidiadelphus loreus*** [Western Hemlock - Pacific Silver Fir / Alaska Blueberry / Deer Fern / Gooseneck Moss] [Pruche de l'Ouest - Sapin gracieux / Airelle d'Alaska / Blechnum en épi / Rhytidiadelphe lanière]
  GNR.
- **CNVC00035** ***Tsuga heterophylla - Abies amabilis / Vaccinium alaskaense / Rubus pedatus / Rhytidiopsis robusta*** [Western Hemlock - Pacific Silver Fir / Alaska Blueberry / Strawberry-Leaf Raspberry / Pipecleaner Moss] [Pruche de l'Ouest - Sapin gracieux / Airelle d'Alaska / Ronce à feuilles pédatifides / Rhytidiopsis robuste]
  GNR.
- **CNVC00036** ***Tsuga heterophylla - Abies amabilis / Blechnum spicant - Tiarella trifoliata - Polystichum munitum*** [Western Hemlock - Pacific Silver Fir / Deer Fern - Threeleaf Foamflower - Western Swordfern] [Pruche de l'Ouest - Sapin gracieux / Blechnum en épi - Tiarelle trifoliée - Fougère épée]
  GNR.
- **CNVC00028** ***Tsuga heterophylla - Abies amabilis / Oplopanax horridus / Gymnocarpium dryopteris*** [Western Hemlock - Pacific Silver Fir / Devil's-Club / Western Oakfern] [Pruche de l'Ouest - Sapin gracieux / Bois piquant / Gymnocarpe du chêne]
  GNR.
- **CNVC00005** ***Tsuga heterophylla (Picea sitchensis - Abies amabilis) / Rubus spectabilis / Polystichum munitum*** [Western Hemlock (Sitka Spruce - Pacific Silver Fir) / Salmonberry / Western Swordfern] [Pruche de l'Ouest (Épinette Sitka - Sapin gracieux) / Ronce remarquable / Fougère épée]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3387 Pacific Silver Fir - Western Hemlock / Thinleaf Huckleberry Cold Forest Alliance

[ ]

Abies amabilis - Tsuga heterophylla / Vaccinium membranaceum Cold Forest Alliance

Pacific Silver Fir - Western Hemlock / Thinleaf Huckleberry Cold Forest

IVC Scientific Name: *Abies amabilis - Tsuga heterophylla / Vaccinium membranaceum* Cold Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These are tall evergreen forests dominated by a mix of *Abies amabilis* and *Tsuga heterophylla* often with *Pseudotsuga menziesii*, but the latter may be absent. In this typically mixed conifer forest, *Tsuga heterophylla* is usually codominant with *Abies amabilis* in the overstory; however, *Tsuga mertensiana* may also be present in the canopy. *Abies amabilis* is the most shade-tolerant conifer and is dominant in all age classes. *Callitropsis nootkatensis* may be frequent in the upper elevations and is occasionally codominant. *Thuja plicata* is also an occasional codominant. Associated shrubs are primarily ericaceous. *Vaccinium membranaceum, Vaccinium ovalifolium*, and *Rhododendron albiflorum* are common along with *Menziesia ferruginea*. The herbaceous layer is generally dominated by shade-tolerant species with northern affinities (i.e., cold-tolerant), including *Clintonia uniflora, Cornus canadensis, Linnaea borealis, Orthilia secunda, Rubus lasiococcus, Valeriana sitchensis, Xerophyllum tenax*, and many others. These forests occupy a broad elevational band in the Cascades, extending from approximately 1000 to 1500 m. In the Olympic Mountains and northward through British Columbia, elevations range from approximately 1000 to 1200 m. The climate is cool and wet with annual precipitation totals generally exceeding 200 cm and deep (1-3 m) snow accumulations. A consistent winter snowpack of moderate duration along with less frequent winter rain-on-snow events and more frequent snow-on-snow events are driving factors in the occurrence of these forests. Stands typically occupy moderate to steep middle and upper mountain slopes and are often contiguous with the lower-elevation forests.

IVC Dynamics: These forests rarely burn and are often very old. Even-aged stands are believed to originate from stand-replacing disturbance (Franklin et al. 1988). Mixed stands result following fire or other disturbance, and *Pseudotsuga menziesii* or *Abies amabilis* becomes established and can persist in the canopy for centuries.

IVC Environment: These forests occupy a broad elevational band in the Cascades, extending from approximately 1000 to 1500 m. In the Olympic Mountains and northward through British Columbia, elevations range from approximately 1000 to 1200 m. The climate is cool and wet with annual precipitation totals generally exceeding 200 cm and deep (1-3 m) snow accumulations. A consistent winter snowpack of moderate duration along with less frequent winter rain-on-snow events and more frequent snow-on-snow events are driving factors in the occurrence of these forests. Stands typically occupy moderate to steep middle and upper mountain slopes and are often contiguous with the lower-elevation forests.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in coastal mountains of British Columbia, Washington, Oregon, and possibly southeastern Alaska.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA?, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002836 *Tsuga heterophylla - Pseudotsuga menziesii - Abies amabilis / Paxistima myrsinites* Forest** [Western Hemlock - Douglas-fir - Pacific Silver Fir / Oregon Boxleaf Forest] []
  G3 (2005-09-19) BC
- **CEGL005516 *Abies amabilis - (Tsuga heterophylla) / Vaccinium membranaceum / Orthilia secunda* Forest** [Pacific Silver Fir - (Western Hemlock) / Thinleaf Huckleberry / Sidebells Wintergreen Forest] []
  G4 (2015-02-06) BC?, CA?, OR, WA
- **CEGL005517 *Abies amabilis - (Tsuga heterophylla) / Vaccinium membranaceum - Vaccinium alaskaense* Forest** [Pacific Silver Fir - (Western Hemlock) / Thinleaf Huckleberry - Alaska Blueberry Forest] []
  G4G5 (2015-02-06) BC, WA

- **CEGL005585** ***Tsuga heterophylla - Abies amabilis / Vaccinium alaskaense*** **Forest** [Western Hemlock - Pacific Silver Fir / Alaska Blueberry Forest] []
  GNR. BC, WA
- **CEGL005518** ***Tsuga heterophylla - Abies amabilis - (Pseudotsuga menziesii) / Vaccinium alaskaense*** **Forest** [Western Hemlock - Pacific Silver Fir - (Douglas-fir) / Alaska Blueberry Forest] []
  G4 (2015-02-06) BC, OR, WA
- **CEGL005565** ***Tsuga heterophylla - Abies amabilis / Vaccinium alaskaense / Rubus pedatus*** **Forest** [Western Hemlock - Pacific Silver Fir / Alaska Blueberry / Strawberry-leaf Raspberry Forest] []
  G4G5 (2015-02-06) BC, OR, WA
- **CEGL002850** ***Tsuga heterophylla - Abies amabilis - (Callitropsis nootkatensis) / Vaccinium alaskaense*** **Forest** [Western Hemlock - Pacific Silver Fir - (Alaska-cedar) / Alaska Blueberry Forest] []
  G3? (2006-04-11) AK, BC, WA?
- **CEGL002833** ***Tsuga heterophylla - Abies amabilis - (Pseudotsuga menziesii) / Hylocomium splendens*** **Forest** [Western Hemlock - Pacific Silver Fir - (Douglas-fir) / Splendid Feathermoss Forest] []
  G2G3 (2005-09-19) BC, OR, WA
- **CEGL000239** ***Abies amabilis - (Pseudotsuga menziesii, Abies procera) / Vaccinium membranaceum / Xerophyllum tenax*** **Forest** [Pacific Silver Fir - (Douglas-fir, Noble Fir) / Thinleaf Huckleberry / Common Beargrass Forest] []
  G4 (1996-02-01) BC, OR, WA
- **CEGL002830** ***Tsuga heterophylla / Hylocomium splendens - Pleurozium schreberi*** **Forest** [Western Hemlock / Splendid Feathermoss - Schreber's Big Red-stem Moss Forest] []
  G2G3 (2005-09-19) BC
- **CNVC00040** ***Tsuga heterophylla - Abies amabilis*** **(*Pseudotsuga menziesii*) /** ***Vaccinium alaskaense / Rhytidiopsis robusta*** [Western Hemlock - Pacific Silver Fir (Douglas-Fir) / Alaska Blueberry / Pipecleaner Moss] [Pruche de l'Ouest - Sapin gracieux (Douglas de Menzies) / Airelle d'Alaska / Rhytidiopsis robuste]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

G751 North Pacific Western Hemlock - Sitka Spruce - Western Red Cedar Rainforest

Forêts de pruches de l'Ouest, d'épinettes de Sitka et de cèdre de l'Ouest du nord du Pacifique

IVC Colloquial Name: North-Central Pacific Western Hemlock - Sitka Spruce Rainforest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM024b Typic Vancouverian Rainforest

CNVC Concept: The CNVC concept CG0751 appears to be the same as this IVC concept (G751), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.

IVC Concept: These rainforests are dominated by tall evergreen needle-leaved trees, and are restricted to the outer coastal hypermaritime areas of southeastern Alaska, British Columbia, Washington, Oregon and northern California. The forests are often open and scrubby but can have a closed upper canopy. Stands may be pure *Picea sitchensis, Thuja plicata*, or *Tsuga heterophylla* but are more often a mix and may occur with other conifers such as *Callitropsis nootkatensis, Chamaecyparis lawsoniana, Abies grandis, Pseudotsuga menziesii, Acer circinatum, Alnus rubra, Acer macrophyllum*, and *Frangula purshiana*. *Abies amabilis* is widespread (except in southern Washington) and can be common but is not dominant. In Washington, nearly pure stands of *Tsuga heterophylla* are common and seem to be associated with microsites where exposure to intense windstorms is likely. Wet coastal environments that support stands of *Chamaecyparis lawsoniana* in the absence of *Tsuga heterophylla, Thuja plicata*, or *Picea sitchensis* are also part of this group. The understory is rich with shade-tolerant shrubs and ferns, including *Gaultheria shallon, Vaccinium ovatum, Menziesia ferruginea, Polystichum munitum, Dryopteris* spp., and *Blechnum spicant*, as well as a high diversity of mosses. *Oxalis oregana* is important in the understory of moist sites in Washington. *Oplopanax horridus* and *Rubus spectabilis* are important understory shrubs on wet sites dominated by *Picea sitchensis* in the overstory canopy, these sites tend to be sub-irrigated and wet, but not saturated, soils remain well-oxygenated.

Stands are restricted to areas within 25 km of saltwater and are most abundant along coastal central British Columbia, coastal Vancouver Island, and on the Olympic Peninsula of Washington. They range from southern southeastern Alaska (approximately south of Wrangell), through British Columbia, along the southern Washington, Oregon and northern California coasts. The climate is hypermaritime, with cool summers, mild and very wet winters (coldest temperatures range 0-5°C [32-41°F), and abundant fog without a major snowpack. Annual precipitation ranges from 975 to 2399 mm (38-94 inches) with an average of 1572 mm (62 inches) with the majority falling as winter rain. Summer rains are less frequent (<10% of annual rainfall occurs in summer) which can be ameliorated by frequent, dense coastal fog and cloud cover.

Stands are found mostly below 300 m in elevation, where the terrain is mostly gentle, of low topographic relief, and often rocky. Some stands occur on stabilized dunes, others in lower toeslopes and wet sites that are also well-drained, such as sloped floodplains (but are not influenced by overbank flooding) and coarse valley bottoms. Sites occupied include the outermost coastal fringe where salt spray is prominent, riparian terraces and valley bottoms near the coast where there is major fog accumulation. Soils typically have a distinct humus layer overlying mineral horizons or bedrock. In central British Columbia the humus layers can be very thick (mean = 17-35 cm). Soils are often imperfectly drained. These forests very rarely burn, and natural disturbance is more often single tree gap-disturbance events and intense winter storms on local and regional scales. Fire becomes more of a player in the southern portions of the range, in Oregon and California.

IVC Dynamics:

IVC Environment: Stands are restricted to areas within 25 km of saltwater and are most abundant along coastal central British Columbia, coastal Vancouver Island, and on the Olympic Peninsula of Washington. They range from southern southeastern Alaska (approximately south of Wrangell), through British Columbia, along the southern Washington, Oregon and northern California coasts. The climate is hypermaritime, with cool summers, mild and very wet winters (coldest temperatures range 0-5°C [32-41°F), and abundant fog without a major snowpack. Annual precipitation ranges from 975 to 2399 mm (38-94 inches) with an average of 1572 mm (62 inches) with the majority falling as winter rain. Summer rains are less frequent (<10% of annual rainfall occurs in summer) which can be ameliorated by frequent, dense coastal fog and cloud cover.

Stands are found mostly below 300 m in elevation, where the terrain is mostly gentle, of low topographic relief, and often rocky. Some stands occur on stabilized dunes, others in lower toeslopes and wet sites that are also well-drained, such as sloped floodplains (but are not influenced by overbank flooding) and coarse valley bottoms. Sites occupied include the outermost coastal fringe where salt spray is prominent, riparian terraces and valley bottoms near the coast where there is major fog accumulation. Soils typically have a distinct humus layer overlying mineral horizons or bedrock. In central British Columbia the humus layers can be very thick (mean = 17-35 cm). Soils are often imperfectly drained. These forests very rarely burn, and natural disturbance is more often single tree gap-disturbance events and intense winter storms on local and regional scales. Fire becomes more of a player in the southern portions of the range, in Oregon and California.

DISTRIBUTION

IVC Geographic Range: This group ranges from southern southeastern Alaska (approximately south of Wrangell), through British Columbia, along the southern Washington, Oregon and northern California coasts.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA, OR, WA

IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.11.78:P, 7.1.7.2:P, 7.1.8.1:P

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G3 rank that was calculated from closely related ecological system global ranks. A rank of G3G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline moderate to high, and threats high.

CLASSIFICATION REVIEW

CNVC Elcode: CG0751

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3609 *Abies grandis - Picea sitchensis - Thuja plicata* Forest Alliance** [Grand Fir - Sitka Spruce - Western Red-cedar Forest Alliance] []
  This alliance consists of generally low-elevation forests of the Pacific Northwest located on dry well-drained sites dominated by *Abies grandis* and usually codominated by *Picea sitchensis, Tsuga heterophylla*, and/or *Thuja plicata*. Understory species are variable and tolerant of drought. Sites are dry and well-drained.

- **A3606 *Chamaecyparis lawsoniana - Picea sitchensis* Forest Alliance** [Port Orford-cedar - Sitka Spruce Forest Alliance] []
  This alliance consists of mixed conifer forests characterized by *Chamaecyparis lawsoniana* codominant in the tree canopy with other conifers, most often with *Pseudotsuga menziesii*. Additional codominants include *Tsuga heterophylla* in northern stands and *Picea sitchensis* in coastal stands. It occurs in a very restricted range in the Klamath-Siskiyou mountain region of northern California and southern Oregon, but shows wide ecological amplitude within that range. Winters are cool and wet; summers are warm and dry. Coastal stands are usually associated with penetration of ocean fog events, and are particularly well-developed on moist toeslopes and valley bottoms of coastal river drainages.
- **A3608 *Picea sitchensis / Rubus spectabilis* Mesic Forest Alliance** [Sitka Spruce / Salmonberry Mesic Forest Alliance] []
  This alliance consists of tall conifer forests of the Pacific Northwest dominated by *Picea sitchensis*, often mixed with *Tsuga heterophylla* and other conifers, with wet indicator understory species such as *Oplopanax horridus* and *Rubus spectabilis*. Soils are subirrigated, well-oxygenated and wet but not saturated. Sites contain subhydric soils, are water-receiving, and are generally poorly drained microsites.
- **A3607 *Picea sitchensis* Stabilized Dune Forest Alliance** [Sitka Spruce Stabilized Dune Forest Alliance] []
  This alliance covers those forests dominated by *Picea sitchensis* or mixed with other conifers on dry, well-drained, stabilized sand dunes or rocky outcrops along the Pacific Coast.
- **A3604 *Tsuga heterophylla - Picea sitchensis / Rhytidiadelphus loreus* Forest Alliance** [Western Hemlock - Sitka Spruce / Gooseneck Moss Forest Alliance] []
  This alliance covers forests of the Pacific Northwest dominated by *Picea sitchensis* and *Tsuga heterophylla* on well-drained, fresh to moist, nutrient-poor sites with thin soils, usually directly facing the ocean. The understory is variable but species are indicators of nutrient-poor soils, such as *Rhytidiadelphus loreus*.
- **A3605 *Tsuga heterophylla - Thuja plicata - Callitropsis nootkatensis* Forest Alliance** [Western Hemlock - Western Red-cedar - Alaska-cedar Forest Alliance] []
  This alliance contains tall, mesic mixed forest of *Tsuga heterophylla, Thuja plicata*, and *Callitropsis nootkatensis*, usually on poorly drained soils in cool and cold microsites of the Pacific Northwest.
- **A3610 *Tsuga heterophylla - Thuja plicata / Blechnum spicant* Rich Mesic Forest Alliance** [Western Hemlock - Western Red-cedar / Deer Fern Rich Mesic Forest Alliance] []
  This alliance consists of forests of the Pacific Northwest coastal mountains dominated by *Tsuga heterophylla* and *Thuja plicata*, with heavy to light maritime influence, on moderate to steep slopes, usually facing the ocean, with nutrient-rich and mesic soils.
- **A3611 *Tsuga heterophylla - Thuja plicata / Vaccinium ovalifolium* Forest Alliance** [Western Hemlock - Western Red-cedar / Oval-leaf Blueberry Forest Alliance] []
  This alliance consists of forests of the Pacific Northwest dominated by *Tsuga heterophylla* and *Thuja plicata* on well-drained and nutrient-poor sites. Understory species are indicators of nutrient-poor soils.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2015)
IVC Description Author: G. Kittel
IVC Description Date: 2015-05-15
IVC Acknowledgments:

A3609 Grand Fir - Sitka Spruce - Western Red-cedar Forest Alliance

[ ]
Abies grandis - Picea sitchensis - Thuja plicata Forest Alliance
Grand Fir - Sitka Spruce - Western Red-cedar Forest

IVC Scientific Name: *Abies grandis - Picea sitchensis - Thuja plicata* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of low-elevation forests of the Pacific Northwest located on dry well-drained sites dominated by *Abies grandis* and usually codominated by *Picea sitchensis, Tsuga heterophylla*, and/or *Thuja plicata*. These forests are characterized by a multi-tiered tree canopy and can be over 50 m in height. Understory species are variable and tolerant of drought, such as *Rhododendron macrophyllum, Vaccinium ovatum*, or *Gaultheria shallon*. Sites are dry and well-drained. These conifer forests typically occur on deep soils of alluvial terraces.

IVC Dynamics: Forest associations within this alliance are dominated by a moderately fast-growing, shade-tolerant, fire-intolerant conifer, which requires moist conditions and a mild temperature regime for establishment and growth. Following disturbance, a variety of other conifer species can become established and dominate sites previously supporting stands of this alliance. *Pseudotsuga menziesii*, in particular, can become established on these sites and dominate for many years following disturbance. Wind dominates the disturbance patterns of these forests, and fire-return intervals are very long. Fires are infrequent in these forests, due to high fuel moisture and protected topographic positions.

IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance occurs along coastal southern British Columbia, Washington, Oregon and northern California.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002846** ***Thuja plicata - Acer macrophyllum - Abies grandis / (Oemleria cerasiformis) / Polystichum munitum*** **Forest** [Western Red-cedar - Bigleaf Maple - Grand Fir / (Indian-plum) / Western Swordfern Forest] []
  G1 (2006-04-11) BC, OR, WA
- **CEGL000468** ***Thuja plicata - (Abies grandis) / Polystichum munitum*** **Forest** [Western Red-cedar - (Grand Fir) / Western Swordfern Forest] []
  G1 (2017-01-31) BC, OR, WA
- **CEGL002848** ***Thuja plicata - Pseudotsuga menziesii - Abies grandis / Mahonia nervosa / Polystichum munitum*** **Forest** [Western Red-cedar - Douglas-fir - Grand Fir / Cascade Barberry / Western Swordfern Forest] []
  G1 (2006-04-11) BC, OR, WA
- **CNVC00055** ***Thuja plicata* (*Abies grandis*) / *Polystichum munitum - Achlys triphylla*** [Western Red-Cedar (Grand Fir) / Western Swordfern - Sweet After Death] [Thuya géant (Sapin grandissime) / Fougère épée - Achlyde à trois folioles]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3606 Port Orford-cedar - Sitka Spruce Forest Alliance

[ ]
Chamaecyparis lawsoniana - Picea sitchensis Forest Alliance
Port Orford-cedar - Sitka Spruce Forest

IVC Scientific Name: *Chamaecyparis lawsoniana - Picea sitchensis* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of mixed conifer forests characterized by *Chamaecyparis lawsoniana* codominant in the tree canopy usually with *Pseudotsuga menziesii*. Additional codominants include *Tsuga heterophylla* in northern stands and *Picea sitchensis* in coastal stands. Other conifers present may include *Abies lowiana, Callitropsis nootkatensis, Picea breweriana*, and *Taxus brevifolia*. A tall-shrub stratum generally occurs with *Acer circinatum, Gaultheria shallon, Rhododendron macrophyllum*, and/or *Vaccinium parvifolium*. Shorter shrubs may include *Chimaphila umbellata, Leucothoe davisiae, Mahonia nervosa,*

Paxistima myrsinites, Rosa gymnocarpa, Rubus ursinus, and *Vaccinium membranaceum*. Herbaceous layers commonly have shade-tolerant species such as *Clintonia uniflora, Goodyera oblongifolia, Linnaea borealis, Oxalis oregana*, and *Polystichum munitum*. Important herbs may include *Xerophyllum tenax*, in addition to the species listed above. This alliance occurs in a very restricted range in the Klamath-Siskiyou mountain region of northern California and southern Oregon, but shows wide ecological amplitude within that range.

IVC Dynamics: *Chamaecyparis lawsoniana* is a somewhat shade-tolerant conifer. It regenerates under its own shade and will eventually dominate stands where it co-occurs with *Pinus* spp., if disturbance is absent. Conversely, it appears to be less shade-tolerant and much more fire-tolerant than *Tsuga heterophylla* or *Picea sitchensis*, and can vigorously colonize recently burned substrates. Mature individuals of *Chamaecyparis lawsoniana* have thick, fire-resistant bark which allows them to persist through repeated fires. *Phytophthora* root rot, a water-borne disease spread by logging and other anthropogenic disturbances, is severely impacting stands of this alliance throughout its range. Many stands have been lost to this pathogen, and populations are presently in decline throughout the range of the species.

IVC Environment: Winters are cool and wet; summers are warm and dry. Coastal stands are usually associated with penetration of ocean fog events, and are particularly well-developed on moist toeslopes and valley bottoms of coastal river drainages. Disjunct inland stands occur at up to 2000 m elevation in the southern Cascades and inner Klamath Mountains where stands occur in moist microhabitats, often in association with streams or springs. Soils are often moist, coarse-textured, ultra-mafic soils with perched water tables derived from alluvium or colluvium.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in southwestern coastal Oregon and extreme northwestern California Coastal Ranges and Klamath-Siskiyou mountains.

IVC Nations: CA,US

IVC States/Provinces: CA, OR

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A3608 Sitka Spruce / Salmonberry Mesic Forest Alliance

[ ]

Picea sitchensis / Rubus spectabilis Mesic Forest Alliance

Sitka Spruce / Salmonberry Mesic Forest

IVC Scientific Name: *Picea sitchensis / Rubus spectabilis* Mesic Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance consists of tall conifer forests of the Pacific Northwest dominated by *Picea sitchensis*, often mixed with *Tsuga heterophylla* and other conifers. Soils are subirrigated, well-oxygenated and wet but not saturated. Wet indicator species such as *Oplopanax horridus* and *Rubus spectabilis* often form the understory shrub canopy. The herbaceous layer is dominated by mesic, shade-tolerant ferns and forbs such as *Athyrium filix-femina, Blechnum spicant, Maianthemum dilatatum, Oxalis oregana*, and *Polystichum munitum*. Mosses and lichens are abundant on logs, snags, trees, or the ground surface. Sites have subhydric, water-receiving, and poorly drained soils. This conifer forest alliance is found within the maritime climate-influenced

region of the Pacific Northwest, from northern California to British Columbia and possibly southern Alaska, usually within 50 km of tidewater and below 1000 m in elevation. Stands typically occur on coastal terraces, but extend up river valleys and seaward slopes of coastal mountains. Stands occur on moderate to steep slopes with shallow to moderately deep soils.

IVC Dynamics: Fires tend to be infrequent in stands of this alliance due to high average humidities and low lightning frequencies. When they do burn, these forests are susceptible to high-intensity crown fires. Windthrow resulting from intense winter storms is a common, and occasionally catastrophic, agent of disturbance which can result in forest turnover. Following disturbance, sites are often colonized by shade-intolerant tree species such as *Pinus contorta* or *Alnus rubra*. Shrubs, such as *Rubus spectabilis, Sambucus racemosa var. melanocarpa*, and *Vaccinium* spp., can also invade. *Alnus rubra* and *Rubus spectabilis*, in particular, can form semi-persistent communities on disturbed sites. Regeneration and growth of *Picea sitchensis* can be severely limited in such early-seral stands. In mature *Picea sitchensis* forests, regeneration often occurs on downed "nurse logs" on the forest floor.

IVC Environment: Stands occur on low to moderate slopes, especially where subirrigation can occur, with shallow to moderately deep soils. Although this alliance is usually associated with coastal terraces, these forests may extend up river valleys and seaward slopes of coastal mountains. This alliance occurs within the maritime climate-influenced region of the Pacific Northwest, from northern California to British Columbia and possibly southern Alaska, usually within 50 km of tidewater and below 1000 m in elevation. Winter rains can be heavy. Summer rain decreases to the south, but coastal fog events and drizzle are characteristic throughout the range and minimize drought stress.

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout the Pacific coastal mountains from California to British Columbia and possibly southern Alaska.

IVC Nations: CA,US

IVC States/Provinces: AK?, BC, CA?, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002825** ***Picea sitchensis - Tsuga heterophylla / Oplopanax horridus - Rubus spectabilis / Gymnocarpium dryopteris*** **Forest** [Sitka Spruce - Western Hemlock / Devil's-club - Salmonberry / Western Oakfern Forest] []
  G3 (2005-09-20) BC
- **CEGL002832** ***Tsuga heterophylla - (Abies amabilis) - Picea sitchensis / Oplopanax horridus*** **Forest** [Western Hemlock - (Pacific Silver Fir) - Sitka Spruce / Devil's-club Forest] []
  G2G3 (2005-09-19) BC
- **CEGL002788** ***Picea sitchensis - Acer macrophyllum / Oplopanax horridus - Rubus spectabilis / Maianthemum dilatatum*** **Forest** [Sitka Spruce - Bigleaf Maple / Devil's-club - Salmonberry / False Lily-of-the-Valley Forest] []
  G1G2 (2005-06-02) BC

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A3607 Sitka Spruce Stabilized Dune Forest Alliance

[ ]

Picea sitchensis Stabilized Dune Forest Alliance

Sitka Spruce Stabilized Dune Forest

IVC Scientific Name: *Picea sitchensis* Stabilized Dune Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance consists of forests dominated by *Picea sitchensis* that occur on dry, well-drained, stabilized sand dunes or rocky outcrops along the Pacific Coast. Other codominant conifer species include *Pinus contorta, Tsuga heterophylla*, and *Pseudotsuga menziesii*. A short-shrub layer is usually present, but is often patchy and rarely has substantial cover. Cespitose graminoids or forbs tolerant of dry conditions are dominant. Lichens and mosses may be present, and are an important component in coastal stands. This alliance is found along the southwestern British Columbia to northern California coast. Sites are very well-drained on sandy soils. *Pinus contorta* trees may be stunted and twisted in coastal stands.

IVC Dynamics: Fires tend to be infrequent in stands of this alliance due to high average humidities and low lightning frequencies. When they do burn, these forests are susceptible to high-intensity crown fires. Fire is infrequent in coastal stands, but shifting sand substrates and wind-borne salt spray act to discourage competition and provide suitable condition for stand regeneration.

IVC Environment: Vegetation occurs within the maritime climate-influenced region of the Pacific Northwest, from northern California to southwestern British Columbia, usually within 50 km of tidewater and below 1000 m in elevation. Stands are associated with sandy soils of stabilized dune habitats of coastal Oregon and Washington. On coastal wooded sand dunes, stands occur on all aspects on dry, partially-stabilized sand ridges, slopes, and flats, between open sand and the forest edge. Stands also occur on dry deflation plains. Requirements here seem to be minimal sand movement, and well-drained, exposed sites. Soils supporting these woodlands are acidic, and rarely are formed from calcareous parent materials.

DISTRIBUTION

IVC Geographic Range: This alliance is found along the southwestern British Columbia to northern California coast.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002823** ***Picea sitchensis / Gaultheria shallon / Maianthemum dilatatum*** **Forest** [Sitka Spruce / Salal / False Lily-of-the-Valley Forest] []
  G2G3 (2005-09-19) BC
- **CEGL002791** ***Pinus contorta - Callitropsis nootkatensis / Racomitrium lanuginosum*** **Woodland** [Lodgepole Pine - Alaska-cedar / Woolly Moss Woodland] []
  G4 (2005-09-14) BC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3604 Western Hemlock - Sitka Spruce / Gooseneck Moss Forest Alliance

[ ]

Tsuga heterophylla - Picea sitchensis / Rhytidiadelphus loreus Forest Alliance

North Pacific Western Hemlock - Sitka Spruce Forest

IVC Scientific Name: *Tsuga heterophylla - Picea sitchensis / Rhytidiadelphus loreus* Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance consists of forests of the Pacific Northwest dominated by *Picea sitchensis* and *Tsuga heterophylla* on well-drained, fresh to moist, nutrient-poor sites with thin soils, usually directly facing the ocean. The understory is variable, but species are indicators of nutrient-poor soils, such as *Rhytidiadelphus loreus*. Forests included in this alliance are dominated by *Picea sitchensis*, but *Tsuga heterophylla* and *Pseudotsuga menziesii* may codominate the canopy. Common understory species include *Blechnum spicant, Calamagrostis nutkaensis, Eurhynchium oreganum, Eurhynchium oreganum, Gaultheria shallon, Maianthemum dilatatum, Polystichum munitum, Rhizomnium glabrescens, Rhytidiadelphus loreus, Tiarella trifoliata*, and *Trisetum canescens*. This alliance is found within the maritime climate-influenced region of the Pacific Northwest, from northern Oregon to southern Alaska, usually within 50 km of tidewater and below 1000 m in elevation. Stands typically occur on coastal terraces, but extend up river valleys and seaward slopes of coastal mountains. Stands occur on moderate to steep slopes with shallow to moderately deep soils.

IVC Dynamics: Fires tend to be infrequent in stands of this alliance due to high average humidities and low lightning frequencies. When they do burn, these forests are susceptible to high-intensity crown fires. Windthrow resulting from intense winter storms is a common, and occasionally catastrophic, agent of disturbance which can result in forest turnover. *Alnus rubra* and *Rubus spectabilis*, in particular, can form semi-persistent communities on disturbed sites. Regeneration and growth of *Picea sitchensis* can be severely limited in such early-seral stands. In mature *Picea sitchensis* forests, regeneration often occurs on downed "nurse logs" on the forest floor.

IVC Environment: This alliance occurs within the maritime climate-influenced region of the Pacific Northwest, from northern Oregon to southern Alaska, usually within 50 km of tidewater and below 1000 m in elevation. Stands of this alliance are best represented in the relatively mild, wet climates along the coast. Although this alliance is usually associated with coastal terraces, these forests may extend up river valleys and seaward slopes of coastal mountains. Annual precipitation ranges from 65-550 cm, with the majority falling as rain. Winter rains can be heavy. Summer rain decreases to the south, but coastal fog events and drizzle are characteristic throughout the range and minimize drought stress. Stands occur on moderate to steep slopes with shallow to moderately deep soils. Best forest development is on deep, moist, well-aerated soils with abundant calcium and magnesium and moderate acidity (Burns and Honkala 1990a).

DISTRIBUTION

IVC Geographic Range: This alliance is found in coastal mountains and along immediate coastlines of southern Alaska, British Columbia, Washington and Oregon.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA?, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005526** ***Picea sitchensis - Pseudotsuga menziesii / Gaultheria shallon*** **Forest** [Sitka Spruce - Douglas-fir / Salal Forest] []
  GNR. BC, CA?, OR, WA
- **CEGL005524** ***Picea sitchensis / Gaultheria shallon*** **Forest** [Sitka Spruce / Salal Forest] []
  GNR. BC, CA?, OR, WA
- **CEGL002824** ***Picea sitchensis / Trisetum canescens*** **Forest** [Sitka Spruce / Tall Trisetum Forest] []
  G1G2 (2005-09-19) BC
- **CEGL002789** ***Picea sitchensis - Tsuga heterophylla / Eurhynchium oreganum*** **Forest** [Sitka Spruce - Western Hemlock / Oregon Beaked Moss Forest] []
  G2G3 (2005-06-02) BC
- **CEGL005523** ***Picea sitchensis / Calamagrostis nutkaensis*** **Forest** [Sitka Spruce / Pacific Reedgrass Forest] []
  G3 (2015-02-06) AK, BC, OR, WA
- **CEGL007324** ***Tsuga heterophylla - Thuja plicata - Picea sitchensis / Rhytidiadelphus loreus*** **Forest** [Western Hemlock - Western Red-cedar - Sitka Spruce / Gooseneck Moss Forest] []
  GNR. BC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Meidinger, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3605 Western Hemlock - Western Red-cedar - Alaska-cedar Forest Alliance

[ ]
Tsuga heterophylla - Thuja plicata - Callitropsis nootkatensis Forest Alliance
Western Hemlock - Western Red-cedar - Alaska-cedar Forest

IVC Scientific Name: *Tsuga heterophylla - Thuja plicata - Callitropsis nootkatensis* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of tall, mesic mixed forest of *Tsuga heterophylla, Thuja plicata*, and *Callitropsis nootkatensis*, usually on poorly drained soils in cool and cold microsites. These forests occur in the Pacific Northwest, mostly west of the crest of the Cascade Range from southeastern Oregon to British Columbia, Canada, within the maritime-influenced region where much of the annual precipitation occurs as rain. Where snow does occur, it can generally be melted by rain during warm winter storms. Stands occur from sea level in coastal areas. In all settings, it occurs where environmental conditions are moderated by the marine influence, with moderate drought and frost. Stands generally occur on all slopes and aspects, but grow best on sites with high soil moisture, such as toeslopes and bottomlands. These forests generally occur at moist, non-flooded or upland sites that are not saturated year-long.
IVC Dynamics:
IVC Environment: These forests usually occur on poorly drained soils in cool and cold microsites in the Pacific Northwest, mostly west of the crest of the Cascade Range from southeastern Oregon to British Columbia, Canada, within the maritime-influenced region where much of the annual precipitation occurs as rain. Where snow does occur, it can generally be melted by rain during warm winter storms. Stands occur from sea level in coastal areas. In all settings, it occurs where environmental conditions are moderated by the marine influence, with moderate drought and frost. Stands generally occur on all slopes and aspects, but grow best on sites with high soil moisture, such as toeslopes and bottomlands. These forests generally occur at moist, non-flooded or upland sites that are not saturated year-long.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in coastal British Columbia, Washington and Oregon.
IVC Nations: CA,US
IVC States/Provinces: BC, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002776 *Tsuga heterophylla - Thuja plicata - Callitropsis nootkatensis / Gaultheria shallon / Blechnum spicant* Forest** [Western Hemlock - Western Red-cedar - Alaska-cedar / Salal / Deer Fern Forest] []
  GNR. BC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:

IVC Primary Concept Source: D. Meidinger, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3610 Western Hemlock - Western Red-cedar / Deer Fern Rich Mesic Forest Alliance

[ ]
Tsuga heterophylla - Thuja plicata / Blechnum spicant Rich Mesic Forest Alliance
Western Hemlock - Western Red-cedar Rich Mesic Forest

IVC Scientific Name: *Tsuga heterophylla - Thuja plicata / Blechnum spicant* Rich Mesic Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of forests of the Pacific Northwest coastal mountains dominated by *Tsuga heterophylla* and *Thuja plicata*, with heavy to light maritime influence, on moderate to steep slopes, usually facing the ocean, with nutrient-rich and mesic soils.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance is found in coastal mountains from British Columbia south to northern California.
IVC Nations: CA,US
IVC States/Provinces: AK, BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003787** ***Picea sitchensis - Tsuga heterophylla / Polystichum munitum*** **Forest** [Sitka Spruce - Western Hemlock / Western Swordfern Forest] []
  G3? (2006-04-11) BC, OR, WA
- **CEGL007307** ***Picea sitchensis - Callitropsis nootkatensis - Tsuga mertensiana / Conocephalum salebrosum*** **Forest** [Sitka Spruce - Alaska-cedar - Mountain Hemlock / Cat-tonque Liverwort Forest] []
  GNR. BC
- **CEGL002778** ***Tsuga heterophylla - Thuja plicata / Vaccinium (alaskaense, ovalifolium) / Hylocomium splendens*** **Forest** [Western Hemlock - Western Red-cedar / (Alaska Blueberry, Oval-leaf Blueberry) / Splendid Feathermoss Forest] []
  G3 (2005-09-19) BC, WA
- **CEGL002843** ***Tsuga heterophylla - (Thuja plicata, Pseudotsuga menziesii) / Polystichum munitum - Blechnum spicant*** **Forest** [Western Hemlock - (Western Red-cedar, Douglas-fir) / Western Swordfern - Deer Fern Forest] []
  G2G3 (2006-04-11) BC, WA
- **CEGL000475** ***Thuja plicata / Gaultheria shallon*** **Forest** [Western Red-cedar / Salal Forest] []
  G1G2 (1997-11-14) BC, WA
- **CEGL002849** ***Thuja plicata - Pseudotsuga menziesii - Tsuga heterophylla / Polystichum munitum - Dryopteris expansa*** **Forest** [Western Red-cedar - Douglas-fir - Western Hemlock / Western Swordfern - Spreading Woodfern Forest] []
  G2G3 (2006-04-11) BC
- **CNVC00013** ***Tsuga heterophylla - Thuja plicata - Pseudotsuga menziesii / Polystichum munitum - Blechnum spicant*** [Western Hemlock - Western Red-Cedar - Douglas-Fir / Western Swordfern - Deer Fern] [Pruche de l'Ouest - Thuya géant - Douglas de Menzies / Fougère épée - Blechnum en épi]
  GNR.
- **CNVC00037** ***Tsuga heterophylla - Thuja plicata - Picea sitchensis / Rhytidiadelphus loreus*** [Western Hemlock - Western Red-Cedar - Sitka Spruce / Gooseneck Moss] [Pruche de l'Ouest - Thuya géant - Épinette de Sitka / Rhytidiadelphe lanière]
  GNR.

- **CNVC00041** ***Tsuga heterophylla - Thuja plicata / Gaultheria shallon / Blechnum spicant*** [Western Hemlock - Western Red-Cedar / Salal / Deer Fern] [Pruche de l'Ouest - Thuya géant / Salal / Blechnum en épi]
  GNR.
- **CNVC00038** ***Tsuga heterophylla - Thuja plicata - Pseudotsuga menziesii / Vaccinium alaskaense / Gymnocarpium dryopteris - Clintonia uniflora*** [Western Hemlock - Western Red-Cedar - Douglas-Fir / Alaska Blueberry / Western Oakfern - Bride's Bonnet] [Pruche de l'Ouest - Thuya géant - Douglas de Menzies / Airelle d'Alaska / Gymnocarpe du chêne - Clintonie uniflore]
  GNR.
- **CNVC00029** ***Tsuga heterophylla - Thuja plicata - Chamaecyparis nootkatensis / Coptis aspleniifolia / Rhytidiadelphus loreus*** [Western Hemlock - Western Red-Cedar - *Chamaecyparis nootkatensis* / Fernleaf Goldthread / Gooseneck Moss] [Pruche de l'Ouest - Thuya géant - Cyprès jaune / Coptide à feuilles d'asplénie / Rhytidiadelphe lanière]
  GNR.
- **CNVC00046** ***Thuja plicata - Pseudotsuga menziesii - Tsuga heterophylla / Oplopanax horridus / Polystichum munitum / Plagiomnium insigne*** [Western Red-Cedar - Douglas-Fir - Western Hemlock / Devil's-Club / Western Swordfern / Badge Moss] [Thuya géant - Douglas de Menzies - Pruche de l'Ouest / Bois piquant / Fougère épée / Mnie remarquable]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Meidinger, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3611 Western Hemlock - Western Red-cedar / Oval-leaf Blueberry Forest Alliance

[ ]
Tsuga heterophylla - Thuja plicata / Vaccinium ovalifolium Forest Alliance
Western Hemlock - Western Red-cedar / Oval-leaf Blueberry Forest

IVC Scientific Name: *Tsuga heterophylla - Thuja plicata / Vaccinium ovalifolium* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance covers forests dominated by *Tsuga heterophylla* and *Thuja plicata* on well-drained and nutrient-poor sites. Understory species are indicators of nutrient-poor soils. These forests occur in the maritime-influenced regions of the Pacific Northwest, from the central coast of British Columbia to the Kenai Peninsula in Alaska. Throughout the range of this alliance, much of the annual precipitation occurs as rain. Where snow does occur, it can generally be melted by rain during warm winter storms. In all settings, this type occurs where environmental conditions are moderated by the marine influence, with moderate drought and frost. Stands of the alliance generally occur on all slopes and aspects, except for wet bottomland sites. It occurs on a wide variety of soil types across its range, but growth of *Tsuga heterophylla* is decreased on heavy soils, or soils with poor drainage. The geographic and environmental range of this type is wide, and associated vegetation is correspondingly diverse.
IVC Dynamics:
IVC Environment: This section needs to be developed from Canadian plot data.

DISTRIBUTION

IVC Geographic Range: This alliance occurs from the central coast of British Columbia to the Kenai Peninsula in Alaska.
IVC Nations: CA,US
IVC States/Provinces: AK, BC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002837** ***Tsuga heterophylla - Thuja plicata - (Abies amabilis) / Cornus canadensis*** **Forest** [Western Hemlock - Western Red-cedar - (Pacific Silver Fir) / Bunchberry Dogwood Forest] []
  G1G3 (2005-09-19) BC
- **CNVC00007** ***Tsuga heterophylla - Thuja plicata*** **(*Pseudotsuga menziesii - Abies amabilis*) /** ***Gymnocarpium dryopteris - Clintonia uniflora*** [Western Hemlock - Western Red-Cedar (Douglas-Fir - Pacific Silver Fir) / Western Oakfern - Bride's Bonnet] [Pruche de l'Ouest - Thuya géant (Douglas de Menzies - Sapin gracieux) / Gymnocarpe du chêne - Clintonie uniflore]
  GNR.
- **CNVC00001** ***Tsuga heterophylla - Thuja plicata / Gaultheria shallon - Vaccinium alaskaense / Hylocomium splendens*** [Western Hemlock - Western Red-Cedar / Salal - Alaska Blueberry / Splendid Feathermoss] [Pruche de l'Ouest - Thuya géant / Salal - Airelle d'Alaska / Hypne éclatante]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

G237 North Pacific Red Alder - Big-leaved Maple - Coast Douglas-fir Rainforest

Forêts d'aulnes rouges, d'érables grandifoliés et de douglas de Menzies du nord du Pacifique

IVC Colloquial Name: North Pacific Red Alder - Bigleaf Maple - Douglas-fir Rainforest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM024b Typic Vancouverian Rainforest

CNVC Concept: The CNVC concept CG0237 appears to be the same as this IVC concept (G237), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.

IVC Concept: This lowland hardwood or mixed hardwood-conifer forest group occurs in the Pacific Northwest from northern British Columbia to northern California. These forests are composed of mostly deciduous broadleaf species sometimes with varying components of conifers. *Alnus rubra* or *Acer macrophyllum* are the major tree species. Companion species are common and specific species present depend on the geographic location. Conifers, including *Abies grandis, Picea sitchensis, Pseudotsuga menziesii, Thuja plicata*, and/or *Tsuga heterophylla*, can be codominant (up to one-third relative cover). Other major dominant broadleaf species are *Quercus garryana, Frangula purshiana*, and *Cornus nuttallii*. Conifers tend to increase in abundance with time in the absence of major disturbance, although the hardwoods, particularly *Acer macrophyllum*, can persist in the overstory. The understory is characterized by deciduous shrubs such as *Acer circinatum, Corylus cornuta, Oemleria cerasiformis, Rubus ursinus, Symphoricarpos albus*, and/or *Toxicodendron diversilobum*, but evergreen shrubs, including *Gaultheria shallon* and *Mahonia nervosa* and forbs, such as *Polystichum munitum* and *Oxalis oregana*, can be dominant. This group occurs on valley terraces and slopes at low elevations in the mountains of the Pacific Northwest coast and interior valleys west of the high Cascade Range. It is the dominant forest and woodland surrounding cities and towns of the Pacific Northwest, and component species are indicators of recent and past disturbance, both human-induced and natural. It also occurs on steep slopes and bluffs that are subject to mass movements on a periodic basis.

IVC Dynamics: This is, for the most part, an early-successional forest group. *Alnus* and *Acer* are dependent on full sunlight, and once overtopped by larger conifer species, will, without further disturbance, typically succeed to a conifer forest type. However, some stands can persist without disturbance (200 years) and remain mixed deciduous-conifer forests. When these forests are clearcut, logging companies systematically plant only conifers, causing this type to decline in heavily managed landscapes. So, it becomes an important type for conservation, especially in the Coast Ranges. In areas where it is regenerated by natural disturbances, it is not just a seral type of dry or mesic Douglas-fir - western hemlock types, but an important component of the forested landscape of the Pacific Northwest.

IVC Environment: This alliance occurs on valley terraces and slopes at low elevations in the mountains of the Pacific Northwest coast and interior valleys west of the high Cascade Range, and west of the Klamath Mountains in northwestern California. It is the dominant forest and woodland surrounding cities and towns of the Pacific Northwest, and component species are indicators of

recent and past disturbance, both human-induced and natural. They also occur on steep slopes and bluffs that are subject to mass movements on a periodic basis. They are found in patches of differing age associated with different landslide events.

Soil/substrate/hydrology: In some places, hardwoods are truly only found in early-seral conditions. This is truer in the northern part of the range. In the southern regions, such as Washington state, there are a few places where hardwoods persist, outside of the dry Douglas-fir - madrone forests around the Willamette Valley, Puget Trough and the western Oregon interior valleys. In the Coast Ranges and Cascades, there are hardwoods (mostly *Alnus rubra* and *Acer macrophyllum*) found in most of the valley toeslopes. They also occur in areas with exposed talus and exposed rocks, often with *Quercus garryana* and *Fraxinus latifolia*. This mix of deciduous hardwoods and conifers can be a late-seral, relatively stable forest in many areas, while in others it is successional, with the conifers completely overtaking the hardwoods after 200 years or so without disturbance.

DISTRIBUTION

IVC Geographic Range: This group occurs from northern British Columbia to northern California, in the coastal areas of the Pacific Northwest, at elevations below the Silver Fir Zone in the northern Pacific mountains and in lowlands (latter especially adjacent to coastlines), becoming less prominent in the northern half of this region.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.11.78:P, 7.1.7.2:P, 7.1.8.1:P, 7.1.9.3:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Elcode: CG0237

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A0427 *Alnus rubra - Acer macrophyllum - Pseudotsuga menziesii* Forest Alliance** [Red Alder - Bigleaf Maple - Douglas-fir Forest Alliance] []
  This forest alliance contains forested stands with an overstory canopy of *Acer macrophyllum* and/or *Alnus rubra*, with at least significant conifer cover by *Abies grandis, Picea sitchensis, Pseudotsuga menziesii*, or *Tsuga heterophylla* emergent through the deciduous layer. This alliance occurs along the Pacific Coast and in coastal valleys from northern British Columbia to northern California (where it would be restricted to the immediate coastal areas). This maritime-influenced region has mild winter temperatures and receives 75-400 cm of annual precipitation, falling mostly as winter rain. Vegetation usually occurs along low-elevation (0-1000 m) valley bottoms and adjacent lower toeslopes, often forming a seral community in moist coniferous forests.
- **A3385 *Alnus rubra - Acer macrophyllum* Forest Alliance** [Red Alder - Bigleaf Maple Forest Alliance] []
  This alliance consists of communities strongly dominated by *Acer macrophyllum* and/or *Alnus rubra*. Some conifers may be present but these have less than 25% relative cover. Vegetation within this alliance usually occurs along low-elevation (0-1000 m) valley slopes and lower mountain slopes of the Pacific Northwest and is often considered an early-seral type to conifer-dominated forests.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: F.H. Eyre (1980)

IVC Description Author: G. Kittel, D. Faber-Langendoen

IVC Description Date: 2015-11-09

IVC Acknowledgments:

A0427 Red Alder - Bigleaf Maple - Douglas-fir Forest Alliance

[ ]

Alnus rubra - Acer macrophyllum - Pseudotsuga menziesii Forest Alliance
Red Alder - Bigleaf Maple - Douglas-fir Forest

IVC Scientific Name: *Alnus rubra - Acer macrophyllum - Pseudotsuga menziesii* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This forest alliance consists of forests where *Acer macrophyllum* and/or *Alnus rubra* are dominant with at least half as much cover by conifer species such as *Abies grandis, Picea sitchensis, Pseudotsuga menziesii*, or *Tsuga heterophylla* emergent through the deciduous layer. The forest understory is usually species-rich and well-developed. Common shrub species include *Acer circinatum, Corylus cornuta var. californica, Menziesia ferruginea, Rhododendron macrophyllum, Rubus spectabilis, Sambucus racemosa var. melanocarpa, Symphoricarpos albus*, and *Vaccinium parvifolium*. The herbaceous layer is usually well-developed and can be very diverse, with *Asarum caudatum, Hydrophyllum tenuipes, Oxalis oregana, Polystichum munitum*, and *Trillium ovatum* particularly common. It occurs along the Pacific Coast and in coastal valleys from northern British Columbia to northern California (where it would be restricted to the immediate coastal areas). This maritime-influenced region has mild winter temperatures and receives 75-400 cm of annual precipitation, falling mostly as winter rain. Vegetation usually occurs along low-elevation (0-1000 m) valley bottoms and adjacent lower toeslopes, often forming a seral community in moist coniferous forests.

IVC Dynamics: These are primarily second-growth forests, resulting from past logging or historic wildfires within the Douglas-fir, Douglas-fir - western hemlock, Sitka spruce, and western hemlock zones. In the Puget lowlands, these appear to be communities of natural origin. At all except the wettest sites, dominance shifts towards *Pseudotsuga menziesii, Tsuga heterophylla*, or *Picea sitchensis* with stand age, forming a two-tiered canopy.

IVC Environment: The vegetation types within this alliance occur along the Pacific Coast in the Cascades foothills and lowlands of the Puget Trough. Vegetation within this alliance usually occurs along low-elevation (0-1000 m) valley bottoms and adjacent lower toeslopes, often forming a seral community in moist coniferous forests. This maritime-influenced region has mild winter temperatures, and receives 75-400 cm of annual precipitation, falling mostly as winter rain.

DISTRIBUTION

IVC Geographic Range: This alliance is found from northern British Columbia south to northern California along the coast and interior valleys.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000517** ***Acer macrophyllum - Pseudotsuga menziesii / Corylus cornuta / Hydrophyllum tenuipes*** **Forest** [Bigleaf Maple - Douglas-fir / Beaked Hazelnut / Pacific Waterleaf Forest] []
  G3 (1996-02-01) BC?, OR, WA?
- **CNVC00015** ***Abies grandis - Thuja plicata - Acer macrophyllum / Oemleria cerasiformis / Polystichum munitum*** [Grand Fir - Western Red-Cedar - Bigleaf Maple / Indian-Plum / Western Swordfern] [Sapin grandissime - Thuya géant - Érable à grandes feuilles / Oemléria faux-prunier / Fougère épée]
  GNR.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Sarr, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A3385 Red Alder - Bigleaf Maple Forest Alliance

[ ]

Alnus rubra - Acer macrophyllum Forest Alliance

Red Alder - Bigleaf Maple Forest

IVC Scientific Name: *Alnus rubra - Acer macrophyllum* Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance contains communities dominated by *Acer macrophyllum* and/or *Alnus rubra*. Some conifers, such as *Abies grandis, Picea sitchensis, Pseudotsuga menziesii, Thuja plicata*, or *Tsuga heterophylla* may be present, and can usually be found growing in the understory or as occasional canopy trees, but never have more than 25% relative cover. Other deciduous trees, such as *Cornus nuttallii* and *Betula papyrifera* (which is sometimes codominant in northwestern Washington), may also be present in the tree stratum. The forest understory is usually species-rich and well-developed compared to adjacent conifer forests in the same area. Common shrub species in stands of this type include *Acer circinatum* (which is always present), *Gaultheria shallon, Mahonia nervosa, Menziesia ferruginea, Rubus parviflorus, Rubus spectabilis, Sambucus racemosa var. melanocarpa*, and *Vaccinium membranaceum*. The herbaceous layer is often well-developed, with *Oxalis oregana* and *Stachys mexicana* particularly common. Ferns can be an abundant component. Species include *Polystichum munitum, Athyrium filix-femina*, and *Pteridium aquilinum*. This alliance is found from northwestern British Columbia south along the coastal front and interior valleys to northern California. This maritime-influenced region receives annual precipitation ranging from 75-400 cm, mostly as winter rain. Vegetation within this alliance usually occurs along low-elevation (0-1000 m [0-3300 feet]) valley slopes and lower mountain slopes, often forming a seral community in moist coniferous forests.

IVC Dynamics: Stands of this alliance are often favored by disturbance. Communities within this alliance are usually seral to conifer forest, but can persist on particularly moist sites. Most of these are forests that initiated following fire, logging, and other stand-replacement disturbances (Chappell et al. 1997). They may be associated with fire, or are steep slope forests associated with landslides and windthrows. Many stands of this alliance are associated with past logging. *Alnus rubra* is a nitrogen-fixing species which increases local soil fertility after colonization.

IVC Environment: Vegetation within this alliance usually occurs along low-elevation (0-1000 m) valley slopes and lower mountain slopes, often forming a seral community in moist coniferous forests along the Pacific coast from central California north through Oregon and Washington. This maritime-influenced region receives annual precipitation ranging from 75-400 cm, mostly as winter rain.

DISTRIBUTION

IVC Geographic Range: This alliance is found from northwestern British Columbia south along the coastal front and interior valleys to northern California.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000560 *Acer macrophyllum / Acer circinatum* Forest** [Bigleaf Maple / Vine Maple Forest] []
  G4G5 (1996-02-01) BC?, OR, WA
- **CEGL003334 *Acer macrophyllum - Alnus rubra / Polystichum munitum - Tellima grandiflora* Forest** [Bigleaf Maple - Red Alder / Western Swordfern - Fragrant Fringecup Forest] []
  G2G3 (2002-10-17) BC, OR, WA
- **CEGL003297 *Acer macrophyllum / Carex deweyana* Forest** [Bigleaf Maple / Dewey's Sedge Forest] []
  G3 (2002-10-01) BC, OR
- **CEGL000638 *Alnus rubra / Polystichum munitum* Forest** [Red Alder / Western Swordfern Forest] []
  G4 (1996-02-01) BC?, CA, OR, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G750 North Pacific Maritime Western Hemlock - Sitka Spruce Rainforest

Forêts maritimes de pruches de l'Ouest et d'épinettes de Sitka du nord du Pacifique

IVC Colloquial Name: Alaskan Maritime Western Hemlock - Sitka Spruce Rainforest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM024c Northern Vancouverian Rainforest

CNVC Concept: The CNVC concept CG0750 appears to be the same as this IVC concept (G750), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.

IVC Concept: This group is composed of tall evergreen needle-leaved tree-dominated, closed- to open-canopy forests of coastal Alaska from Cook Inlet and Kenai Peninsula south through the mainland and coastal islands of southeastern Alaska, ending at approximately Prince Rupert, British Columbia, along the Alaska-Canadian border. These forests are dominated by *Tsuga heterophylla* or *Picea sitchensis* but are also often mixed stands with other conifers often present to codominant, such as *Callitropsis nootkatensis* and *Tsuga mertensiana*. Stands of *Picea sitchensis* are often codominant with *Tsuga heterophylla*. At the southern end of the range, *Thuja plicata* may also occur, as well as *Pinus contorta*. The understory is rich with shade-tolerant shrubs and ferns, including *Gaultheria shallon, Vaccinium ovatum, Polystichum munitum, Dryopteris* spp., and *Blechnum spicant*, as well as a high diversity of mosses. Stands are mostly restricted to areas within 25 km of saltwater. They occur within the hypermaritime coastal boreal climatic zones of high precipitation in winter and summer along the coast. The northern limit is the northern extent of *Picea sitchensis*, where the dominant tree shifts to *Picea glauca* and climate becomes colder, with a true boreal climate at the coast. The southern limit is based on a transition to a more temperate climate, where minimum temperatures remain above 0°C and summer precipitation begins to decrease, and additional species appear such as *Thuja plicata* and *Pinus contorta*. These forests occupy the outermost coastal fringe where salt spray is prominent, riparian terraces and valley bottoms near the coast where there is major fog accumulation and the maritime "interior" part of northern forests, often on steep, well-drained productive slopes. Annual precipitation ranges from 623 to 3235 mm (24-127 inches) with an average of 1464 mm (58 inches), that falls year-round, with the majority falling as rain on the immediate coast, but at higher elevations the climate is wet with heavy snow and rainfall, and coastal winter rains can be heavy. Coldest monthly temperature range from -15° to -1°C (5-30°F). Stands ranges from sea level to about 1000 m (3000 feet) in elevation. These forests occur along a coastal belt on deep, acidic soils derived from marine sediments, but can also occur at higher elevations along stream channels, snow avalanche paths, mass-wasting slopes or loess deposits. In British Columbia, much of the hypermaritime band is shallow soils derived from acidic bedrock with deep organic accumulations due to hypermaritime climate. Glaciation resulted in a scouring of the landscape with little till accumulation. There are also pockets of richer bedrock that is reflected in the productivity of the stands. Disturbance is mostly small-scale windthrow or other gap-mortality processes with occasional widespread intense windstorms.

IVC Dynamics: Disturbance is mostly small-scale windthrow or other gap-mortality processes with occasional widespread intense windstorms.

IVC Environment: They occur within the hypermaritime coastal boreal climatic zones of high precipitation in winter and summer along the coast. The northern limit is the northern extent of *Picea sitchensis*, where the dominant tree shifts to *Picea glauca* and climate becomes colder, with a true boreal climate at the coast. The southern limit is based on a transition to a more temperate climate, where minimum temperatures remain above 0°C and summer precipitation begins to decrease, and additional species appear such as *Thuja plicata* and *Pinus contorta*. These forests occupy the outermost coastal fringe where salt spray is prominent, riparian terraces and valley bottoms near the coast where there is major fog accumulation and the maritime "interior" part of northern forests, often on steep, well-drained productive slopes. Annual precipitation ranges from 623 to 3235 mm (24-127 inches) with an average of 1464 mm (58 inches), that falls year-round, with the majority falling as rain on the immediate coast, but at higher elevations the climate is wet with heavy snow and rainfall, and coastal winter rains can be heavy. Coldest monthly temperature range from -15° to -1°C (5-30°F). Stands ranges from sea level to about 1000 m (3000 feet) in elevation. These forests occur along a coastal belt on deep, acidic soils derived from marine sediments, but can also occur at higher elevations along stream channels, snow avalanche paths, mass-wasting slopes or loess deposits. In British Columbia, much of the hypermaritime band is shallow soils derived from acidic bedrock with deep organic accumulations due to hypermaritime climate. Glaciation resulted in a scouring of the landscape with little till accumulation. There are also pockets of richer bedrock that is reflected in the productivity of the stands.

DISTRIBUTION

IVC Geographic Range: This group ranges along coastal Alaska from Cook Inlet and Kenai Peninsula south through the mainland and coastal islands of southeastern Alaska, ending at approximately Prince Rupert, British Columbia, along the Alaska-Canadian border.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Elcode: CG0750

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3602 *Picea sitchensis / Athyrium filix-femina* Forest Alliance** [Sitka Spruce / Common Ladyfern Forest Alliance] []
  This is an alliance of tall conifer rainforests dominated by *Picea sitchensis* often with *Tsuga heterophylla*. The understory has nutrient-rich soil indicators such as *Athyrium filix-femina*, on sites that are very wet to moist but well-drained. They are found in Alaska and the northernmost coast of British Columbia.
- **A3603 *Picea sitchensis / Oplopanax horridus* Forest Alliance** [Sitka Spruce / Devil's-club Forest Alliance] []
  This alliance consists of forests dominated by *Picea sitchensis* often with *Tsuga heterophylla*. Understory shrubs include species such as *Oplopanax horridus* as an indicator of very wet, subirrigated water-receiving sites on nutrient-rich soils. This alliance occurs in Alaska and the northernmost coast of British Columbia.
- **A3601 *Tsuga heterophylla - Picea sitchensis / Vaccinium alaskaense* Forest Alliance** [Western Hemlock - Sitka Spruce / Alaska Blueberry Forest Alliance] []
  This alliance consists of tall conifer rainforests dominated by *Tsuga heterophylla* and/or *Picea sitchensis*. The understory can be dominated by *Vaccinium alaskaense*, which is an indicator of hypermaritime - maritime climate and nitrogen-poor soils. This alliance occurs in Alaska and the northernmost coast of British Columbia.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2015)

IVC Description Author: G. Kittel

IVC Description Date: 2015-05-15

IVC Acknowledgments:

A3602 Sitka Spruce / Common Ladyfern Forest Alliance

[ ]

Picea sitchensis / Athyrium filix-femina Forest Alliance

Sitka Spruce / Common Ladyfern Forest

IVC Scientific Name: *Picea sitchensis / Athyrium filix-femina* Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance consists of tall conifer rainforests dominated by *Picea sitchensis* often with *Tsuga heterophylla*. Understories are herb-rich with species such as *Athyrium filix-femina* that are indicators of nitrogen-rich soils on very wet to moist sites that are well-drained. This alliance occurs in Alaska and the northernmost coast of British Columbia.

IVC Dynamics: These forests have a high-severity or, less commonly, moderate-severity fire regime with natural return intervals of 100-600 years.

IVC Environment: Nutrient-rich moist to wet soils on well-drained sites where water does not pond or pool.

DISTRIBUTION

IVC Geographic Range: This alliance is found along the coast of Alaska from Cook Inlet through the islands and mainland of southeastern Alaska and just into northern coastal British Columbia.

IVC Nations: CA,US

IVC States/Provinces: AK, BC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002793** ***Tsuga heterophylla - Picea sitchensis - (Thuja plicata) / Polystichum munitum - Tiarella trifoliata*** **Forest** [Western Hemlock - Sitka Spruce - (Western Red-cedar) / Western Swordfern - Threeleaf Foamflower Forest] []
  G2G3 (2005-06-02) BC
- **CEGL002834** ***Tsuga heterophylla - Picea sitchensis - Abies amabilis / Rubus spectabilis / Polystichum munitum*** **Forest** [Western Hemlock - Sitka Spruce - Pacific Silver Fir / Salmonberry / Western Swordfern Forest] []
  G1G3 (2005-09-19) BC
- **CNVC00189** ***Tsuga heterophylla - Picea sitchensis / Blechnum spicant - Tiarella trifoliata*** [Western Hemlock - Sitka Spruce / Deer Fern - Threeleaf Foamflower] [Pruche de l'Ouest - Épinette de Sitka / Blechnum en épi - Tiarelle trifoliée]
  GNR.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A3603 Sitka Spruce / Devil's-club Forest Alliance

[ ]

Picea sitchensis / Oplopanax horridus Forest Alliance

Sitka Spruce / Devil's-club Forest

IVC Scientific Name: *Picea sitchensis / Oplopanax horridus* Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance covers tall conifer rainforests dominated by *Picea sitchensis* often with *Tsuga heterophylla, Callitropsis nootkatensis*, and/or *Tsuga mertensiana*. The understory may be dominated by *Oplopanax horridus*, an indicator of very wet, subirrigated water-receiving sites on nutrient-rich soils. This alliance occurs in Alaska and the northernmost coast of British Columbia.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliances is found along the coast of Alaska from Cook Inlet through the islands and mainland of southeastern Alaska and just into northern coastal British Columbia.

IVC Nations: CA,US

IVC States/Provinces: AK, BC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002826** ***Tsuga heterophylla - Picea sitchensis / Rubus spectabilis - Ribes bracteosum*** **Forest** [Western Hemlock - Sitka Spruce / Salmonberry - Stink Currant Forest] []
  G1G2 (2005-09-20) BC
- **CNVC00065** ***Malus fusca / Maianthemum dilatatum / Rhytidiadelphus squarrosus*** [Oregon Crabapple / False Lily-Of-The-Valley / Square Gooseneck Moss] [Pommier du Pacifique / Maïanthème dilaté / Rhytidiadelphe à feuilles squarreuses]
  GNR.
- **CNVC00003** ***Picea sitchensis - Tsuga heterophylla / Oplopanax horridus - Rubus spectabilis / Gymnocarpium dryopteris*** [Sitka Spruce - Western Hemlock / Devil's-Club - Salmonberry / Western Oakfern] [Épinette de Sitka - Pruche de l'Ouest / Bois piquant - Ronce remarquable / Gymnocarpe du chêne]
  GNR.
- **CNVC00017** ***Picea sitchensis - Tsuga heterophylla / Rubus spectabilis / Maianthemum dilatatum*** [Sitka Spruce - Western Hemlock / Salmonberry / False Lily-Of-The-Valley] [Épinette de Sitka - Pruche de l'Ouest / Ronce remarquable / Maïanthème dilaté]
  GNR.
- **CNVC00024** ***Picea sitchensis / Rubus spectabilis - Malus fusca / Carex obnupta*** [Sitka Spruce / Salmonberry - Oregon Crabapple / Slough Sedge] [Épinette de Sitka / Ronce remarquable - Pommier du Pacifique / Carex voilé]
  GNR.
- **CNVC00018** ***Picea sitchensis / Trisetum canescens*** [Sitka Spruce / Tall Trisetum] [Épinette de Sitka / Trisète blanchâtre]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3601 Western Hemlock - Sitka Spruce / Alaska Blueberry Forest Alliance

[ ]
Tsuga heterophylla - Picea sitchensis / Vaccinium alaskaense Forest Alliance
Western Hemlock - Sitka Spruce / Alaska Blueberry Forest

IVC Scientific Name: *Tsuga heterophylla - Picea sitchensis / Vaccinium alaskaense* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of tall conifer rainforests dominated by *Tsuga heterophylla* and/or *Picea sitchensis*. The understory can be dominated by *Vaccinium alaskaense*, which is an indicator of hypermaritime - maritime climate and nitrogen poor soils. This alliance occurs in Alaska and the northernmost coast of British Columbia.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance occurs along the Alaska coast from Cook Inlet and Kodiak Island through the islands and mainland coast of southeastern Alaska, and just into northern British Columbia coastal areas.

IVC Nations: CA,US
IVC States/Provinces: AK, BC, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003229** ***Tsuga heterophylla / Vaccinium (alaskaense, ovalifolium)*** **Forest** [Western Hemlock / (Alaska Blueberry, Oval-leaf Blueberry) Forest] []
  G5 (1995-11-15) AK, BC
- **CEGL003261** ***Picea sitchensis - Tsuga heterophylla / Vaccinium (alaskaense, ovalifolium)*** **Forest** [Sitka Spruce - Western Hemlock / (Alaska Blueberry, Oval-leaf Blueberry) Forest] []
  G5 (1995-11-15) AK, BC?
- **CEGL003230** ***Tsuga heterophylla / Vaccinium (alaskaense, ovalifolium) / Dryopteris expansa*** **Forest** [Western Hemlock / (Alaska Blueberry, Oval-leaf Blueberry) / Spreading Woodfern Forest] []
  G5 (1995-11-15) AK, BC
- **CEGL002790** ***Picea sitchensis - Tsuga heterophylla - Thuja plicata / Gaultheria shallon*** **Forest** [Sitka Spruce - Western Hemlock - Western Red-cedar / Salal Forest] []
  G3 (2005-06-02) BC
- **CNVC00042** ***Picea sitchensis - Tsuga heterophylla / Blechnum spicant / Rhizomnium glabrescens*** [Sitka Spruce - Western Hemlock / Deer Fern / Fan Moss] [Épinette de Sitka - Pruche de l'Ouest / Blechnum en épi / Mnie glabre]
  GNR.
- **CNVC00025** ***Picea sitchensis - Tsuga heterophylla / Eurhynchium oreganum*** [Sitka Spruce - Western Hemlock / Oregon Beaked Moss] [Épinette de Sitka - Pruche de l'Ouest / Kindbergie de l'Oregon]
  GNR.
- **CNVC00016** ***Picea sitchensis / Gaultheria shallon / Maianthemum dilatatum*** [Sitka Spruce / Salal / False Lily-Of-The-Valley] [Épinette de Sitka / Salal / Maïanthème dilaté]
  GNR.
- **CNVC00057** ***Picea sitchensis / Gaultheria shallon / Polystichum munitum*** [Sitka Spruce / Salal / Western Swordfern] [Épinette de Sitka / Salal / Fougère épée]
  GNR.
- **CNVC00054** ***Tsuga heterophylla - Picea sitchensis / Vaccinium alaskaense / Dryopteris expansa*** [Western Hemlock - Sitka Spruce / Alaska Blueberry / Spreading Woodfern] [Pruche de l'Ouest - Épinette de Sitka / Airelle d'Alaska / Dryoptère dressée]
  GNR.
- **CNVC00056** ***Tsuga heterophylla - Picea sitchensis / Oplopanax horridus / Athyrium filix-femina*** [Western Hemlock - Sitka Spruce / Devil's-Club / Common Ladyfern] [Pruche de l'Ouest - Épinette de Sitka / Bois piquant / Athyrie fougère-femelle]
  GNR.
- **CNVC00026** ***Tsuga heterophylla - Picea sitchensis / Rhytidiadelphus loreus - Hylocomium splendens*** [Western Hemlock - Sitka Spruce / Gooseneck Moss - Splendid Feathermoss] [Pruche de l'Ouest - Épinette de Sitka / Rhytidiadelphe lanière - Hypne éclatante]
  GNR.
- **CNVC00058** ***Tsuga heterophylla - Picea sitchensis / Polystichum munitum*** [Western Hemlock - Sitka Spruce / Western Swordfern] [Pruche de l'Ouest - Épinette de Sitka / Fougère épée]
  GNR.
- **CNVC00052** ***Tsuga heterophylla / Vaccinium alaskaense / Dryopteris expansa*** [Western Hemlock / Alaska Blueberry / Spreading Woodfern] [Pruche de l'Ouest / Airelle d'Alaska / Dryoptère dressée]
  GNR.
- **CNVC00053** ***Tsuga heterophylla / Vaccinium alaskaense / Hylocomium splendens*** [Western Hemlock / Alaska Blueberry / Splendid Feathermoss] [Pruche de l'Ouest / Airelle d'Alaska / Hypne éclatante]
  GNR.
- **CNVC00012** ***Tsuga heterophylla / Hylocomium splendens - Pleurozium schreberi* (*Rhytidiadelphus triquetrus*)** [Western Hemlock / Splendid Feathermoss - Schreber's Big Red-Stem Moss (Rough Gooseneck Moss)] [Pruche de l'Ouest / Hypne éclatante - Hypne de Schreber (Hypne triquètre)]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M025 Vancouverian Subalpine - High Montane Forest

Forêts subalpines et des montagnes de haute altitude de la région floristique de Vancouver

IVC Colloquial Name: Vancouverian Subalpine-High Montane Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M025 describes the maritime, temperate subalpine and high montane treed vegetation of western North America. The Canadian expression includes high-elevation forests and woodlands of the southern and central British Columbia (BC) coast. Most of the closed forests comprise multi-aged stands of old, medium to large trees. Canopies are typically evergreen coniferous. Stands of M025 vary from closed forests to very open short-statured woodlands, becoming more open and patchy with increased elevation and seasonal longevity of snowpack, and often occurring as tree islands or ribbons in a matrix of graminoid snowbeds, meadows, heaths or shrublands at elevational treeline. Avalanches, windthrow, mass soil movement, pathogens and insect infestations are the most widespread forms of natural disturbance. In Canada, mountain hemlock (*Tsuga mertensiana*) is the characteristic tree species of M025 forests. Other common trees include Pacific silver fir (*Abies amabilis*), yellow-cypress (*Callitropsis nootkatensis*) and western hemlock (*T. heterophylla*). The understory is typically dominated by ericaceous low and dwarf shrubs, conifer regeneration and a well-developed bryophyte layer. Common shrubs include oval-leaved blueberry (*Vaccinium ovalifolium*), mountain huckleberry (*V. membranaceum*), false azalea (*Menziesia ferruginea*), red huckleberry (*V. parvifolium*) and copperbush (*Elliottia pyroliflora*). At higher elevations various heath species are common, including pink mountain heather (*Phyllodoce empetriformis*), crowberry (*Empetrum nigrum*) and white mountain heather (*Cassiope mertensiana*). Characteristic herbs and dwarf shrubs include five-leaved dwarf bramble (*Rubus pedatus*), twistedstalks (*Streptopus* spp.), deer fern (*Blechnum spicant*), green false hellebore (*Veratrum viride*), three-leaved foamflower (*Tiarella trifoliata*), fern-leaved goldthread (*Coptis aspleniifolia*) and deer cabbage (*Nephrophyllidium crista-galli*). Pipecleaner moss (*Rhytidiopsis robusta*), broom mosses (*Dicranum* spp.) and lanky moss (*Rhytidiadelphus loreus*) are the most common bryophytes on the forest floor.

In Canada, M025 forests and woodlands occur at high elevations in the coastal and insular mountain ranges of BC. Elevations extend from approximately 800 mASL to 1800 mASL, depending on location. The climate is cool, moist to wet, maritime and temperate; summers are short and cool, and winters long, cool and snowy. A deep and late-melting snowpack is characteristic of the M025 environment. Mean annual temperatures vary from 1° to 5° C and mean annual precipitation regularly exceeds 2500 mm, much of it falling as snow. All parts of the range experienced Pleistocene glaciation; soils are mostly Podzols with deep compacted Mor humus.

Two subtypes characterize regional variation in the Canadian range of M025. CM025a [Typic Vancouverian High Montane & Subalpine Forest] is the predominant condition occurring on most of the Vancouver Island and mainland ranges. CM025b [Hypermaritime Vancouverian High Montane & Subalpine Forest] describes the high elevation forests and woodlands in hypermaritime climates on Haida Gwaii and the outer coast of mainland BC.

IVC Geographic Range: This macrogroup occurs in the mountains of the Pacific states including coastal southeastern Alaska, British Columbia and Baja California, Mexico. It occurs at upper treeline elevations from the San Pedro Martir Mountains in Baja California, throughout the Sierra Nevada, Transverse, Peninsular and Coast ranges of California, the Klamath Mountains, Modoc Plateau and Warner Mountains of California and Oregon, the Coast and Cascade ranges of Oregon, the Cascade Range of Washington, and the coastal mountains of islands and mainland British Columbia north into southeastern Alaska to Cook Inlet.

IVC Nations: CA,MX,US

IVC States/Provinces: AK, BC, BCN, CA, MT, NV, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: M025 characterizes subalpine and high montane forests of the maritime temperate climates of the North American Pacific coast. In Canada, lower elevation forests contiguous with the range of M025 are characterized by M024 [Vancouverian Coastal Rainforest]. Higher elevation montane and subalpine forests of continental temperate climates on the eastern side of the Coast Mountains are described by M020 [Rocky Mountain Subalpine - High Montane Forest].

"Montane" vegetation occurs in mountainous terrain below the elevational treeline. The term "subalpine" is applied to the transitional band between the treed "montane" and the non-treed "alpine" elevational zones. The vegetation of M025 occurs at higher elevations in the coastal mountains of western North America, including forests and woodlands of "high montane" and "subalpine" vegetation zones. Often, lower elevations in this mountainous region are dominated by vegetation that is described by M024 [Vancouverian Coastal Rainforest].

Abies lasiocarpa here refers to both *A. lasiocarpa* (subalpine fir) and *A. bifolia* (Rocky Mountain alpine fir), as well as their hybrids, as recognized by VASCAN.

Vaccinium ovalifolium here includes *V. alaskaense* (Alaska blueberry), according to VASCAN.

Groups in Canada:

- **G849 North Pacific Mountain Hemlock - Pacific Silver Fir Forest & Tree Island [Forêts et îlots forestiers de pruches subalpines et de sapins blancs du nord du Pacifique]**
- **G850 Alaskan Mountain Hemlock Forest []**

CNVC Concept Author: D. Meidinger, W. MacKenzie, K. Baldwin, USNVC
CNVC Concept Date: 2015-04-01
CNVC Description Author: D. Meidinger and K. Baldwin
CNVC Description Date: 2017-08-01
IVC Primary Concept Source: Barbour and Billings (2000)
IVC Description Author: G. Kittel, D. Meidinger, M.S. Reid, D. Faber-Langendoen
IVC Description Date: 2014-10-15
IVC Acknowledgments:

G849 North Pacific Mountain Hemlock - Pacific Silver Fir Forest & Tree Island

Forêts et îlots forestiers de pruches subalpines et de sapins blancs du nord du Pacifique

IVC Colloquial Name: North-Central Pacific Mountain Hemlock - Silver Fir Woodland
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM025a Typic Vancouverian High Montane & Subalpine Forest

CNVC Concept: The CNVC concept CG0245 appears to be the same as this IVC concept (G849), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.

IVC Concept: This forested group occurs throughout the mountains of the North Pacific, from the central Cascades of Oregon north to the upper slopes of mountain ranges along the Gulf Coast of Alaska, to the Cook Inlet. It is the predominant forest of subalpine elevations in the coastal mountains of British Columbia, Alaska, western Washington and western Oregon. It also occurs on mountain slopes on the outer coastal islands of British Columbia. It occurs at elevations ranging from 300 to 2300 m (1000-7500 feet). At the highest altitudes, the forest may begin to break up, forming "tree islands" that are surrounded by meadows or shrublands, where they form the "parkland" habitats before giving way to treeline. The lower and upper elevational limits decrease from south to north and from east to west. *Tsuga mertensiana* is one of the dominant tree species throughout, and *Abies amabilis* becomes an important associated species in the southern and central portion of the range, and drops out completely for the Alaska portion of this group's range. *Tsuga heterophylla* often occurs at lower elevations in this group but is much less abundant than *Tsuga mertensiana*. *Callitropsis nootkatensis* occurs in the more coastal-influenced sections, decreasing with increasing continental climate, while *Abies lasiocarpa* is found inland and becomes increasingly common near the transition to the Subalpine Fir-Engelmann Spruce Zone in the Cascades and British Columbia. On the leeward side of the Cascades, the group is usually a dense canopy composed of *Abies lasiocarpa* and *Tsuga mertensiana*, with some *Picea engelmannii* or *Abies amabilis*. In Alaska *Abies lasiocarpa* mixes with the canopy of *Tsuga mertensiana* in some locations. *Picea sitchensis* and *Thuja plicata* are occasionally present. Deciduous trees are rare. Common understory species include *Blechnum spicant, Elliottia pyroliflora, Empetrum nigrum, Geum calthifolium, Vaccinium ovalifolium, Gymnocarpium dryopteris, Harrimanella stelleriana, Luetkea pectinata, Menziesia ferruginea, Nephrophyllidium crista-galli, Phyllodoce aleutica* (or *Phyllodoce glanduliflora*), *Rubus pedatus, Streptopus lanceolatus, Tiarella trifoliata, Vaccinium membranaceum*, and *Vaccinium ovalifolium*.

IVC Dynamics: Fire is very rare or absent across the northern and coastal influence portion of the range of the group. In the drier-summer climatic areas (eastern Cascades), occasional high-severity fires occur, with return intervals of 400-600 years (J. Kertis pers. comm. 2006, K. Kopper pers. comm. 2006). On drier sites, *Abies lasiocarpa* and *Pinus contorta* can be the first forests to develop after stand-replacing fire. These early-seral stages, with lodgepole pine dominant in the upper canopy, should be considered part of this group if *Tsuga mertensiana* and *Abies amabilis* are present, as it will succeed as a mixed pine type, then mountain hemlock becomes characteristic. Landfire VDDT models: R#ABAMup.

IVC Environment: *Climate:* The climate is generally characterized by short, cool summers, rainy autumns and long, cool, wet winters with heavy snow cover for 5-9 months. The heavy snowpack is ubiquitous, but at least in southern Oregon and perhaps the eastern Cascades, summer drought is more significant.

DISTRIBUTION

IVC Geographic Range: This group occurs throughout the mountains of the North Pacific, from the central Cascades of Oregon north to the coast of Alaska to the Cook Inlet.

IVC Nations: CA,US

IVC States/Provinces: BC, CA?, MT, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Elcode: CG0245
CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3726 *Abies amabilis - Tsuga mertensiana - Abies lasiocarpa* Cascadian Forest & Woodland Alliance** [Pacific Silver Fir - Mountain Hemlock - Subalpine Fir Cascadian Forest & Woodland Alliance] []
  These forests are characterized by a canopy of *Abies amabilis* and/or *Tsuga mertensiana*, with *Abies lasiocarpa, Picea engelmannii, Pinus albicaulis*, and *Callitropsis nootkatensis*. This conifer forest alliance occurs in upper montane and subalpine habitats of the Pacific Northwest and in the subalpine in the Cascades, extending from approximately 1200 to 1500 m in elevation.
- **A3728 *Callitropsis nootkatensis - Tsuga mertensiana - Abies amabilis* Forest & Woodland Alliance** [Alaska-cedar - Mountain Hemlock - Pacific Silver Fir Forest & Woodland Alliance] []
  These are mature forests, commonly mixed stands with *Callitropsis nootkatensis* and *Abies amabilis* and/or *Tsuga mertensiana*. These are primarily subalpine forests which are found at elevations over 1000 m, primarily west of the Cascade Crest, where maritime influence and deep winter snowpacks are typical. This alliance occurs in the northern Cascades and Olympic Mountains and into British Columbia.
- **A3727 *Tsuga mertensiana - Abies amabilis - Callitropsis nootkatensis* Tree Island Alliance** [Mountain Hemlock - Pacific Silver Fir - Alaska-cedar Tree Island Alliance] []
  This is a forested alliance with dominants of *Abies lasiocarpa, Tsuga mertensiana, Abies amabilis*, and/or *Callitropsis nootkatensis*. These tree islands occur near treeline where extremely deep snowpacks discourage tree growth in topographic depressions, and the forest interdigitates with herbaceous communities. This alliance occurs in the Washington and Oregon Cascades, on the Olympic Peninsula and Coastal Mountains of British Columbia.
- **A3723 *Tsuga mertensiana - Abies amabilis* Forest & Woodland Alliance** [Mountain Hemlock - Pacific Silver Fir Forest & Woodland Alliance] []
  These forests have a closed tree canopy that is dominated by *Tsuga mertensiana* and *Abies amabilis*. Other trees present may include *Tsuga heterophylla, Callitropsis nootkatensis*, and *Pseudotsuga menziesii*. Stands occur in cold, snowy upper montane and subalpine environments from southern British Columbia to central Oregon.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: F.H. Eyre (1980)
IVC Description Author: G. Kittel
IVC Description Date: 2013-10-09
IVC Acknowledgments:

A3726 Pacific Silver Fir - Mountain Hemlock - Subalpine Fir Cascadian Forest & Woodland Alliance

[ ]
Abies amabilis - Tsuga mertensiana - Abies lasiocarpa Cascadian Forest & Woodland Alliance
Cascadian Pacific Silver Fir - Mountain Hemlock - Subalpine Fir Forest & Woodland

IVC Scientific Name: *Abies amabilis - Tsuga mertensiana - Abies lasiocarpa* Cascadian Forest & Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These forests are characterized by a canopy of *Abies amabilis* and/or *Tsuga mertensiana*, with *Abies lasiocarpa, Picea engelmannii, Pinus albicaulis*, and *Callitropsis nootkatensis*. In this typically mixed forest, *Abies lasiocarpa* usually codominates

the overstory. Associated shrubs are primarily *Vaccinium membranaceum, Vaccinium ovalifolium, Vaccinium scoparium, Quercus sadleriana, Menziesia ferruginea, Oplopanax horridus*, and *Rhododendron albiflorum*. The herbaceous layer is generally dominated by shade-tolerant species with northern affinities, including *Carex* spp., *Luzula glabrata, Chimaphila umbellata, Linnaea borealis, Cornus canadensis, Clintonia uniflora*, and many others. Stands typically occupy moderate to steep upper mountain slopes, extending from approximately 1200 to 1500 m in elevation. The climate is cool and wet with total annual precipitation totals generally exceeding 200 cm and deep (1-3 m) snow accumulations. This conifer forest alliance occurs in upper montane and subalpine habitats of the Pacific Northwest.

IVC Dynamics:

IVC Environment: Stands typically occupy moderate to steep upper mountain slopes and are often contiguous with the lower-elevation *Abies amabilis - Tsuga heterophylla* forests and higher subalpine *Tsuga mertensiana* and *Callitropsis nootkatensis* forests. This alliances occurs in the subalpine in the Cascades, extending from approximately 1200 to 1500 m in elevation. The climate is cool and wet with total annual precipitation totals generally exceeding 200 cm and deep (1-3 m) snow accumulations. A consistent winter snowpack of moderate duration along with frequent winter storms (snow on snow events) are driving factors in the occurrence of these forests. Podzolization is the dominant soil development process, and organic soil layers are generally well-developed. This alliance typically occurs in subalpine habitats, but may occur in slightly lower montane environments, such as slope benches or canyon bottoms, which are prone to cold-air drainage. This conifer forest alliance occurs in upper montane and subalpine habitats of the Pacific Northwest.

DISTRIBUTION

IVC Geographic Range: Montane and subalpine habitats of the Cascade Range of Oregon and Washington, and into British Columbia.
IVC Nations: CA,US
IVC States/Provinces: BC, CA?, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00047** ***Tsuga mertensiana - Abies amabilis* (*Abies lasiocarpa*) / *Vaccinium ovalifolium / Gymnocarpium dryopteris*** [Mountain Hemlock - Pacific Silver Fir (Subalpine Fir) / Oval-Leaf Blueberry / Western Oakfern] [Pruche subalpine - Sapin gracieux (Sapin subalpin) / Airellee à feuilles ovées / Gymnocarpe du chêne]
  GNR.
- **CNVC00141** ***Abies lasiocarpa - Tsuga mertensiana / Vaccinium membranaceum / Streptopus lanceolatus*** **Forest** [Subalpine Fir - Mountain Hemlock / Thinleaf Huckleberry / Rosy Twisted-Stalk Forest] [Fôret Sapin subalpin - Pruche subalpine / Airelle à feuilles membraneuses / Streptope rose]
  GNR.
- **CNVC00133** ***Abies lasiocarpa* (*Tsuga mertensiana*) / *Gymnocarpium dryopteris - Valeriana sitchensis*** **Forest** [Subalpine Fir (Mountain Hemlock) / Western Oakfern - Sitka Valerian Forest] [Fôret Sapin subalpin (Pruche subalpine) / Gymnocarpe du chêne - Valériane de Sitka]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3728 Alaska-cedar - Mountain Hemlock - Pacific Silver Fir Forest & Woodland Alliance

[ ]

Callitropsis nootkatensis - Tsuga mertensiana - Abies amabilis Forest & Woodland Alliance

Alaska-cedar - Mountain Hemlock - Pacific Silver Fir Forest & Woodland

IVC Scientific Name: *Callitropsis nootkatensis - Tsuga mertensiana - Abies amabilis* Forest & Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These are mature forests, commonly mixed stands with *Callitropsis nootkatensis* and *Abies amabilis* and/or *Tsuga mertensiana*. Canopies in these stands can range from closed to somewhat open, often with multiple tree layers and copious woody debris. These are primarily subalpine forests which are found at elevations over 1000 m, primarily west of the Cascade Crest, where maritime influence and deep winter snowpacks are typical. Precipitation ranges from 150-400 cm annually, falling largely as snow, and snowpacks usually linger into June or later. Communities within this alliance occur at the ecotone between the high montane and subalpine zones and therefore contain species indicative of each zone. Vegetation types within this alliance occur in cold, snowy environments in the northern Cascades and Olympic Mountains.

IVC Dynamics:

IVC Environment: These are primarily subalpine forests which are found at elevations over 1000 m, primarily west of the Cascade Crest, where maritime influence and deep winter snowpacks are typical. Precipitation ranges from 150-400 cm annually, falling largely as snow, and snowpacks usually linger into June or later. Communities within this alliance occur at the ecotone between the high montane and subalpine zones and therefore contain species indicative of each zone.

DISTRIBUTION

IVC Geographic Range: This alliance is found in Oregon, Washington and British Columbia.
IVC Nations: CA,US
IVC States/Provinces: BC, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3727 Mountain Hemlock - Pacific Silver Fir - Alaska-cedar Tree Island Alliance

[ ]

Tsuga mertensiana - Abies amabilis - Callitropsis nootkatensis Tree Island Alliance

Mountain Hemlock - Pacific Silver Fir - Alaska-cedar Tree Island

IVC Scientific Name: *Tsuga mertensiana - Abies amabilis - Callitropsis nootkatensis* Tree Island Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This is a forested alliance with dominants of *Abies lasiocarpa, Tsuga mertensiana, Abies amabilis*, and/or *Callitropsis nootkatensis*. The structure of this alliance is limited to tree islands, which are stands of full-height trees surrounded by meadows. These tree islands occur near treeline where extremely deep snowpacks discourage tree growth in topographic depressions, and the forest interdigitates with herbaceous communities. The entire landscape of meadow with dotted tree islands is often referred to as "parkland." This alliance contains only the forested part of that landscape. Tree islands are typically individually quite small, consisting of 5-10 trees or more, and do not form a continuous canopy typical of forests or

woodlands. These tree islands are not krummholz, but are full-statured trees. This alliance occurs in the Washington and Oregon Cascades, on the Olympic Peninsula and Coastal Mountains of British Columbia.

IVC Dynamics: Trees are slow-growing, long-lived conifers with flexible crowns and branches that resist damage from heavy snows and avalanche. These tree are sensitive to fire and are readily killed by cool or hot surface fires, but will colonize burned sites, especially at lower elevations (Burns and Honkala 1990a). This alliance typically occurs near timberline in an ecotone between subalpine forest and meadow. The dynamics of meadow invasion by trees, and tree mortality, are largely controlled by short-term climatic changes such as a series of above-average precipitation years, or by changes in microenvironment caused by plants, such as more rapid snowmelt around trees in the spring (Franklin and Dyrness 1973).

IVC Environment: This woodland alliance occur as a mosaic of forest islands, tree clumps surrounded by meadows in the subalpine parkland zone of the Cascade Range. These stands are included in the upper parkland subzone within the *Tsuga mertensiana* Zone (Franklin and Dyrness 1973). They occur near treeline in a narrow 300- to 400-m elevational band above the closed-canopy subalpine forests and below the alpine meadows. Elevations range from 1700-2300 m depending on aspect and latitude. Climate is temperate, with a strong maritime influence, deep winter snowpacks and moderately cold winter temperatures. Precipitation ranges from 150-300 cm annually, occurring mostly in winter and largely as snow. The growing season is short with snowpacks often present into midsummer. Summers are cool with little rain. Tree groups within this parkland mosaic vary in size from a few trees to 0.1 ha or larger, and often occur on ridges and hummocks where the winter snowpack melts sooner. Landscapes are typically gently to moderately sloping with steep rocky ridges. Sites are relatively mesic and may occur on any aspect. Substrates are typically shallow, rocky, coarse-textured soils derived from volcanic rocks such as deposits of pumice, cinder and ash, and lava flows.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Washington and Oregon Cascades, on the Olympic Peninsula and Coastal Mountains of British Columbia.

IVC Nations: CA,US

IVC States/Provinces: BC, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008259 *Abies lasiocarpa* - (*Callitropsis nootkatensis*) Subalpine Scrub** [Subalpine Fir - (Alaska-Cedar) Subalpine Scrub] []
  Scrubby subalpine shrublands dominated by stunted *Abies lasiocarpa* and/or *Callitropsis nootkatensis*, with variable understories. GNR. BC?, OR?, WA
- **CEGL005579 *Tsuga mertensiana / Phyllodoce empetriformis - Vaccinium deliciosum* Woodland** [Mountain Hemlock / Pink Mountain-heath - Cascade Bilberry Woodland] []
  G4 (2015-02-07) BC, OR, WA
- **CEGL005583 *Tsuga mertensiana - Abies lasiocarpa / Vaccinium deliciosum - Phyllodoce empetriformis* Woodland** [Mountain Hemlock - Subalpine Fir / Cascade Bilberry - Pink Mountain-heath Woodland] []
  GNR. BC?, WA
- **CEGL008256 *Callitropsis nootkatensis* - (*Acer circinatum - Paxistima myrsinites*) Subalpine Scrub** [Alaska-Cedar - (Vine Maple - Oregon Boxleaf) Subalpine Scrub] []
  High-elevation, dry avalanche-chute shrublands dominated by scrubby *Callitropsis nootkatensis*. GNR. AK?, BC?, OR?, WA
- **CEGL005578 *Tsuga mertensiana* Krummholz** [Mountain Hemlock Krummholz] []
  GNR. BC, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A3723 Mountain Hemlock - Pacific Silver Fir Forest & Woodland Alliance

[ ]

Tsuga mertensiana - Abies amabilis Forest & Woodland Alliance

Mountain Hemlock - Pacific Silver Fir Forest & Woodland

IVC Scientific Name: *Tsuga mertensiana - Abies amabilis* Forest & Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These forests have a closed tree canopy that is dominated by *Tsuga mertensiana* and *Abies amabilis*. Other common trees include *Tsuga heterophylla, Callitropsis nootkatensis*, and *Pseudotsuga menziesii*. The undergrowth is often somewhat depauperate because of poor light penetration at the forest floor, but may include a moderately sparse shrub layer composed of *Rubus* spp., *Elliottia pyroliflora, Rhododendron albiflorum, Menziesia ferruginea, Vaccinium membranaceum*, and *Vaccinium ovalifolium*. Shade-tolerant forbs and ferns may also be present. Stands occur between 1000-1500 m (possibly up to 2000 m). Sites are found on mid to lower slopes, benches and bottoms with typically western and northern aspects. Soils are acidic, coarse-textured and often subirrigated. Stands occur primarily west of the Cascade Crest where maritime influence and deep winter snowpacks are typical. This alliance occurs in southern British Columbia to central Oregon.

IVC Dynamics: These forests rarely burn, and are often very old. High precipitation and low annual temperatures favor development of acidic, organic soils.

IVC Environment: It occurs from mid-elevations, ranging between 1000-1500 m (possibly up to 2000 m), and may occur lower in montane environments, such as slope benches or canyon bottoms, which are prone to cold-air drainage. It is found primarily west of the Cascade Crest where maritime influence and deep winter snowpacks are typical. Precipitation ranges from 150-400 cm annually, falling largely as snow, and the snowpack usually lingers into June or later. These forests often attain great age due to low fire frequency in the moist locations where they occur, but tree stature is strongly affected by local environmental conditions, especially elevation. Substrates are moderately deep soils derived from colluvium, glacial outwash and volcanic ash, which overlie gneiss or schist. Soils are acidic, coarse-textured and often subirrigated, with a substantial organic component, owing to persistently high moisture and low temperatures. Sites are cold and moist, and found on mid to lower slopes, benches and bottoms with typically western and northern aspects.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the Coast Mountains of British Columbia and Cascade Range of Washington and Oregon.

IVC Nations: CA,US

IVC States/Provinces: BC, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005519** ***Abies amabilis - Tsuga mertensiana / Streptopus lanceolatus var. curvipes*** **Forest** [Pacific Silver Fir - Mountain Hemlock / Rosy Twisted-stalk Forest] []
  G4 (2015-02-06) BC, WA
- **CEGL005580** ***Tsuga mertensiana - Abies amabilis / Vaccinium alaskaense / Rubus pedatus*** **Forest** [Mountain Hemlock - Pacific Silver Fir / Alaska Blueberry / Strawberry-leaf Raspberry Forest] []
  G4G5 (2015-02-07) BC, OR, WA
- **CEGL007326** ***Tsuga mertensiana - Abies lasiocarpa / Vaccinium ovalifolium / Valeriana sitchensis*** **Forest** [Mountain Hemlock - Subalpine Fir / Oval-leaf Blueberry / Sitka Valerian Forest] []
  GNR. BC
- **CEGL005581** ***Tsuga mertensiana - Abies amabilis / Vaccinium membranaceum / Valeriana sitchensis*** **Woodland** [Mountain Hemlock - Pacific Silver Fir / Thinleaf Huckleberry / Sitka Valerian Woodland] []
  GNR. BC, WA
- **CEGL002632** ***Tsuga mertensiana - Abies amabilis / Rhododendron albiflorum*** **Forest** [Mountain Hemlock - Pacific Silver Fir / Cascade Azalea Forest] []
  G4G5 (2017-02-01) BC, OR, WA

- **CEGL000225** ***Abies amabilis / Rhododendron albiflorum*** **Forest** [Pacific Silver Fir / Cascade Azalea Forest] []
  G5 (1996-02-01) OR, WA
- **CEGL000503** ***Tsuga mertensiana - Abies amabilis - (Callitropsis nootkatensis) / Elliottia pyroliflora - Vaccinium membranaceum*** **Woodland** [Mountain Hemlock - Pacific Silver Fir - (Alaska-cedar) / Copperbush - Thinleaf Huckleberry Woodland] []
  G5 (2017-02-01) BC, WA
- **CNVC00051** ***Tsuga mertensiana - Abies amabilis*** **(*Chamaecyparis nootkatensis*) /** ***Elliottia pyroliflorus - Vaccinium membranaceum*** [Mountain Hemlock - Pacific Silver Fir (*Chamaecyparis nootkatensis*) / *Elliottia pyroliflorus* - Thinleaf Huckleberry] [Pruche subalpine - Sapin gracieux (Cyprès jaune) / Elliottie à fleurs de pyrole - Airelle à feuilles membraneuses]
  GNR.
- **CNVC00049** ***Tsuga mertensiana - Abies amabilis / Vaccinium alaskaense / Rubus pedatus / Rhytidiopsis robusta*** [Mountain Hemlock - Pacific Silver Fir / Alaska Blueberry / Strawberry-Leaf Raspberry / Pipecleaner Moss] [Pruche subalpine - Sapin gracieux / Airelle d'Alaska / Ronce à feuilles pédatifides / Rhytidiopsis robuste]
  GNR.
- **CNVC00004** ***Tsuga mertensiana - Picea sitchensis*** **(*Chamaecyparis nootkatensis*) /** ***Vaccinium alaskaense - V. parvifolium / Rhytidiadelphus loreus - Scapania bolanderi*** [Mountain Hemlock - Sitka Spruce (*Chamaecyparis nootkatensis*) / Alaska Blueberry - *V. parvifolium* / Gooseneck Moss - A Liverwort] [Pruche subalpine - Épinette de Sitka (Cyprès jaune) / Airelle d'Alaska - Airelle à petites feuilles / Rhytidiadelphe lanière - Scapanie de Bolander]
  GNR.
- **CNVC00033** ***Tsuga mertensiana - Picea sitchensis*** **(*Chamaecyparis nootkatensis*) /** ***Calamagrostis nutkaensis - Veratrum viride*** [Mountain Hemlock - Sitka Spruce (*Chamaecyparis nootkatensis*) / Pacific Reedgrass - Green False Hellebore] [Pruche subalpine - Épinette de Sitka (Cyprès jaune) / Calamagrostide de Nootka - Vérâtre vert]
  GNR.
- **CNVC00011** ***Tsuga mertensiana - Callitropsis nootkatensis / Vaccinium alaskaense / Coptis aspleniifolia*** [Mountain Hemlock - Alaska-cedar / Alaska Blueberry / Fernleaf Goldthread] [Pruche subalpine - Cyprès jaune / Airelle d'Alaska / Coptide à feuilles d'asplénie]
  GNR.
- **CNVC00050** ***Tsuga mertensiana / Elliottia pyroliflorus / Fauria crista-galli*** [Mountain Hemlock / *Elliottia pyroliflorus* / *Fauria crista-galli*] [Pruche subalpine / Elliottie à fleurs de pyrole / Faurie à crête de coq]
  GNR.
- **CNVC00048** ***Abies amabilis - Tsuga mertensiana / Streptopus lanceolatus*** [Pacific Silver Fir - Mountain Hemlock / Rosy Twisted-Stalk] [Sapin gracieux - Pruche subalpine / Streptope rose]
  GNR.
- **CNVC00020** ***Pinus contorta var. contorta - Callitropsis nootkatensis / Racomitrium*** **spp.** [Beach Pine - Alaska-cedar / Racomitrium Moss species] [Pin tordu côtier - Cyprès jaune / Racomitre]
  GNR.
- **CNVC00032** ***Chamaecyparis nootkatensis - Tsuga mertensiana*** **(*Picea sitchensis*) /** ***Veratrum viride - Fauria crista-galli*** [*Chamaecyparis nootkatensis* - Mountain Hemlock (Sitka Spruce) / Green False Hellebore - *Fauria crista-galli*] [Cyprès jaune - Pruche subalpine (Épinette de Sitka) / Vérâtre vert - Faurie à crête de coq]
  GNR.
- **CNVC00022** ***Callitropsis nootkatensis - Tsuga mertensiana / Calamagrostis nutkaensis*** [Alaska-cedar - Mountain Hemlock / Pacific Reedgrass] [Cyprès jaune - Pruche subalpine / Calamagrostide de Nootka]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G850 Alaskan Mountain Hemlock Forest

[ ]

IVC Colloquial Name: Alaskan Mountain Hemlock Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, BC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4284 *Tsuga mertensiana* Maritime Alaskan Forest Alliance** [Mountain Hemlock Maritime Alaskan Forest Alliance] []
- **A3725 *Tsuga mertensiana* Montane Alaskan Forest Alliance** [Mountain Hemlock Montane Alaskan Forest Alliance] []
  This is a forested alliance of open canopy "parklands" dominated by *Tsuga mertensiana* and ericaceous and alpine shrubs and forbs such as *Cassiope mertensiana, Elliottia pyroliflora*, and *Phyllodoce aleutica*. It occurs from near sea level into the subalpine in Alaska coastal areas, on slope benches or canyon bottoms.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4284 Mountain Hemlock Maritime Alaskan Forest Alliance

[ ]
Tsuga mertensiana Maritime Alaskan Forest Alliance
Alaskan Maritime Mountain Hemlock Forest

IVC Scientific Name: *Tsuga mertensiana* Maritime Alaskan Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3725 Mountain Hemlock Montane Alaskan Forest Alliance

[ ]
Tsuga mertensiana Montane Alaskan Forest Alliance
Montane Alaskan Mountain Hemlock Forest

IVC Scientific Name: *Tsuga mertensiana* Montane Alaskan Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This is a forested alliance of open canopy "parklands" dominated by *Tsuga mertensiana* and ericaceous and alpine shrubs and forbs such as *Cassiope mertensiana, Elliottia pyroliflora*, and *Phyllodoce aleutica*. This woodland alliance occurs in cold, snowy subalpine environments from southern Alaska. It occurs from near sea level into the subalpine in Alaska coastal areas, on slope benches or canyon bottoms, which are prone to cold-air drainage. The alliance occurs on a wide variety of soils, including organic muskeg margins. Best growth of *Tsuga mertensiana* is reported on loose, coarse-textured, well-drained soils.
IVC Dynamics: *Tsuga mertensiana* is a slow-growing, long-lived conifer, which can regenerate under its own canopy, but can be succeeded by other shade-tolerant conifers, such as *Tsuga heterophylla* or *Callitropsis nootkatensis* at the lower or northern edges of its range. Fire often allows the seral invasion of *Pinus contorta* into associations of this type.
IVC Environment: It occurs from near sea level and up into higher elevations in the coastal ranges of Alaska. In interior ranges, it is generally associated with areas of maritime influence and deep winter snowpacks. Parklands can occur near treeline where extremely deep snowpacks discourage tree growth in topographic depressions, and the forest interdigitates with herbaceous communities. Stands occur on slope benches or canyon bottoms, which are prone to cold air drainage. The alliance occurs on a wide variety of soils.

DISTRIBUTION

IVC Geographic Range: This alliance is found in coastal ranges of southeastern Alaska.
IVC Nations: CA,US
IVC States/Provinces: AK, BC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003248** ***Tsuga mertensiana / Elliottia pyroliflora / Nephrophyllidium crista-galli*** **Woodland** [Mountain Hemlock / Copperbush / Deer-cabbage Woodland] []
  G5 (2017-02-01) AK, BC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M886 Southern Vancouverian Dry Foothill Forest & Woodland

Forêts et terres boisées sèches du piémont du sud de la région floristique de Vancouver

IVC Colloquial Name: Southern Vancouverian Dry Foothill Forest & Woodland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M886 describes the low elevation Pacific coastal forests of the rain shadow influenced maritime climate in western North America. The Canadian expression includes forests and woodlands of the southern British Columbia (BC) coast that occur in the lee of the Olympic and Vancouver Island mountain ranges. Canopies are typically evergreen coniferous, although evergreen broad-leaved and cold-deciduous broad-leaved species are often present in the tree stratum. Coast Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*) is the characteristic tree species, however other diagnostic trees include Pacific arbutus (*Arbutus menziesii*) and Garry oak (*Quercus garryana* var. *garryana*). Western red cedar (*Thuja plicata*) and grand fir (*Abies grandis*) often co-occur with Douglas-fir on circum-mesic sites. Shore pine (*Pinus contorta* var. *contorta*) occurs occasionally on dry sites, where it can dominate some stands. The understory of conifer stands is typically dominated by evergreen broad-leaved shrubs, conifer regeneration and a well-developed moss layer. Common shrubs include ocean-spray (*Holodiscus discolor*), Cascade barberry (*Mahonia nervosa*) and salal (*Gaultheria shallon*). The main moss species are Oregon beaked moss (*Kindbergia oregana*) and stairstep moss (*Hylocomium splendens*). Garry oak forests and woodlands have a rich understory dominated by camas (*Camassia* spp.) and other flowering herbs in the spring, and a variety of grasses later in the growing season. Historically, stand-replacing fire was the main natural disturbance factor but since European settlement, human-influenced disturbances predominate. Most forests were harvested many years ago and much of the range converted to agriculture, settlement and urban infrastructure; invasive non-native plant species exert a strong influence on understory composition and structure in much of the range.

In Canada, M886 forests occur between sea level and approximately 700 mASL in a cool Mediterranean climate, with moderately warm dry summers and mild wet winters. Mean annual precipitation varies between approximately 650 and 1250 mm, the majority falling as rain in winter months; snow is uncommon and ephemeral. Mean annual temperature is approximately 8° to 10° C; soils do not freeze in winter. Growing degree days above 5° C (GDD) vary between approximately 1700 and 2200 across the Canadian range. All parts of the Canadian range experienced Pleistocene glaciation; soils are mostly Brunisols developed in glacial surficial materials. Mor and moder humus forms predominate.

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: M886 describes low elevation forests and woodlands on mesic and dry sites in the cool Mediterranean climate of the central Pacific coast of North America. Stands lack *Tsuga heterophylla* and are dominated by *Pseudotsuga menziesii*, often with *Quercus garryana* and/or *Arbutus menziesii*. Forests on moister sites in this drier climatic region and at low elevations in wetter climatic regions adjacent to M886, that contain *Tsuga heterophylla* and grade into temperate maritime "rainforests" of the Pacific coast of North America, are included in M024 [Vancouverian Coastal Rainforest].

All M886 forest and woodland Associations in British Columbia (BC) are considered to be at a high risk of becoming extinct, both globally and provincially, and are included on the BC Red List of Threatened Ecological Communities. Many red-listed plant species occur within these ecosystems.

Pseudotsuga menziesii here refers to variety *menziesii* (coast Douglas-fir).

Quercus garryana here refers to variety *garryana* (Garry oak).

Groups in Canada:

- **G800 Southern Vancouverian Dry Douglas-fir - Madrone Woodland [Terres boisées sèches de douglas de Menzies et d'arbousier d'Amérique de la région de Vancouver]**
- **G206 Cascadian Oregon White Oak - Conifer Forest & Woodland []**

CNVC Concept Author: D. Meidinger , W. MacKenzie, K. Baldwin, USNVC

CNVC Concept Date: 2015-04-01

CNVC Description Author: D. Meidinger and K. Baldwin

CNVC Description Date: 2018-03-01

IVC Primary Concept Source: Faber-Langendoen et al. (2019a)

IVC Description Author:

IVC Description Date:

IVC Acknowledgments:

G800 Southern Vancouverian Dry Douglas-fir - Madrone Woodland

Terres boisées sèches de douglas de Menzies et d'arbousier d'Amérique de la région de Vancouver

IVC Colloquial Name: Southern Vancouverian Dry Douglas-fir - Madrone Woodland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This dry, mixed broadleaf-conifer forest group is dominated by the evergreen broadleaf *Arbutus menziesii* and the evergreen conifer *Pseudotsuga menziesii*. Some stands may have only *Pseudotsuga menziesii*. The short-lived conifer *Pinus contorta*, the broad-leaved deciduous *Acer macrophyllum*, and the shade-tolerant conifer *Abies grandis* can be locally dominant or codominant species. *Calocedrus decurrens* is absent. The broad-leaved deciduous tree *Quercus garryana* may also be present in the upper tree stratum or as a subcanopy. The forest understory is usually species-rich and well-developed. This group is found in lowland areas of the Puget Sound, including the San Juan Islands in Washington and the Gulf Islands in British Columbia, and as far south as the Klamath Mountains. It occurs along low-elevation (0-1000 m) mountain slopes and valley margins, usually on southern exposures with ample sun and seasonal drought. Sites usually have bedrock or sandy soils which drain quickly.

IVC Dynamics: *Arbutus menziesii* stump sprouts following fire, and these communities were probably subject to a moderate-severity fire regime in presettlement times. These sites are too dry and warm or have been too frequently and extensively burned for more than small amounts of *Tsuga heterophylla* or *Thuja plicata* to be present as regeneration. On sites where it occurs, *Arbutus menziesii* dominance is favored by high-severity fires; *Pseudotsuga menziesii* can be locally eliminated by logging and hot fire or repeated high-severity fires.

IVC Environment: This group occurs along low-elevation (0-1000 m) mountain slopes and valley margins, usually on southern exposures with ample sun and seasonal drought, often adjacent to saltwater shorelines. Primarily, this group occurs in areas with a pronounced rainshadow effect from the Olympics and other coastal ranges. Sites usually have bedrock or sandy soils which drain quickly.

DISTRIBUTION

IVC Geographic Range: This group is found in lowland areas of the Puget Sound, including the San Juan Islands in Washington and the Gulf Islands in British Columbia, and as far south as the Klamath Mountains of northern California. It is less common around the margins of the Willamette Valley, Oregon, and on the lower foothills of the Cascades in Washington and Oregon.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.11.78:P, 7.1.7.2:P, 7.1.8.1:P, 7.1.9.3:P

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G3 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3716 *Pseudotsuga menziesii* - *Abies grandis* - *Arbutus menziesii* Forest & Woodland Alliance** [Douglas-fir - Grand Fir - Pacific Madrone Forest & Woodland Alliance] []
  This dry, mixed broadleaf-conifer forest alliance is typically dominated by a canopy of the broadleaf evergreen *Arbutus menziesii*. *Pseudotsuga menziesii* is emergent through this sclerophyllous layer, and some stands may have only *Pseudotsuga menziesii*. This alliance occurs along low-elevation (0-1000 m) mountain slopes and valley margins, usually on southern exposures with ample sun and seasonal drought, often adjacent to saltwater shorelines. It is found in lowland areas of the Puget Sound, including the San Juan Islands in Washington and the Gulf Islands in British Columbia, and as far south as the Klamath Mountains and northern Coast Ranges of California.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: C. Chappell, in Faber-Langendoen et al. (2015)
IVC Description Author: G. Kittel and C. Chappell
IVC Description Date: 2015-05-14
IVC Acknowledgments:

A3716 Douglas-fir - Grand Fir - Pacific Madrone Forest & Woodland Alliance

[ ]
Pseudotsuga menziesii - Abies grandis - Arbutus menziesii Forest & Woodland Alliance
Douglas-fir - Grand Fir - Pacific Madrone Forest & Woodland

IVC Scientific Name: *Pseudotsuga menziesii - Abies grandis - Arbutus menziesii* Forest & Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This dry, mixed broadleaf-conifer forest alliance is typically dominated by the broadleaf evergreen *Arbutus menziesii* and *Pseudotsuga menziesii*. Some stands may have only *Pseudotsuga menziesii*. Other trees present may include *Abies grandis, Acer macrophyllum, Pinus contorta*, and *Quercus garryana*. Small amounts of *Tsuga heterophylla* or *Thuja plicata* may be present. The forest understory is usually species-rich and well-developed. Common shrub species include *Corylus cornuta var. californica, Gaultheria shallon, Holodiscus discolor, Lonicera hispidula, Symphoricarpos albus*, and *Vaccinium ovatum*. The herbaceous layer is usually well-developed and dominated by xerophytic grasses and forbs. *Festuca occidentalis, Elymus glaucus*, and *Bromus vulgaris* are typical grass species. *Vicia americana, Lathyrus nevadensis*, and *Sanicula crassicaulis* are common forbs. Ferns include *Polystichum munitum* and *Pteridium aquilinum*. This alliance occurs along low-elevation (0-1000 m) mountain slopes and valley margins, usually on southern exposures with ample sun and seasonal drought, often adjacent to saltwater shorelines. It is found in lowland areas of the Puget Sound as far south as the Klamath Mountains and northern Coast Ranges of California.
IVC Dynamics: Vegetation types within this alliance are often comprised of second-growth stands created by fire or logging disturbance, but these are stable stands on xeric forest sites. Both *Arbutus menziesii* and *Pseudotsuga menziesii* are shade-intolerant, and these forests are dependent upon recurring disturbance for regeneration. *Arbutus menziesii*, which resprouts following fire, is favored over *Pseudotsuga menziesii* with increasing fire frequency. With increasing stand age, *Pseudotsuga menziesii* overtops *Arbutus menziesii* and assumes canopy dominance.
IVC Environment: The vegetation within this alliance occurs in relatively dry, fire-prone areas west of the Cascades. This maritime-influenced region has mild to warm winter temperatures, and receives 75-200 cm of annual precipitation, falling mostly as winter rain. However, this alliance occurs in areas with a pronounced rainshadow effect from the Olympics or Coast ranges. Vegetation within this alliance occurs along low-elevation (0-1000 m) mountain slopes and valley margins, usually on southern exposures with ample sun and seasonal drought, often adjacent to saltwater shorelines. Sites where this vegetation occurs usually have bedrock or sandy soils which drain quickly. *Arbutus menziesii* stump-sprouts following fire, and these communities were probably subject to a moderate-severity fire regime in presettlement times.

DISTRIBUTION

IVC Geographic Range: This alliance is found in lowland areas of the Puget Sound, including the San Juan Islands in Washington and the Gulf Islands in British Columbia, and as far south as the Klamath Mountains and northern Coast Ranges of California. It is less common around the margins of the Willamette Valley, Oregon, and on the lower foothills of the Cascades in Washington and Oregon.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002827 *Pseudotsuga menziesii - Pinus contorta - (Tsuga heterophylla) / Vaccinium membranaceum / Arctostaphylos uva-ursi* Woodland** [Douglas-fir - Lodgepole Pine - (Western Hemlock) / Thinleaf Huckleberry / Kinnikinnick Woodland] []
  G2G4 (2005-09-19) BC

- **CEGL000422** ***Pseudotsuga menziesii - Arbutus menziesii / Holodiscus discolor*** **Forest** [Douglas-fir - Pacific Madrone / Oceanspray Forest] []
  G1G2Q (1997-11-14) BC, WA
- **CEGL007331** ***Pseudotsuga menziesii - Abies grandis / Gaultheria shallon - Holodiscus discolor*** **Forest** [Douglas-fir - Grand Fir / Salal - Oceanspray Forest] []
  GNR. BC, WA
- **CNVC00044** ***Pseudotsuga menziesii - Arbutus menziesii / Holodiscus discolor*** [Douglas-Fir - Pacific Madrone / Oceanspray] [Douglas de Menzies - Arbousier d'Amérique / Holodisque discolore]
  GNR.
- **CNVC00021** ***Pseudotsuga menziesii - Pinus contorta var. contorta / Festuca occidentalis / Niphotrichum canescens - Racomitrium lanuginosum - Cladina*** **spp.** [Douglas-Fir - Beach Pine / Western Fescue / Grey Rock Moss - Woolly Moss - Reindeer Lichen species] [Douglas de Menzies - Pin tordu côtier / Fétuque de l'Ouest / Racomitre blanchâtre - Racomitre laineux - Cladonie]
  GNR.
- **CEGL002316** ***Pseudotsuga menziesii / Pleurozium schreberi - Hylocomium splendens*** **Forest** [Douglas-fir / Schreber's Big Red-stem Moss - Splendid Feathermoss Forest] []
  G3 (2004-06-03) BC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by J. Evens.

G206 Cascadian Oregon White Oak - Conifer Forest & Woodland

[ ]

IVC Colloquial Name: Cascadian Oregon White Oak - Conifer Forest & Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This narrowly restricted group appears at or near lower treeline in foothills of the eastern Cascades in Washington and Oregon, within 65 km (40 miles) of the Columbia River Gorge. It also appears in the adjacent Columbia Plateau ecoregion. Most occurrences of this group are dominated by a mix of *Quercus garryana* and *Pinus ponderosa* or *Pseudotsuga menziesii*. Isolated, taller *Pinus ponderosa* or *Pseudotsuga menziesii* over *Quercus garryana* trees characterize parts of this group. Clonal *Quercus garryana* can create dense patches across a grassy landscape or can dominate open woodlands or even savannas. The understory may include dense stands of shrubs or, more often, be dominated by grasses, sedges or forbs. Shrub-steppe shrubs may be prominent in some stands and create a distinct tree / shrub / sparse grassland habitat, including *Artemisia nova* (in Oregon only), *Artemisia tridentata, Chrysothamnus viscidiflorus*, and *Purshia tridentata*. Mesic sites have an open to closed sodgrass understory dominated by *Calamagrostis rubescens, Carex geyeri, Carex inops, Carex rossii*, or *Elymus glaucus*. Drier savanna and woodland understories typically contain bunchgrass steppe species such as *Festuca idahoensis* or *Pseudoroegneria spicata*. Common exotic grasses that often appear in high abundance are *Bromus tectorum* and *Poa bulbosa*. Disjunct occurrences in the Klamath Mountains and southernmost Cascades typically have high cover of sagebrush and bitterbrush in the understory, along with other shrubs. In the Columbia River Gorge, this group appears as small to large patches in transitional areas in the Little White Salmon and White Salmon river drainages in Washington and Hood River, Rock Creek, Moiser Creek, Mill Creek, Threemile Creek, Fifteen Mile Creek, and White River drainages in Oregon. *Quercus garryana* can create dense patches often associated with grassland or shrubland balds within a closed *Pseudotsuga menziesii* forest landscape. Commonly the understory is shrubby and composed of *Ceanothus integerrimus, Holodiscus discolor, Symphoricarpos albus*, and *Toxicodendron diversilobum*. These woodlands occur at the lower treeline/ecotone between *Artemisia* spp. or *Purshia tridentata* steppe or shrubland and *Pinus ponderosa* and/or *Pseudotsuga menziesii* forest or woodland. Elevations range from 460 to 1920 m. Sites are typically warm with southern exposures with seasonal soil drought or desiccating winds. Substrates usually have bedrock, sand, or pumice soils which are excessively well-drained. Fire plays an important role in creating vegetation structure and composition in this habitat. Decades of fire suppression have led to invasion by *Pinus ponderosa* along lower treeline and by *Pseudotsuga menziesii* in the gorge and other oak patches on xeric sites in the east Cascade foothills. In the past, most of the habitat experienced frequent low-severity fires that maintained woodland or savanna conditions. The

mean fire-return interval is 20 years, although variable. Soil drought plays a role, maintaining an open tree canopy in part of this dry woodland habitat.

Westside: This group also occurs of the west side of the mountain ranges from the Cascades to the North Coast Ranges in California. It is limited to the southern portions of the North Pacific region where it occurs in southwestern British Columbia, in the Puget Trough and Willamette Valley south into the Klamath Mountains and into northern California, southward through the lower southern Cascades and western Modoc Plateau and the middle and inner North Coast Ranges into Mendocino County. The vegetation ranges from savanna and woodland to forest dominated by deciduous broadleaf trees, mostly *Quercus garryana*. Codominance by the evergreen conifer *Pseudotsuga menziesii* is common, and *Pinus ponderosa* is important in some stands. In the south, common associates also include *Quercus kelloggii* and *Arbutus menziesii*. The predominant oaks with the higher frequency fires include *Quercus kelloggii* and *Quercus garryana*, with *Quercus garryana var. garryana* codominant in the central and northern Coast Ranges, Klamath Mountains and Modoc Plateau. However, *Quercus garryana var. fruticosa* often codominates in the northwestern Coast Ranges. More isolated patches of shrubby, clonal *Quercus garryana var. semota* (similar to but apparently distinct from *var. fruticosa*) occur farther south into the Sierra Nevada southward to the Paiute and Tehachapi mountains (southern branches of the Sierra Nevada), but these are without *Pinus ponderosa* or *Pseudotsuga menziesii* and appear to behave more as montane chaparral stands. The perennial bunchgrass component includes *Danthonia californica* (close to the coast), *Elymus glaucus, Festuca californica*, and *Festuca idahoensis*. A variety of native forbs also occur. Other characteristic species include *Ceanothus cuneatus, Juniperus occidentalis*, and *Toxicodendron diversilobum*. Succession in the absence of fire tends to favor increased shrub dominance in the understory, increased tree density, and increased importance of conifers, with the end result being conversion to a conifer forest. This group merges into Californian Broadleaf Forest & Woodland Group (G195). This group occurs as both small patch and large patch in its dynamics. This west side version of this group is associated with dry, predominantly low-elevation sites and/or sites that experienced frequent presettlement fires. Elevations range from 600-1600 m (1800-4850 feet) on steep, rocky slopes where snow and cold temperatures occur. In the Willamette Valley, soils are mesic yet well-drained, and the stands are mostly large patch. In the Puget Lowland and Georgia Basin, this group is primarily found on dry sites, typically either shallow bedrock soils or deep gravelly glacial outwash soils. It occurs on various soils in the interior valleys of the Klamath Mountains, and on shallow soils of "bald hill" toward the coast. Even where more environmentally limited, the group is strongly associated with a historic low-severity fire regime. With frequent annual burning (at lower elevations and on warmer sites), this group is an open to dense woodland of large oaks with well-developed grassy understories of native perennial bunchgrass. Succession in the absence of fire tends to favor increased shrub dominance in the understory, increased tree density, and increased importance of conifers, with the end result being conversion to a conifer forest. This group merges into Californian Broadleaf Forest & Woodland Group (G195). This group occurs as both small patch and large patch in its dynamics.

IVC Dynamics: Fire plays an important role in creating vegetation structure and composition in this habitat. Decades of fire suppression have led to invasion by *Pinus ponderosa* along lower treeline and by *Pseudotsuga menziesii* in the gorge and other oak patches on xeric sites in the east Cascade foothills. Most of the habitat experienced frequent low-severity fires that maintained woodland or savanna conditions. The mean fire-return interval is 20 years, although variable. Landfire VDDT models: #R OAP1 Oregon White Oak-Ponderosa Pine model describes general successional pathways treating drier pine succession separate from more mesic Douglas-fir pathways. Frequent annual burning (at lower elevations and on warmer sites) is required to maintain the open to dense woodland of large oaks with well-developed grassy understories of native perennial bunchgrass. Landfire VDDT models: #R OWOA Oregon White Oak applies to southern occurrences.

IVC Environment: This narrowly restricted group appears at or near lower treeline in foothills of the eastern Cascades in Washington and Oregon within 65 km (40 miles) of the Columbia River Gorge. It also appears in the adjacent Columbia Plateau ecoregion associated with low-elevation slopes and valley margins. This area receives 50-80 cm of annual precipitation, falling mostly as winter rain and snow. Elevation ranges from 460 to 1920 m. Stands often occur on warm sites with southern exposures with seasonal soil drought or desiccating winds. Substrates usually have bedrock, sand, or pumice soils which drain quickly (Reid et al.1999).

Westside environment: This group is limited to southwestern British Columbia, in the Puget Trough and Willamette Valley south into the Klamath Mountains and into northern California, where it is found throughout the Sierra Nevada and Coast Ranges foothills and lower montane elevations from 600-1600 m (1800-4850 feet) on steep, rocky slopes where snow and cold temperatures occur. This group is associated with dry, predominantly low-elevation sites and/or sites that experienced frequent presettlement fires. In the Willamette Valley, soils are mesic yet well-drained, and the stands are mostly large patch. In the Puget Lowland and Georgia Basin, this group is primarily found on dry sites, typically either shallow bedrock soils or deep gravelly glacial outwash soils. It occurs on various soils in the interior valleys of the Klamath Mountains, and on shallow soils of "bald hills" toward the coast.

DISTRIBUTION

IVC Geographic Range: This narrowly restricted group appears at or near lower treeline in the foothills of the eastern Cascades in Washington and Oregon within 65 km (40 miles) of the Columbia River Gorge. It also appears in the adjacent Columbia Plateau ecoregion. Disjunct occurrences in the Klamath Mountains and southernmost Cascades may have big sagebrush and bitterbrush in the understory, along with other shrubs.

Westside range: This group occurs primarily in the Puget Trough and Willamette Valley and extends southward at low elevations in the Klamath Mountains on both sides of the Oregon/California stateline, and continues south throughout the Sierra Nevada and Coast Ranges foothills and lower montane of California and Oregon at elevations from 600-1600 m (1800-4850 feet).

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.11.78:P, 7.1.7.2:P, 7.1.8.1:P, 7.1.9.3:P, 10.1.2.10:P

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G2 rank that was calculated from closely related ecological system global ranks. A rank of G2G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately restricted, long-term decline moderate to high, and threats from development high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3327 *Quercus garryana - Pinus ponderosa / Carex geyeri* Woodland Alliance** [Oregon White Oak - Ponderosa Pine / Geyer's Sedge Woodland Alliance] []
  This alliance covers stands that are dominated by *Quercus garryana* mixed with *Pinus ponderosa* and/or *Pseudotsuga menziesii*. The understory may include dense shrubs or just herbaceous species. This alliance is geographically concentrated on the eastside of the Cascade Range of Oregon and Washington with disjunct stands in southern central Oregon and northern California.
- **A3328 *Quercus garryana - Pseudotsuga menziesii / Toxicodendron diversilobum* Forest & Woodland Alliance** [Oregon White Oak - Douglas-fir / Pacific Poison-oak Forest & Woodland Alliance] []
  This alliance covers savanna, woodland and forest dominated by *Quercus garryana*. Codominance by the evergreen conifer *Pseudotsuga menziesii* is common, and *Pinus ponderosa* can be important in some stands. This alliance occurs from southwestern British Columbia to northern California at lower montane on steep, rocky slopes where snow and cold temperatures occur.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2011)

IVC Description Author: G. Kittel, C. Chappell, M.S. Reid, R. Crawford, K.A. Schulz

IVC Description Date: 2015-11-09

IVC Acknowledgments: R. Crawford, R.J. Cole, T. Keeler-Wolf, J. Evens

A3327 Oregon White Oak - Ponderosa Pine / Geyer's Sedge Woodland Alliance

[ ]

Quercus garryana - Pinus ponderosa / Carex geyeri Woodland Alliance

East Cascadian Oregon White Oak - Pine Woodland

IVC Scientific Name: *Quercus garryana - Pinus ponderosa / Carex geyeri* Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance consists of stands dominated by *Quercus garryana* mixed with *Pinus ponderosa* and/or *Pseudotsuga menziesii*. Isolated, taller *Pinus ponderosa* or *Pseudotsuga menziesii* over *Quercus garryana* trees sometimes characterize this alliance. Clonal *Quercus garryana* stands can create dense patches across a grassy landscape creating open woodlands or savannas. The understory may be dense shrubs or be dominated by grasses, sedges or forbs. Shrubs prominent in some stands include *Artemisia nova, Artemisia tridentata, Chrysothamnus viscidiflorus*, and *Purshia tridentata*. Understories are generally dominated by herbaceous species, especially graminoids. Mesic sites have an open to closed sodgrass understory dominated by

Calamagrostis rubescens, Carex geyeri, Carex rossii, Carex inops, or *Elymus glaucus*. Drier savanna and woodland understories typically contain bunchgrass steppe species such as *Festuca idahoensis* or *Pseudoroegneria spicata*. Common exotic grasses that often appear in high abundance are *Bromus tectorum* and *Poa bulbosa*. This alliance occurs in the foothills of the eastern Cascades in Washington and Oregon within 65 km (40 miles) of the Columbia River Gorge, further east into the Columbia Plateau ecoregion, and there are disjunct occurrences in Klamath County, south-central Oregon and Siskiyou County, north-central California. These woodlands occur at the lower treeline/ecotone between *Artemisia* spp. or *Purshia tridentata* steppe or shrubland and *Pinus ponderosa* and/or *Pseudotsuga menziesii* forests or woodlands. Fire plays an important role in creating vegetation structure and composition in this habitat. Decades of fire suppression have led to invasion by *Pinus ponderosa* along lower treeline and by *Pseudotsuga menziesii*. Soil, fire and drought play roles in maintaining an open tree canopy in part of this dry woodland habitat. It is drier and colder than more maritime stands of *Quercus garryana - Pseudotsuga menziesii / Toxicodendron diversilobum* Forest & Woodland Alliance (A3328).

IVC Dynamics: In the past, most of the habitat experienced frequent low-severity fires that maintained woodland or savanna conditions. The mean fire-return interval is 20 years, although variable. Dry season fire historically controlled the abundance of invading conifers and maintained the savanna structure of these communities (Thilenius 1968). Fire suppression and grazing can lead to cloning of *Quercus garryana* and the development of more closed-canopy stands. *Quercus garryana* is shade-intolerant and is eventually killed when overtopped by coniferous forest. Although many *Quercus garryana* communities are seral to conifer forest, the extreme seasonal drought where this alliance occurs allows the *Quercus garryana* to maintain dominance.

IVC Environment: Vegetation within this alliance is found in low-elevation (120-900 m) valleys and slopes of the Pacific Northwest. Precipitation ranges from 40-150 cm annually, with a protracted warm, dry period in midsummer. Dry-season fire is common and serves to maintain the open canopy of these savannas. These are among the most drought-tolerant communities of the maritime Pacific Northwest, and occur east of the Cascade Range where river canyons allow adequate penetration of Pacific moisture. This alliance represents the most xeric expression of the *Quercus garryana* alliances, where soil drought prohibits continuous canopy cover. Stands of the alliance are found at the lowermost boundary of woodland and forest vegetation, on hot, dry sites, particularly in the Columbia River Gorge, on southerly aspects. Soils are moderately deep, rocky silt loams to loams, derived from mixed colluvium of basaltic materials with a minor component of loess. Adjacent vegetation often includes *Quercus garryana* woodlands, *Quercus garryana, Pseudotsuga menziesii, Pinus ponderosa*, or *Abies grandis* forest communities at the upper elevation, and valley grasslands or *Artemisia* steppe at lower, drier sites.

DISTRIBUTION

IVC Geographic Range: This alliance occurs at or near lower treeline in foothills of the eastern Cascades in Washington and Oregon within 65 km (40 miles) of the Columbia River Gorge. It also appears in the adjacent Columbia Plateau ecoregion. Disjunct occurrences are found in Klamath County in south-central Oregon and Siskiyou County in north-central California where more sagebrush and bitterbrush occurs in the understory, along with other shrubs.

IVC Nations: CA?,US

IVC States/Provinces: BC?, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M.S. Reid, in Faber-Langendoen et al. (2013)

IVC Description Author: M.S. Reid

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A3328 Oregon White Oak - Douglas-fir / Pacific Poison-oak Forest & Woodland Alliance

[ ]

Quercus garryana - Pseudotsuga menziesii / Toxicodendron diversilobum Forest & Woodland Alliance
West Cascadian Dry White Oak - Douglas-fir Forest & Woodland

IVC Scientific Name: *Quercus garryana - Pseudotsuga menziesii / Toxicodendron diversilobum* Forest & Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance consists of savanna, woodland and forest dominated by *Quercus garryana*. Codominance by the evergreen conifer *Pseudotsuga menziesii* is common, and *Pinus ponderosa* is important in some stands with mesic indicator species in the undergrowth. In the south, common associates also include *Quercus kelloggii* and *Arbutus menziesii*. The predominant oaks in areas of higher fire frequency include *Quercus kelloggii* and *Quercus garryana*, with *Quercus garryana var. garryana* codominant in the central and northern Coast Ranges. The perennial bunchgrass component includes *Festuca idahoensis, Festuca californica, Elymus glaucus*, and *Danthonia californica* (close to the coast). A variety of native forbs also occur. Other characteristic species include *Toxicodendron diversilobum, Juniperus occidentalis*, and *Ceanothus cuneatus*. This alliance occurs in southwestern British Columbia, in the Puget Trough and Willamette Valley south into the Klamath Mountains and into northern California, where it is found in the northern portions of the Sierra Nevada and Coast Ranges foothills at lower montane elevations from 600-1600 m (1800-4850 feet) on steep, rocky slopes where snow and cold temperatures occur. This alliance is associated with dry, predominantly low-elevation sites and/or sites that experienced frequent presettlement fires.

IVC Dynamics: Succession in the absence of fire tends to favor increased shrub dominance in the understory, increased tree density, and increased importance of conifers, with the end result being conversion to a conifer forest. Dry-season fire was historically common and controlled the abundance of invading conifers (Thilenius 1968). *Quercus garryana* is shade-intolerant and is eventually killed when overtopped by coniferous forest. Stands of this type often are seral to *Pseudotsuga menziesii* in the absence of fire (Chappell et al. 1997). Animal dissemination of acorns is important in dispersal of oaks and thus the presence of oak-dominated stands.

IVC Environment: Vegetation within this alliance is found in low-elevation (15-610 m) valleys and slopes of the Pacific Northwest, usually on the leeward side of the coastal ranges. This alliance is associated with dry, predominantly low-elevation sites and/or sites that experienced frequent presettlement fires. In the Willamette Valley, soils are mesic yet well-drained, and the stands are mostly large patch. In the Puget Lowland and Georgia Basin, it is found primarily on dry sites, typically either with shallow bedrock soils or deep gravelly glacial outwash soils. It occurs on various soils in the interior valleys of the Klamath Mountains, and on shallow soils of "bald hill" toward the coast. Even where more environmentally limited, it is strongly associated with a historic low-severity fire regime. With frequent annual burning (at lower elevations and on warmer sites), this is an open to dense woodland of large oaks with well-developed grassy understories of native perennial bunchgrass.

Precipitation ranges from 50-200 cm annually, with a decidedly warm, dry period in midsummer. Environmental factors that limit the invasion and increase of conifers play an important role in maintenance and functioning of these communities; foremost in importance are soil drought and fire. These communities are associated with excessively drained soils, or sometimes riparian areas and wetland transitions in prairie landscapes. Best stand development occurs on well-drained alluvial soils and mild slopes. This is one of the most drought-tolerant communities of the maritime Pacific Northwest.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in southwestern British Columbia, in the Puget Trough and Willamette Valley and extends southward at low elevations in the Klamath Mountains on both sides of the Oregon/California stateline, and continues south in the northern portions of the Sierra Nevada and Coast Ranges foothills and lower montane of California and Oregon.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000548 *Quercus garryana / Carex inops ssp. inops - Camassia quamash* Woodland** [Oregon White Oak / Long-stolon Sedge - Small Camas Woodland] []
  G1 (1997-11-14) BC?, WA
- **CEGL003355 *Pseudotsuga menziesii - Quercus garryana / Melica subulata* Forest** [Douglas-fir - Oregon White Oak / Alaska Oniongrass Forest] []
  G1 (2006-04-11) BC, WA

- **CEGL003358** ***Quercus garryana / Symphoricarpos albus / Carex inops ssp. inops*** **Woodland** [Oregon White Oak / Common Snowberry / Long-stolon Sedge Woodland] []
  G2 (2000-11-16) BC?, WA
- **CNVC00045** ***Pseudotsuga menziesii - Quercus garryana / Melica subulata*** [Douglas-Fir - Oregon White Oak / Alaska Oniongrass] [Douglas de Menzies - Chêne de Garry / Mélique à lemma subulé]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.S. Reid, in Faber-Langendoen et al. (2013)
IVC Description Author: M.S. Reid
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M405 Vancouverian Ruderal Forest

[ ]

IVC Colloquial Name: Vancouverian Ruderal Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup has either a mix of native and exotic species that establish on soil disturbed sites or of non-native tree species that have escaped cultivation, dominate abandoned plantations or have otherwise become naturalized. These stands are not maintained by human activities for the purpose of their production. These stands are not abundant or even common, but they are certainly present and may increase with climate warming and further human disturbances across the landscape. Non-native species include *Acer platanoides, Crataegus arborea, Ilex aquifolium, Ilex crenata, Pinus nigra, Pinus sylvestris*, or *Prunus padus*. Characteristics of native species that occupy disturbed sites needs further review. Habitats range from sand dunes to old fields, often are present due to some type of severe disturbance or deliberate planting. Most stands are near current or past human habitations. They occur in Oregon, Washington, and southern British Columbia.

IVC Geographic Range: This macrogroup occurs in Oregon, Washington and southern British Columbia..

IVC Nations: CA,US

IVC States/Provinces: BC, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G801 Vancouverian Ruderal Forest []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel

IVC Description Date: 2014-10-15

IVC Acknowledgments: Rex Crawford, Joe Rocchio, Jimmy Kagan, and Del Meidinger contributed information.

G801 Vancouverian Ruderal Forest

[ ]

IVC Colloquial Name: Vancouverian Ruderal Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group has either a mix of native and exotic species that establish on soil disturbed sites or of non-native tree species that have escaped cultivation, dominate abandoned plantations or have otherwise become naturalized. These stands are not abundant or even common, but they are certainly present and may increase with climate warming and further human disturbances across the landscape. Non-native species include *Acer platanoides, Crataegus arborea, Ilex aquifolium, Ilex crenata, Pinus nigra, Pinus sylvestris*, or *Prunus padus*. Characteristics of native species that occupy disturbed sites needs further review. Habitats range from sand dunes to old fields, often are present due to some type of severe disturbance or deliberate planting. Most stands are near current or past human habitations. They occur in Oregon, Washington and southern British Columbia.

IVC Dynamics:

IVC Environment: These forests are uncommon in the Pacific Northwest. They can occur on various upland soil conditions. In Oregon, *Pinus nigra* and *Pinus sylvestris* occur on sand dunes and were planted as a soil erosion measure. In Washington and British Columbia, small stands of various species occur near human habitation.

DISTRIBUTION

IVC Geographic Range: This group occurs in Oregon, Washington and southern British Columbia,

IVC Nations: CA,US

IVC States/Provinces: BC, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2018-01-19)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2014)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-03
IVC Acknowledgments:

M151 Great Plains Forest & Woodland

Forêts & terres boisées des Grandes Plaines

IVC Colloquial Name: Great Plains Forest & Woodland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M151 describes upland North American Great Plains treed vegetation. The Canadian expression of this vegetation includes cold-deciduous broad-leaved woodlands and forest patches in Alberta, Saskatchewan and Manitoba. M151 does not include floodplain forests, which are described by M028 [Great Plains Floodplain Forest]. Most Canadian occurrences of M151 are in the *Great Plains Parkland* vegetation zone, which occupies the northern edge of the dry North American Great Plains grassland region where it is transitional to boreal forest. Here, the climate is moist enough to support tree growth under certain conditions, and the natural vegetation is a landscape mosaic comprising patches of grassland and groves of forest and woodland (i.e., parkland). M151 describes only the treed portion of the vegetation mosaic. M151 also includes copses of forest and woodland that are found in the prairie grasslands to the south of the parkland on specific sites, including steep north-facing valley slopes, moist depressions and flats within sand dune complexes.

In Canada, the largest proportion of M151 occurrences are pure stands of trembling aspen (*Populus tremuloides*), sometimes accompanied by balsam poplar (*P. balsamifera*), Manitoba maple (*Acer negundo*) or red ash (*Fraxinus pennsylvanica*) on moist lower slopes. At the eastern end of the range, bur oak (*Quercus macrocarpa*) also becomes important, especially on drier sites. Red ash may also occur as an understory associate in upland aspen stands at the eastern end of the range. Understory vegetation in these stands includes a diverse suite of shrubs and herbs adapted to partial shade. Common species include saskatoon (*Amelanchier alnifolia*), chokecherry (*Prunus virginiana*), pin cherry (*P. pensylvanica*), hazelnuts (*Corylus* spp.), western snowberry (*Symphoricarpos occidentalis*), thin-leaved snowberry (*S. albus*), Canada gooseberry (*Ribes oxyacanthoides*), Woods' rose (*Rosa woodsii*), vetchlings (*Lathyrus* spp.), American vetch (*Vicia americana*), star-flowered false Solomon's seal (*Maianthemum stellatum*), wild lily-of-the-valley (*M. canadense*), meadow-rues (*Thalictrum* spp.), rough-fruited fairy bells (*Prosartes trachycarpa*), spreading dogbane (*Apocynum androsaemifolium*), Maryland sanicle (*Sanicula marilandica*), wild sarsaparilla (*Aralia nudicaulis*), slender wildrye (*Elymus trachycaulus*), purple false melic (*Schizachne purpurascens*), rough-leaved mountain rice (*Oryzopsis asperifolia*), dry-spike sedge (*Carex siccata*) and Sprengel's sedge (*C. sprengelii*).

M151 occurs in a subhumid continental temperate climate with cold winters and warm summers. Mean annual temperatures average approximately 2ËšC, and precipitation varies from approximately 350 to 540 mm. Elevations are <1000 mASL. Stands of M151 occur on a variety of well-drained, mostly Chernozemic soils. Forest and woodland conditions described here for Canada also occur in North Dakota and Minnesota.

IVC Geographic Range: This type is found throughout the central and northern Great Plains from Kansas and Colorado north to southeastern Alberta, southern Saskatchewan, southwestern Manitoba, northern North Dakota and northwestern Minnesota. It may occur in Oklahoma.

IVC Nations: CA,MX?,US

IVC States/Provinces: AB, AR, CO, IA, KS, MB, MN, MO, MT, ND, NE, OK, ON, SD, SK, TX, WY

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: The *Great Plains Parkland* vegetation zone is a geographic area comprising a landscape mosaic of grassland patches and groves of forest and woodland. It occupies the northernmost edge of the North American Great Plains grassland region and reflects an ecoclimatic transition from temperate grassland to boreal forest vegetation. The treed component of the natural parkland vegetation complex is represented by a portion of M151 and is described in this CNVC factsheet. Grassland components of the parkland mosaic are described in factsheets for CM332 [Great Plains Rough Fescue Prairie], CM051 [Great Plains Mixedgrass Prairie] and M054 [Central Lowlands Tallgrass Prairie], representing non-treed plant communities that occur in spatial relationship with treed communities across the west to east range of M151. The geographic extent of the *Great Plains Parkland* vegetation zone (as a map unit) approximates that of the Aspen Parkland ecoregion of the Terrestrial Ecozones and Ecoregions of Canada.

The majority of the range of northern Great Plains forests and woodlands (described here) lies in Canada, although this vegetation does occur in parts of North Dakota and northwestern Minnesota. In the Canadian portion of its range, M151 vegetation occurs more extensively on upland sites and is more highly dominated by *Populus tremuloides*.

CNVC may recognize subtypes of M151 in the future (e.g., the eastern Aspen - Oak condition), but this is pending development of Associations from ground plot data.

Populus deltoides here refers to subspecies *monilifera* (plains cottonwood, peuplier deltoïde de l'Ouest).

Groups in Canada:

- **G145 Great Plains Mesic Forest & Woodland []**
- **G329 Great Plains Bur Oak Forest & Woodland []**

- **G146 Northeastern Great Plains Aspen Woodland []**
- **G328 Northwestern Great Plains Aspen Woodland []**

CNVC Concept Author: Ken Baldwin, Lorna Allen, USNVC
CNVC Concept Date: 2015-02-01
CNVC Description Author: Jeff Thorpe, Ken Baldwin, Lorna Allen
CNVC Description Date: 2016-03-01
IVC Primary Concept Source: Faber-Langendoen et al. (2014)
IVC Description Author: J. Drake, D. Faber-Langendoen and K. Baldwin
IVC Description Date: 2016-01-08
IVC Acknowledgments: Jeff Thorpe, Ken Baldwin, and Lorna Allen

G145 Great Plains Mesic Forest & Woodland

[ ]

IVC Colloquial Name: Great Plains Mesic Forest & Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is dominated by trees and/or shrubs in a largely grassland landscape. Cover of woody species is variable and can range from just over 10% to nearly 100%. This group occurs in a semi-arid climate, but sites are more mesic than the surrounding areas. In general, shrubs dominate stands that receive less moisture from surrounding areas (e.g., higher on the landscape, steeper slopes, coarser soil), while sites that receive more moisture are dominated by trees and shrubs. The herbaceous layer is variable but tends to be less prominent under heavier woody canopies with deep litter deposition. Dominant trees include *Betula papyrifera, Fraxinus pennsylvanica, Populus tremuloides, Ulmus americana, Ulmus rubra*, and, in the western Great Plains, *Juniperus scopulorum*. *Quercus macrocarpa* is common but not dominant except in some stands in canyons. Common shrubs are *Amelanchier alnifolia, Cornus sericea, Crataegus douglasii, Crataegus chrysocarpa, Crataegus succulenta, Dasiphora fruticosa ssp. floribunda, Elaeagnus commutata, Juniperus horizontalis, Prunus virginiana, Rhus* spp., *Rosa woodsii, Shepherdia argentea, Symphoricarpos occidentalis*, and *Toxicodendron rydbergii*. Common graminoids can include *Calamagrostis stricta, Carex* spp., *Pascopyrum smithii, Piptatheropsis micrantha, Pseudoroegneria spicata*, or *Schizachyrium scoparium*. *Festuca* spp. can be abundant in the northwestern Great Plains. Typical sites are upper river terraces, protected slopes (often north-facing), ravines, and draws. Stands of this group that occur on upper terraces and toeslopes in riparian areas are rarely flooded but have root access to groundwater. Soils range from shallow to deep and fine to sandy loams.

IVC Dynamics: Fire, grazing, and hydrologic dynamics are the dominant factors affecting this group. It occurs in a landscape dominated by grasslands but is found in sites that have more moisture and less fire frequency than the surrounding grasslands. Even in the more mesic sites where this group occurs (ravines, riparian terraces, protected slopes), a decrease in moisture and/or an increase in fire frequency can result in transformation of the site to another group. Excessive grazing can have significant effects on the herbaceous component of this group, particularly by fostering invasion by exotic species, including *Euphorbia esula, Bromus inermis, Bromus arvensis, Poa pratensis*, and *Bromus tectorum*.

IVC Environment: This group occurs in a semi-arid climate, but sites are more mesic than the surrounding areas. Typical sites are upper river terraces, protected slopes (often north-facing), ravines, and draws. Stands of this group in riparian areas are rarely flooded but have root access to groundwater. Soils range from shallow to deep and fine to sandy loams.

DISTRIBUTION

IVC Geographic Range: This group can be found from southern Saskatchewan, southwestern Manitoba, and possibly southeastern Alberta south through much of the northern Great Plains. It may extend into the lower foothills of the Rocky Mountains and the lower elevations of the Black Hills. It extends eastward to the eastern Dakotas and eastern Nebraska (excluding the Sandhills).

IVC Nations: CA,US

IVC States/Provinces: AB?, CO, MB, MT, ND, NE, SD, SK, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G3G4 rank that was calculated from closely related ecological system global ranks. A rank of G3G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline moderate to high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3211 *Fraxinus pennsylvanica - Ulmus americana* Great Plains Forest Alliance** [Green Ash - American Elm Great Plains Forest Alliance] []
  This alliance is found in mesic ravines or draws in the northern and central Great Plains with an open to closed short tree canopy typically dominated by *Fraxinus pennsylvanica* and *Ulmus americana*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard and K. Kindscher, in Faber-Langendoen et al. (2011)
IVC Description Author: J. Drake
IVC Description Date: 2015-05-07
IVC Acknowledgments: C. Lea

A3211 Green Ash - American Elm Great Plains Forest Alliance

[ ]
Fraxinus pennsylvanica - Ulmus americana Great Plains Forest Alliance
Great Plains Ash - Elm Ravine Forest

IVC Scientific Name: *Fraxinus pennsylvanica - Ulmus americana* Great Plains Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found in the northern and central Great Plains. Tree canopy is variable, ranging from open to closed. Trees are often short (5-10 m tall) and dominant trees are *Fraxinus pennsylvanica* and *Ulmus americana*. *Acer negundo* can also be common in some stands and *Populus deltoides* may be scattered. The shrub layer can be sparse to dense. *Prunus virginiana* and *Symphoricarpos occidentalis* are common shrubs. Sites are usually found in mesic ravines and draws that concentrate the available precipitation by receiving runoff from higher uplands and trapping drifting snow. Some stands may be inundated for brief periods in the spring or after heavy rains but flooding does not persist. Rarely, stands of this alliance can be found upper terraces of rivers or streams or on north- or east-facing hillsides. Fires from adjacent upland prairies do not usually move through these sites due to the more mesic conditions and the lower landscape position.
IVC Dynamics: Stands of this alliance are typically in ravines and can be flooded or saturated for brief periods after heavy rains or spring snowmelt. Flooding does not shape this alliance to the extent that it does communities on true floodplains, though. Fires spreading from adjacent grasslands can burn the edges of stands but does not usually spread through the entire stand. In Nebraska, stands are becoming more ruderal.
IVC Environment: This alliance is found in upland ravines, upper terraces of rivers and streams, and, rarely, on north- or east-facing slopes (Rolfsmeier and Steinauer 2010). Sites are usually found in mesic ravines and draws that concentrate the available precipitation by receiving runoff from higher uplands and trapping drifting snow. Some stands may be inundated for brief periods in the spring or after heavy rains but flooding does not persist.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northern Great Plains from the southern Canadian Prairie Provinces of Manitoba and Saskatchewan south through eastern Montana, eastern Wyoming to Nebraska. In the east it extends into central North and South Dakota.
IVC Nations: CA,US
IVC States/Provinces: MB, MT, ND, NE, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002082** ***Fraxinus pennsylvanica - Ulmus americana / Symphoricarpos occidentalis*** **Forest** [Green Ash - American Elm / Western Snowberry Forest] []
  G3G5 (1998-06-22) MB, ND, SD, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G329 Great Plains Bur Oak Forest & Woodland

[ ]

IVC Colloquial Name: Great Plains Bur Oak Forest & Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group is dominated by *Quercus macrocarpa* and is found in upland areas in the northern part of the Great Plains. *Quercus muehlenbergii* can be abundant in the southeastern portion of the group's range. Other species, such as *Tilia americana* (not in the Dakotas), *Populus tremuloides, Juniperus virginiana*, and *Fraxinus* spp., may be present. The herbaceous layer can vary from sparsely to moderately vegetated and is composed of prairie grasses or woodland *Carex* spp. Shrub associates can include *Prunus virginiana, Corylus cornuta, Amelanchier alnifolia*, or *Symphoricarpos* spp. Historically, higher cover of grass species occurred as these stands were more open due to more frequent fires. Few good examples of this group likely remain because of past timber harvesting and heavy grazing. Where it occurs at elevations above 915 m (3000 feet), *Pinus ponderosa* woodlands are probably adjacent. It often occurs as small to large patches on buttes, escarpments, and in foothill zones, usually on northerly-facing slopes. It can also occur in ravines and river valleys, though not where flooding is regular. Farther east it can occur on rolling topography, usually in fire-protected areas.
IVC Dynamics: This group is primarily driven by fire. Fire suppression within this group can lead to more closed canopies and a decrease in the cover of grass species in the understory. Grazing, conversion to agriculture, and past timber harvesting can impact this group. Overgrazing can also lead to a decrease in understory species, and timber harvesting can completely eliminate examples of this group.
IVC Environment: This group is found in upland areas that are protected from fire; sometimes these areas are also more mesic than the surrounding landscape due to receiving run-off from upslope. Often these are valleys or ravines but they can include hillslopes and escarpments. Sites may be in river or stream valleys but are high enough that they are not flooded except in exceptional years. Soils are predominately dry to mesic and can range from sands to loams.

DISTRIBUTION

IVC Geographic Range: This group is found throughout the northern half of the Great Plains from Kansas north and west to the southern Canadian Prairie Provinces and eastern Montana. In Wyoming, it occurs in the Bear Lodge Mountains and around Devils Tower National Monument. In North Dakota, it is most common in locally rough areas such as the Killdeer Mountains, Turtle Mountains, Pembina Hills, etc., and it may occur in the Pine Ridge region of Nebraska.
IVC Nations: CA,US
IVC States/Provinces: KS, MB, MN, MT, ND, NE, OK?, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G2 rank that was calculated from closely related ecological system global ranks. A rank of G2G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert

knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately restricted, area occupied low, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1505 *Quercus macrocarpa* / Mixedgrass Woodland Alliance** [Bur Oak / Mixedgrass Woodland Alliance] []
  This alliance, found in the northern Great Plains, is a mixedgrass savanna and woodland. Scattered and clumped trees are always present, and the tree stratum varies from 10 to 60% cover. *Quercus macrocarpa* is the most common tree while mid grasses and tall grasses dominate the ground layer.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard and K. Kindscher, in Faber-Langendoen et al. (2011)
IVC Description Author: S. Menard and J. Drake
IVC Description Date: 2015-05-07
IVC Acknowledgments:

A1505 Bur Oak / Mixedgrass Woodland Alliance

[ ]
Quercus macrocarpa / Mixedgrass Woodland Alliance
Bur Oak / Mixedgrass Woodland

IVC Scientific Name: *Quercus macrocarpa* / Mixedgrass Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance, found in the northern Great Plains, is a mixedgrass savanna and woodland. Scattered and clumped trees are always present, and the tree stratum varies from 10 to 60% cover. *Quercus macrocarpa* is the most common tree. Mid grasses and tall grasses dominate the ground layer, including *Andropogon gerardii, Carex pensylvanica, Schizachyrium scoparium*, and *Sorghastrum nutans*. Shrubs are present but may be scattered. *Corylus* spp. and *Symphoricarpos occidentalis* are typical shrubs. Stands of this alliance occur on sandy lacustrine and glacial outwash deposits reworked by wind, on shale, and on glacial till. Soils are relatively infertile and excessively well-drained.
IVC Dynamics:
IVC Environment: Stands of this alliance occur on sandy lacustrine and glacial outwash deposits reworked by wind, on shale, and on glacial till. Soils are relatively infertile and excessively well-drained.

DISTRIBUTION

IVC Geographic Range: This alliance is found in South Dakota and North Dakota and in Canada in southern Manitoba.
IVC Nations: CA,US
IVC States/Provinces: MB, ND, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002137 *Quercus macrocarpa / Corylus cornuta* Woodland** [Bur Oak / Beaked Hazelnut Woodland] []
  G2G3 (1998-06-22) ND, SD, SK

- **CEGL002163 *Quercus macrocarpa* / Mixedgrass Loam Wooded Grassland** [Bur Oak / Mixedgrass Loam Wooded Grassland] [] G1Q (1998-06-22) MB, ND
- **CEGL002162 *Quercus macrocarpa* / Mixedgrass Sand Wooded Grassland** [Bur Oak / Mixedgrass Sand Wooded Grassland] [] G1 (2000-03-17) MB, ND, SD

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-01-08
IVC Acknowledgments:

G146 Northeastern Great Plains Aspen Woodland

[ ]

IVC Colloquial Name: Northeastern Great Plains Aspen Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This aspen-oak woodland group is found primarily on part of the Glacial Lake Agassiz plain in northwestern Minnesota, ranging into south-central Manitoba, Canada. Historically this group occurred in the context of a mosaic of tallgrass prairie, brush prairie and wetlands. It is dominated by *Populus tremuloides* with scattered *Quercus macrocarpa* and *Betula papyrifera*. Shrubs such as willows (*Salix* spp.) and hazelnuts (*Corylus* spp.) are also common. The dominant tallgrass species, at least in open, fire maintained sites, is *Andropogon gerardii* often associated with *Sorghastrum nutans, Calamagrostis* spp., and *Sporobolus heterolepis*. Calcareous glacial drift overlain with lacustrine soils ranging from loamy to gravelly is characteristic of the lakeplain within the range of this group. Fire is the most important natural dynamic in this group and helps maintain the open parkland or brush nature of this group. Wind and grazing are also important dynamics. Conversion to agriculture and fire suppression have decreased the range of this group and allowed more shrubs and trees to establish.
IVC Dynamics: This group is primarily fire-maintained. Recurrent fires maintain the open nature of this group. Without common fires, stands may succeed to a more closed woodland or forest and may resemble an aspen forest.
IVC Environment: This group occurs in an ecotone between the semi-arid prairie west and semi-humid forested east on level to rolling terrain. Climate is typically cold and dry. Stands typically occur on coarse-textured outwash to lake-washed glacial till or in sandy lacustrine deposits. Soils vary from sandy clay loam to loamy fine sand and range from somewhat poorly drained to well-drained.

DISTRIBUTION

IVC Geographic Range: This group is found primarily on part of the Glacial Lake Agassiz plain in northwestern Minnesota, ranging into southern Canada and eastern North Dakota.
IVC Nations: CA,US
IVC States/Provinces: MB, MN, ND, NE, ON, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G3 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline moderate to high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3209 *Betula papyrifera - Populus tremuloides - Quercus macrocarpa* Forest Alliance** [Paper Birch - Quaking Aspen - Bur Oak Forest Alliance] []
  This alliance consists of forests along ravines, draws, and intermittent streams and on mesic, protected slopes in the northern half of the central and eastern Great Plains. The canopy is moderately closed to closed and usually dominated by some combination of *Betula papyrifera* and *Populus tremuloides*.
- **A3249 *Populus tremuloides - Populus balsamifera / Corylus americana* Forest Alliance** [Quaking Aspen - Balsam Poplar / American Hazelnut Forest Alliance] []
  This alliance includes mesic and wet forests dominated by *Populus tremuloides* or *Populus balsamifera* in the Aspen Parklands areas of south-central Canada and the north-central U.S. A short to medium-tall shrub layer is nearly always present.
- **A3250 *Populus tremuloides - Quercus macrocarpa / Corylus* spp. Woodland Alliance** [Quaking Aspen - Bur Oak / Hazelnut species Woodland Alliance] []
  This alliance consists of grasslands of limestone slopes and associated seeps of the Edwards Plateau and central Oklahoma where *Muhlenbergia reverchonii* is dominant or codominant. Soils are tight clay soils that are wet in spring.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard, in Faber-Langendoen et al. (2011)
IVC Description Author: S. Menard and D. Faber-Langendoen
IVC Description Date: 2016-01-15
IVC Acknowledgments: Jeff Thorpe, Ken Baldwin, Lorna Allen

A3209 Paper Birch - Quaking Aspen - Bur Oak Forest Alliance

[ ]
Betula papyrifera - Populus tremuloides - Quercus macrocarpa Forest Alliance
Northern Great Plains Birch - Aspen Forest

IVC Scientific Name: *Betula papyrifera - Populus tremuloides - Quercus macrocarpa* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of forests along ravines, draws, and intermittent streams and on mesic, protected slopes in the northern half of the central and eastern Great Plains. Sites are sheltered from fire and receive moisture from runoff and snow accumulation but are not flooded. The canopy is moderately closed to closed and usually dominated by some combination of *Betula papyrifera* and *Populus tremuloides*. Other trees can be present to common, including *Quercus macrocarpa, Fraxinus pennsylvanica*, and *Ulmus americana*. The shrub and herbaceous strata can range from sparse to dense. Herbaceous composition is typically distinct from the nearby prairies.
IVC Dynamics:
IVC Environment: This alliance is found in ravines, valleys, and on slopes protected from fires spreading from nearby prairies. These sites also tend to receive additional moisture in the form of seeps, runoff from higher slopes, or the melting of snow drifts that have accumulated in the sheltered areas.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the north-central and northeastern Great Plains from Nebraska north to near the Canadian border and west to eastern Wyoming and possibly eastern Montana.
IVC Nations: CA,US
IVC States/Provinces: MB, ND, NE, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3249 Quaking Aspen - Balsam Poplar / American Hazelnut Forest Alliance

[ ]
Populus tremuloides - Populus balsamifera / Corylus americana Forest Alliance
Aspen Parklands Forest

IVC Scientific Name: *Populus tremuloides - Populus balsamifera / Corylus americana* Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance includes mesic and wet forests dominated by *Populus tremuloides* or *Populus balsamifera* in the Aspen Parklands areas of south-central Canada and the north-central U.S. A shrub layer is nearly always present. *Corylus americana* is very common. Associated shrubs include *Amelanchier alnifolia, Cornus sericea*, and *Salix* spp. Prairie grasses are uncommon due to the shade cast by the tree and shrub canopies. Stands are found on well-drained to poorly drained soils that remain wet or moist for much of the growing season.
IVC Dynamics: This alliance is maintained by fairly frequent surface fires and periodic stand-replacement fires. In Minnesota, surface fires were estimated to occur every 15 years and stand-replacement fires every 100 years (Minnesota DNR 2005a). These fires prevent later successional trees from becoming common. The harsh winters with occasional low temperatures below -30 to -40 degrees F limit the species that can exist in stands of this alliance, as well.
IVC Environment: Stands in this alliance are found on flat to gently rolling landscapes between the Boreal and Hemi-Boreal forests and the northern prairies of north-central North America. The climate is continental with long cold winters and short warm summers. The average frost-free season is <80 days. In northern Minnesota and southern Manitoba, this alliance occurs on the lakeplain of Glacial Lake Agassiz. Soils there are deep and sandy with organic material accumulated in the upper horizon. The soils are wet in the spring but dry out for some of the growing season.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the southern Canadian Prairie Provinces of Manitoba and Saskatchewan and north-central U.S. in Minnesota and North Dakota. This alliance does not extend into the grasslands of the Great Plains.
IVC Nations: CA,US
IVC States/Provinces: MB, MN, ND, SK
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002097** ***Populus tremuloides - Populus balsamifera / Calamagrostis canadensis - Spartina pectinata*** **Forest** [Quaking Aspen - Balsam Poplar / Bluejoint - Prairie Cordgrass Forest] []
  G3G4 (2000-03-06) MB, MN, ND, SK

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: S. Menard
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A3250 Quaking Aspen - Bur Oak / Hazelnut species Woodland Alliance

[ ]
Populus tremuloides - Quercus macrocarpa / Corylus spp. Woodland Alliance
Aspen Parkland Bur Oak Woodland

IVC Scientific Name: *Populus tremuloides - Quercus macrocarpa / Corylus* spp. Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance includes dry to wet-mesic woodlands dominated by some combination of *Populus tremuloides* and *Quercus macrocarpa*. These stands occur in the Aspen Parklands region of northeastern North Dakota and Minnesota and southern Manitoba. Shrubs are common, particularly *Amelanchier alnifolia, Corylus americana, Corylus cornuta, Cornus foemina, Prunus virginiana, Rosa* spp., and *Rubus* spp. On wetter sites, species include *Betula pumila, Cornus sericea, Salix bebbiana*, and *Spiraea alba*. The herbaceous layer is typically a combination of species found in the prairie (in canopy gaps) and in the forest (under denser canopy).
IVC Dynamics: This alliance is maintained by fairly frequent surface fires and periodic stand-replacement fires. In Minnesota, surface fires were estimated to occur every 15 years and stand-replacement fires every 100 years (Minnesota DNR 2005a). These fires prevent later successional trees from becoming common. The harsh winters with occasional low temperatures below -30 to -40 degrees F limit the species that can exist in stands of this alliance, as well.
IVC Environment: Stands in this alliance are found on flat to gently rolling landscapes between the Boreal and Hemi-Boreal forests and the northern prairies of north-central North America. The climate is continental with long cold winters and short warm summers. The average frost-free season is <80 days. In northern Minnesota and Manitoba, this alliance occurs on the lakeplain of Glacial Lake Agassiz and adjacent moraines. Soils are deep sand or loam with organic material accumulated in the upper horizon. The soils are wet in the spring but dry out for most of the growing season.

DISTRIBUTION

IVC Geographic Range: This alliance is found in southern Manitoba and the north-central U.S. in Minnesota and North Dakota. This alliance does not extend into the grasslands of the Great Plains.
IVC Nations: CA,US
IVC States/Provinces: MB, MN, ND, ON, SK?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005205 *Populus tremuloides / Corylus* spp. / *Andropogon gerardii* Woodland** [Quaking Aspen / Hazelnut species / Big Bluestem Woodland] []
  G4G5 (1997-07-08) MB, MN, ND
- **CEGL002139 *Quercus macrocarpa - Populus tremuloides / Corylus* spp. Woodland** [Bur Oak - Quaking Aspen / Hazelnut species Woodland] []
  G4? (1998-06-22) MB, MN, ND, ON
- **CEGL000556 *Quercus macrocarpa / Corylus americana - Amelanchier alnifolia* Woodland** [Bur Oak / American Hazelnut - Saskatoon Serviceberry Woodland] []
  G3 (1996-02-01) MB?, ND, SK?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake and Bruce Hoagland
IVC Description Author: J. Drake
IVC Description Date: 2014-03-14
IVC Acknowledgments:

G328 Northwestern Great Plains Aspen Woodland

[ ]

IVC Colloquial Name: Northwestern Great Plains Aspen Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This aspen woodland group ranges from the North Dakota/Manitoba border west to central Alberta. It occurs in the northern Great Plains, in the boreal forest-prairie grassland transition region. The climate in this region is mostly subhumid low boreal with short, warm summers and cold, long winters. The physiognomy of the area is distinct woodland patches, in moist protected areas on slopes or depressions. Trees are generally short in stature, reaching mature heights of 15-20 m at the northern edge of the range, but averaging 5-10 m on well-drained sites at the southern limit of tree growth in the prairie grasslands. *Populus tremuloides* dominates this group. Common associates are *Populus balsamifera*, with an understory of tall shrubs and diverse herbs. In some areas, *Picea glauca* also occurs, usually as dense stands on north-facing coulee slopes. *Populus tremuloides* tends to grow in pure stands as distinct copses in the southern part of the range, the size of the clumps becoming more extensive moving north. Some of the common shrubs include *Amelanchier alnifolia, Corylus cornuta, Symphoricarpos albus, Symphoricarpos occidentalis, Prunus virginiana, Prunus pensylvanica, Ribes oxyacanthoides, Rosa acicularis, Rosa woodsii*, and *Salix bebbiana*. Common understory herbs include *Aralia nudicaulis, Actaea rubra, Cornus canadensis, Maianthemum canadense*, and *Maianthemum stellatum*. On poorly drained sites, *Populus tremuloides* may be associated with *Populus balsamifera*, with *Cornus sericea* and *Viburnum opulus* important components of the shrub layer. *Betula papyrifera* becomes more common on the north or on north-facing slopes. These woodland patches are commonly ringed by *Symphoricarpos occidentalis* on the drier side, moving into the adjacent prairie community, or by wetlands, with a ring of *Salix* spp., usually *Salix discolor*, then *Salix petiolaris* at the water's edge. *Quercus macrocarpa* is found sporadically along the Qu'Appelle River valley and its tributaries in Saskatchewan, becoming more common into Manitoba. Common grasses and forbs include *Apocynum androsaemifolium, Aralia nudicaulis, Carex siccata, Carex sprengelii, Elymus trachycaulus, Lathyrus* spp., *Maianthemum stellatum, Maianthemum canadense, Oryzopsis asperifolia, Prosartes trachycarpa, Sanicula marilandica, Schizachne purpurascens, Thalictrum* spp., and *Vicia americana*. Fire and drought constitute the most important dynamics in this group. Much of this region has undulating to hummocky glacial till topography with depressional wetlands (potholes or kettles). Soils under the grasslands are generally Black Chernozems; Dark Grey Chernozems have developed under the woodlands and Gleysols are associated with the wetland patches.

IVC Dynamics: Fire and drought likely played a strong role in preventing the woodlands from expanding into the grasslands. Invasion of aspen into the moister grassland areas has been documented with a reduction in fire frequency. Drought years, however, see the retreat of the woodlands. Much of the area where this group once occurred has been converted to agricultural lands. Currently, forest/woodland groves are often subject to livestock grazing, to which they are less resilient than grasslands. Heavy grazing eliminates the taller shrubs and herbs, and removes the most palatable species. Grazing also causes soil disturbance that fosters invasion by exotic plant species. Heavily grazed *Populus tremuloides* stands are often reduced to a layer of unpalatable low shrubs, such as *Symphoricarpos occidentalis*, and a layer of exotic grass species such as *Bromus inermis* or *Poa pratensis*. Along with overgrazing, conversion to agriculture has significantly decreased the extent and range of natural stands of Great Plains forests and woodlands.

IVC Environment: Climate in the range of this group is mostly subhumid low boreal with short, warm summers and long, cold winters. Undulating to hummocky glacial till predominates this region. The northern boundary of aspen parkland is well-defined by the line north or east of which the presence of conifers produces mixed forest (Zoltai 1975). Although *Picea glauca* stands do occasionally occur in mesic location within the region, they tend to be uncommon and restricted to valley bottoms or north-facing slopes. Hogg (1994) found that the northern boundary of the Aspen Parkland correlates with moisture limitations that may limit conifer regeneration or that may have resulted in a fire regime too frequent to allow conifer regeneration. *Populus tremuloides*, however, can persist under a frequent fire regime due to its ability to regenerate by sprouting from the roots.

DISTRIBUTION

IVC Geographic Range: This group ranges from the boreal-grassland transition region. It arcs north from North Dakota through southwest Manitoba, angling northwest through Saskatchewan into Alberta.
IVC Nations: CA,US
IVC States/Provinces: AB, MB, ND, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G2 rank that was calculated from closely related ecological system global ranks. A rank of G2G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3248 *Betula papyrifera - Populus tremuloides / Corylus cornuta* Woodland Alliance** [Paper Birch - Quaking Aspen / Beaked Hazelnut Woodland Alliance] []
  This alliance consists of *Betula papyrifera*-dominated woodlands in the northwestern Great Plains.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard, in Faber-Langendoen et al. (2011)
IVC Description Author: S. Menard, D. Faber-Langendoen, L. Allen, J. Thorpe, K. Baldwin
IVC Description Date: 2016-01-15
IVC Acknowledgments:

A3248 Paper Birch - Quaking Aspen / Beaked Hazelnut Woodland Alliance

[ ]
Betula papyrifera - Populus tremuloides / Corylus cornuta Woodland Alliance
Aspen Parklands Birch Woodland

IVC Scientific Name: *Betula papyrifera - Populus tremuloides / Corylus cornuta* Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of woodlands in the northwestern Great Plains dominated by *Betula papyrifera*. Other associates include *Populus tremuloides, Quercus macrocarpa*, and, less frequently, *Fraxinus pennsylvanica*. A shrub stratum is nearly always present and often vigorous and dominated by species such as *Corylus* spp., *Prunus virginiana, Amelanchier alnifolia*, and *Symphoricarpos* spp. The herbaceous stratum is dominated by woodland and forest species with few prairie species. Stands can be found on a variety of landscape positions from flat areas to steep slopes, though in the southern part of its range it is limited to steep north-facing slopes.
IVC Dynamics:
IVC Environment: Stands can be found on a variety of landscape positions from flat areas to steep slopes, though in the southern part of its range it is limited to steep north-facing slopes.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northwestern Great Plains and western Aspen Parklands from central North Dakota north to southern Manitoba, southern Saskatchewan, and likely southern Alberta.
IVC Nations: CA,US
IVC States/Provinces: AB?, MB, ND, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002130 *Populus tremuloides / Prunus virginiana* Woodland** [Quaking Aspen / Chokecherry Woodland] []
  This aspen / choke cherry woodland is found in the north-central Great Plains of the United States and Canada and extends west into southwestern Wyoming. G4G5 (1996-10-03) MB, ND, SK, WY
- **CEGL002128 *Betula papyrifera / Corylus cornuta* Woodland** [Paper Birch / Beaked Hazelnut Woodland] []
  G2G3 (1998-06-22) MB, ND, SK

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

1.B.3. Temperate Flooded & Swamp Forest

Temperate Flooded & Swamp Forest is a tree-dominated wetland influenced by minerotrophic groundwater, either on mineral or organic (peat) soil, found in mid-latitudes of the globe.

Macrogroups in Canada:

- **M029 Central Hardwood Floodplain Forest [Forêts feuillues alluviales du Centre]**
  The macrogroup includes hardwood floodplain forests typically dominated by a combination of *Acer negundo, Acer saccharinum, Celtis laevigata, Celtis occidentalis, Fraxinus pennsylvanica, Liquidambar styraciflua, Platanus occidentalis, Populus deltoides*, and/or *Ulmus americana*. It occurs in the central, south-central, and north-central U.S. and extreme southern Ontario and Quebec in Canada.
- **M503 Central Hardwood Swamp Forest [Forêts marécageuses du Centre]**
  This swamp forest vegetation encompasses a variety of seepage, wet flatwood and depression, and lake or pond fringe forests (nonriverine) found in the eastern United States and adjacent Canada, primarily exclusive of the coastal plains, dominated by hardwood trees, including *Acer rubrum var. trilobum, Acer saccharinum, Betula nigra, Fagus grandifolia, Fraxinus pennsylvanica, Liriodendron tulipifera, Liquidambar styraciflua, Nyssa biflora, Nyssa sylvatica, Platanus occidentalis, Quercus alba, Quercus bicolor, Quercus lyrata, Quercus michauxii, Quercus palustris*, and *Quercus phellos*.
- **M504 Laurentian-Acadian Flooded & Swamp Forest [Forêts inondées et marécageuses laurentiennes, acadiennes et de la côte atlantique nord]**
  This swamp forest macrogroup of the northeastern and north-central U.S. and southeastern Canada is characterized by a mixture of deciduous trees (*Acer rubrum, Betula alleghaniensis, Fraxinus nigra, Nyssa sylvatica, Ulmus americana*) and coniferous trees (*Chamaecyparis thyoides, Larix laricina, Picea rubens, Pinus strobus, Thuja occidentalis, Tsuga canadensis*) on organic or mineral soils spanning the pH spectrum from acidic to alkaline.
- **M028 Great Plains Floodplain Forest [Forêts alluviales des Grandes Plaines]**
  These deciduous forests and woodlands, dominated by *Populus deltoides, Fraxinus pennsylvanica*, and other hardwoods, are found along floodplains of permanent rivers in the prairie-dominated landscapes of the western and central Great Plains from southern Canada to northern Texas.
- **M302 Eastern North American Ruderal Flooded & Swamp Forest []**
  This wetland forest macrogroup is found in northeastern and central United States and southeastern Canada where significant disturbance has greatly altered the species composition and physiognomy of the canopy and understory. Sites are typically flooded for two or more weeks during the growing season.
- **M034 Rocky Mountain - Great Basin Montane Riparian & Swamp Forest [Forêts montagnardes, riveraines et marécageuses des Rocheuses et du Grand Bassin]**
  This macrogroup consists of montane riparian and swamp forests and woodlands dominated by cottonwood trees, conifer trees, or a mix with such species as *Acer negundo, Alnus rhombifolia, Picea engelmannii, Picea pungens, Pinus contorta, Pinus ponderosa, Populus angustifolia*, and *Populus balsamifera*. It occurs throughout the Great Basin and Rocky Mountains.
- **M036 Western Arid Lowland Riparian Forest []**
  This macrogroup covers warm and cold climate riparian and wetland forested vegetation of the southwestern deserts and western interior U.S., including the Tamaulipan area of southern Texas. Some of the dominant trees species of this highly diverse macrogroup include *Vachellia farnesiana, Celtis laevigata, Ebenopsis ebano, Juglans major, Platanus racemosa, Platanus wrightii, Populus deltoides ssp. wislizeni, Populus deltoides ssp. monilifera, Populus fremontii, Prosopis glandulosa, Salix laevigata*, and *Salix gooddingii*. This macrogroup also includes oases dominated by evergreen palms *Washingtonia filifera* or *Sabal mexicana*.
- **M035 Vancouverian Flooded & Swamp Forest [Forêts inondées et marécageuses de la région floristique de Vancouver]**
  This macrogroup covers forested wetlands and riparian areas of coastal lowlands and mountains from Oregon north into southern Alaska. It includes cottonwood- and conifer-dominated riparian forests, conifer swamps, and treed peatlands (fens and bogs). Dominant species in lowland riparian areas include *Abies grandis, Acer macrophyllum, Alnus rubra, Fraxinus latifolia, Picea sitchensis, Populus balsamifera ssp. trichocarpa, Salix lucida ssp. lasiandra*, and/or *Thuja plicata*; in montane riparian areas include *Abies amabilis, Abies concolor, Abies magnifica, Pinus contorta var. murrayana, Populus tremuloides*, and/or *Tsuga mertensiana*; and in bogs at a variety of elevations, *Callitropsis nootkatensis, Picea sitchensis, Pinus contorta var. contorta, Tsuga heterophylla*, and *Tsuga mertensiana* are some of the common characteristic tree species.

M029 Central Hardwood Floodplain Forest

Forêts feuillues alluviales du Centre

IVC Colloquial Name: Central Hardwood Floodplain Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup encompasses north-temperate floodplain forests dominated by some combination of *Acer negundo, Acer saccharinum, Celtis laevigata, Celtis occidentalis, Fraxinus pennsylvanica, Liquidambar styraciflua, Platanus occidentalis, Populus deltoides*, and/or *Ulmus americana*. Associated trees include *Acer rubrum, Betula nigra*, and/or *Liriodendron tulipifera*. Common shrubs include *Asimina triloba, Carpinus caroliniana, Cornus amomum*, and *Viburnum* spp. Vines, including *Parthenocissus* spp., *Toxicodendron radicans*, and/or *Vitis* spp., are often abundant. The herb layer in the forested portions often features abundant spring ephemerals, giving way to a fern- or forb-dominated understory in many areas by mid-summer. This macrogroup occurs in eastern North America ranging from central Minnesota south to the Ozarks of Arkansas and Missouri east to New England and southern Canada. Some examples reach as far south as the plains of Alabama to Arkansas. Low-lying areas are underwater each spring; microtopography determines how long the various habitats are inundated. Reservoirs and conversion to agriculture have had a serious and negative effect on this macrogroup. Historically, drought, grazing, and fire influenced this macrogroup.

IVC Geographic Range: This macrogroup is found across a large area of the northeastern, midwestern, and southeastern U.S. and southern Canada. It ranges from southern New England and Canada south and west through Minnesota and Iowa and south to the Interior Low Plateau of Ohio, Indiana, Illinois and Kentucky and the Ozarks of Arkansas and Missouri, and the Crosstimbers of Oklahoma. It extends south into the upper plains from Alabama to Arkansas.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC, DE, GA, IA, IL, IN, KS, KY, LA, MA, MB, MD, ME, MI, MN, MO, MS, NB, NC, ND, NE, NH, NJ, NY, OH, OK, ON, PA, QC, RI, SC, SD, TN, TX, VA, VT, WI, WV

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G673 South Central-Appalachian-Northeast Floodplain Forest []**
- **G652 Midwest Floodplain Forest []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: S. Menard

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G673 South Central-Appalachian-Northeast Floodplain Forest

[ ]

IVC Colloquial Name: South Central-Appalachian-Northeast Floodplain Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Stands of these floodplain forests are dominated by some combination of *Acer saccharinum, Betula nigra, Celtis laevigata, Fraxinus pennsylvanica, Liquidambar styraciflua, Liriodendron tulipifera, Platanus occidentalis*, and *Ulmus americana*. Other species that may be present include *Acer negundo*. This complex and widespread group is found in a broad band in the northeastern and middle parts of the eastern United States from southern New England and the Ontario lakeplains of New York south and west through the Interior Low Plateau of Ohio, Indiana, Illinois and Kentucky to the Ozarks of Arkansas and Missouri.

IVC Dynamics:

IVC Environment: These forests occur on large river floodplains, where they occupy banks and first bottoms of major rivers with nutrient-rich silt loams, sand loams, and sands that are temporarily inundated, annually or less often, in major flood events.

DISTRIBUTION

IVC Geographic Range: This group of floodplain forests is found across a broad band in the northeastern and middle parts of the eastern United States from southern New England and the Ontario lakeplains of New York south and west through Interior Low Plateau of Ohio, Indiana, Illinois and Kentucky to the Ozarks of Arkansas and Missouri, and the Crosstimbers of Oklahoma. Some associations range south into the upper coastal plains from Alabama to Arkansas.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC, DE, GA, IL, IN, KY, LA, MA, MD, ME, MO, MS, NB, NC, NH, NJ, NY, OK, ON, PA, QC, RI, SC, TN, TX, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4473 *Acer saccharinum* - *Populus deltoides* East-Central Floodplain Forest Alliance** [Silver Maple - Eastern Cottonwood East-Central Floodplain Forest Alliance] []
- **A3711 *Acer saccharum* - *Carya cordiformis* Mesic Floodplain Forest Alliance** [Sugar Maple - Bitternut Hickory Mesic Floodplain Forest Alliance] []
  This mesic hardwood floodplain forest alliance is found in the central, primarily unglaciated, midwestern United States. Stands are dominated by a combination of *Acer saccharum, Fagus grandifolia*, or *Carya cordiformis*. Stands occur on fairly mesic level to gently sloping ridges, terraces, natural levees, or higher elevations which border river floodplains or streams.
- **A3699 *Betula nigra* - *Platanus occidentalis* Appalachian-Piedmont Floodplain Forest Alliance** [River Birch - American Sycamore Appalachian-Piedmont Floodplain Forest Alliance] []
  These riverfront floodplain forests of the Alleghany Plateau, Appalachian, and Piedmont regions are dominated by *Betula nigra* and *Platanus occidentalis* with a variety of other canopy species, including *Acer negundo, Acer saccharinum, Celtis laevigata, Liquidambar styraciflua, Liriodendron tulipifera, Populus deltoides*, and *Salix nigra*.
- **A3701 *Platanus occidentalis* - *Fraxinus pennsylvanica* - *Liriodendron tulipifera* Central Appalachian-Piedmont Floodplain Forest Alliance** [American Sycamore - Green Ash - Tuliptree Central Appalachian-Piedmont Floodplain Forest Alliance] []
  These are high-energy floodplain forests of rocky streambeds and alluvial deposits, found in the Appalachian and Piedmont regions, typically dominated by *Fraxinus pennsylvanica* and *Platanus occidentalis* with *Liquidambar styraciflua* and/or *Liriodendron tulipifera*.
- **A3408 *Quercus palustris* - *Quercus bicolor* Floodplain Forest Alliance** [Pin Oak - Swamp White Oak Floodplain Forest Alliance] []
  These floodplain swamp forests are found along smaller rivers in southern New England and the northern Piedmont and are dominated by some combination of *Acer rubrum, Carya cordiformis, Fraxinus americana, Fraxinus pennsylvanica, Nyssa sylvatica, Platanus occidentalis, Quercus bicolor, Quercus palustris*, and *Ulmus americana*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al.
IVC Description Author: M. Pyne
IVC Description Date: 2015-05-19
IVC Acknowledgments:

A4473 Silver Maple - Eastern Cottonwood East-Central Floodplain Forest Alliance

[ ]

Acer saccharinum - Populus deltoides East-Central Floodplain Forest Alliance

Central Appalachian-Northeast Silver Maple Floodplain Forest

IVC Scientific Name: *Acer saccharinum - Populus deltoides* East-Central Floodplain Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: CT, DE, MA, MD?, NH, NJ, NY, PA, QC?, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3711 Sugar Maple - Bitternut Hickory Mesic Floodplain Forest Alliance

[ ]

Acer saccharum - Carya cordiformis Mesic Floodplain Forest Alliance

South-Central Mesic Floodplain Forest

IVC Scientific Name: *Acer saccharum - Carya cordiformis* Mesic Floodplain Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This mesic hardwood floodplain forest alliance is found in the central, primarily unglaciated, United States. Stands are dominated by a combination of *Acer saccharum, Fagus grandifolia*, or *Carya cordiformis*. Stands occur on level to gently sloping ridges, terraces, natural levees, or higher elevations which border river floodplains or streams. Sites often have a ridge-and-swale topography. Mesic moisture conditions are maintained throughout most of the growing season, but some flooding does occur.
IVC Dynamics:
IVC Environment: Stands occur on level to gently sloping ridges, terraces, natural levees, or higher elevations which border river floodplains or streams. Sites often have a ridge-and-swale topography. Mesic moisture conditions are maintained throughout most of the growing season, but some flooding does occur.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the central, primarily unglaciated, midwestern United States.

IVC Nations: CA,US
IVC States/Provinces: AR, IL, IN, KY, MO, OH, ON, TN, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005014 *Fagus grandifolia - Quercus* spp. - *Acer rubrum - Juglans nigra* Floodplain Forest** [American Beech - Oak species - Red Maple - Black Walnut Floodplain Forest] []
  G2G3 (1998-06-22) IN, KY, OH, TN?, WV

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard and D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3699 River Birch - American Sycamore Appalachian-Piedmont Floodplain Forest Alliance

[ ]
Betula nigra - Platanus occidentalis Appalachian-Piedmont Floodplain Forest Alliance
Appalachian-Piedmont River Birch - Sycamore Floodplain Forest

IVC Scientific Name: *Betula nigra - Platanus occidentalis* Appalachian-Piedmont Floodplain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These forests are dominated by *Betula nigra* and *Platanus occidentalis* with a variety of other canopy species, including *Acer negundo, Acer saccharinum, Celtis laevigata, Liquidambar styraciflua, Liriodendron tulipifera, Populus deltoides*, and *Salix nigra*. The subcanopy or tall-shrub strata may include *Cornus florida* and *Carpinus caroliniana*, along with *Acer rubrum, Carya* spp., *Ilex opaca, Prunus serotina*, and *Ulmus alata*. The shrub layer is often sparse with such species as *Asimina triloba, Crataegus marshallii, Crataegus viridis*, and *Lindera benzoin* present. Vines include *Berchemia scandens, Bignonia capreolata, Campsis radicans, Parthenocissus quinquefolia, Toxicodendron radicans*, and *Vitis rotundifolia*. Herbaceous species include *Arundinaria gigantea, Boehmeria cylindrica, Chasmanthium latifolium, Elymus hystrix, Impatiens capensis, Pilea pumila, Podophyllum peltatum*, and *Stellaria pubera*. These forests are found in riverfronts areas from the Alleghany Plateau of Pennsylvania east through the Appalachians of West Virginia and Virginia, south to the Piedmont of the Carolinas and Georgia and north to New York and New Jersey. These riverfronts experience frequent, repeated, natural disturbance in the form of flooding. They occur more frequently on sandy soils than on heavier soils, and their most characteristic location is on levees. The soils are deep and well-drained with low organic matter content and are most commonly of the Orders Inceptisol and Entisol.
IVC Dynamics: These forests occur in areas with frequent, repeated, natural disturbance in the form of flooding. Occurrences may have a rather high percentage of standing dead trees, including remnant snags from earlier successional communities. A layer of sand is often deposited at the surface when streams overflow their banks during flash floods. Little or no clay is present in soils which support stands of this alliance. Flooding is seasonal and/or occasional and shallow, but never prolonged. Most of the short-duration flooding takes place in early spring.
IVC Environment: The riverfront forests in this alliance are usually found on the natural levees of watercourses and are slightly elevated above the flats behind the levee. They are more common along small streams and blackwater streams than along alluvial floodplains, mostly because of the higher sustained flow rates of these larger rivers. The soils are deep, nearly level, well-drained and moderately well-drained on bottomlands along streams. They have low organic matter content, moderate permeability, and moderate to high available water capacity. A layer of sand is often deposited at the surface when streams overflow their banks during flash floods. Little or no clay is present in soils which support stands of this alliance. Flooding is

seasonal and/or occasional and shallow, but never prolonged. Most of the short-duration flooding takes place in early spring. The soils are deep and well-drained with low organic matter content and are most commonly of the Orders Inceptisol and Entisol.

DISTRIBUTION

IVC Geographic Range: This alliance occurs from the Alleghany Plateau of Pennsylvania east through the Appalachians of West Virginia and Virginia, south to the Piedmont of the Carolinas and Georgia and north to New York and New Jersey.
IVC Nations: CA,US
IVC States/Provinces: AL, AR, DC, DE, GA, KY, LA, MD, MS, NC, NJ, NY, PA, SC, TN, TX, VA, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M. Pyne, in Faber-Langendoen et al. (2013)
IVC Description Author: M. Pyne
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3701 American Sycamore - Green Ash - Tuliptree Central Appalachian-Piedmont Floodplain Forest Alliance

[ ]

Platanus occidentalis - Fraxinus pennsylvanica - Liriodendron tulipifera Central Appalachian-Piedmont Floodplain Forest Alliance
Central Appalachian-Piedmont Sycamore - Green Ash - Tuliptree Floodplain Forest

IVC Scientific Name: *Platanus occidentalis - Fraxinus pennsylvanica - Liriodendron tulipifera* Central Appalachian-Piedmont Floodplain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Stands are typically dominated by *Fraxinus pennsylvanica* and *Platanus occidentalis* with *Liquidambar styraciflua* and/or *Liriodendron tulipifera*. Other canopy and understory species that may be present include *Acer rubrum, Aesculus sylvatica* (within its range), *Alnus serrulata, Asimina triloba, Carpinus caroliniana, Cornus florida, Fagus grandifolia, Fraxinus americana*, and *Ulmus americana*, in the non-montane part of the distribution. Species present in the montane occurrences include *Betula alleghaniensis, Betula lenta, Liriodendron tulipifera*, and *Platanus occidentalis*, with *Betula nigra, Carpinus caroliniana, Fraxinus americana, Hamamelis virginiana, Liquidambar styraciflua, Pinus strobus, Pinus virginiana*, and *Tsuga canadensis*. *Euonymus americanus* is a typical shrub species in the lower elevation occurrences, while *Leucothoe fontanesiana* and *Rhododendron maximum* are common at higher elevations. These are high-energy floodplain forests of the Appalachian and Piedmont regions from Massachusetts, New York, and Connecticut south to Tennessee and Georgia. They typically occur on rocky streambeds and alluvial deposits of relatively high-gradient rivers.
IVC Dynamics:
IVC Environment: These are high-energy floodplain forests of rocky streambeds and alluvial deposits.

DISTRIBUTION

IVC Geographic Range: Stands of this alliance are found in the Appalachian and Piedmont regions from Massachusetts, New York, and Connecticut south to Tennessee and Georgia.
IVC Nations: CA,US
IVC States/Provinces: CT, DC, DE, KY, MA, MD, ME, NB, NH, NJ, NY, ON, PA, QC?, RI, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006114 *Acer saccharum - Fraxinus* spp. - *Tilia americana / Matteuccia struthiopteris - Ageratina altissima* Floodplain Forest** [Sugar Maple - Ash species - American Basswood / Ostrich Fern - White Snakeroot Floodplain Forest] []
  GNR. CT, MA, MD, ME, NB, NH, NY, ON, PA, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M. Pyne, in Faber-Langendoen et al. (2013)
IVC Description Author: M. Pyne
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3408 Pin Oak - Swamp White Oak Floodplain Forest Alliance

[ ]
Quercus palustris - Quercus bicolor Floodplain Forest Alliance
Central Appalachian-Northeast Pin Oak Floodplain Forest

IVC Scientific Name: *Quercus palustris - Quercus bicolor* Floodplain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This floodplain forest occurs along smaller rivers in southern New England and the northern Piedmont. The setting can range from high terraces to any broad flat area with diffuse or braided drainage. The canopies of examples in New England and the northern Piedmont contain *Fraxinus pennsylvanica, Quercus palustris*, and *Ulmus americana*, with *Acer rubrum* and occasionally with *Quercus bicolor*. In addition, *Carya cordiformis, Fraxinus americana, Fraxinus nigra, Nyssa sylvatica*, and/or *Platanus occidentalis* may be present.
IVC Dynamics:
IVC Environment: The environment of this forest type includes alluvial deposits in the floodplains and terraces of small rivers. Flooding occurs during local events, especially during winter months. These areas can be seasonally, temporarily or intermittently flooded, often with networks of small drainages and pools throughout. Many of these areas were previously used as pasture.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northeastern U.S., in the northern Piedmont and southern New England, as well as in Quebec, Canada.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, MD, NH, NJ, NY, PA, QC, RI, VA, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006386 *Quercus bicolor - Acer rubrum / Carpinus caroliniana* Wet Forest** [Swamp White Oak - Red Maple / American Hornbeam Wet Forest] []
  GNR. MA, NH, NJ, NY, QC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M. Pyne, in Faber-Langendoen et al. (2013)
IVC Description Author: S. Menard and M. Pyne
IVC Description Date: 2018-12-20
IVC Acknowledgments: We have incorporated information compiled by D.J. Allard and D. Faber-Langendoen.

G652 Midwest Floodplain Forest

[ ]

IVC Colloquial Name: Midwest Floodplain Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group includes floodplain forests in the central United States and into southern Ontario, Canada. Stands are dominated by broad-leaved deciduous trees with a closed to moderately open canopy. Typical dominants include a combination of *Acer rubrum, Acer saccharinum, Acer saccharum, Fraxinus pennsylvanica, Platanus occidentalis, Populus deltoides*, and *Quercus macrocarpa*. This group occurs on sloping ridges, terraces, natural levees, or higher elevations that border rivers or streams. Examples occur on well-drained to poorly drained alluvial soils ranging from sands to clay. Sites are infrequently to frequently flooded.
IVC Dynamics: Flooding ranges from infrequent, short-duration to frequently flooded or saturated for a significant portion of the growing season. In some examples, water may be ponded for most of the year in shallow depressions. Riparian vegetation is constantly impacted in areas subjected to higher rates of flooding. Forests are early-, mid- or late-seral, depending on the age class of the trees and the associated species of the stand. Over time, a healthy riparian area can support all stages of development. Many examples of this group have been impacted by excessive browsing, grazing, and agricultural conversion.
IVC Environment: Stands of this group can occur on level to gently sloping ridges, terraces, natural levees, on newly formed sand bars, front-land ridges, low streambanks, overflow areas, and well-drained flats or higher elevations which border river floodplains or streams. They have level or nearly level soils that formed in water-deposited sandy, clayey or loamy sediments on floodplains of the rivers and streams. These soils are well-drained to poorly-drained.

DISTRIBUTION

IVC Geographic Range: This group occurs across the central U.S., from north-central Minnesota to central Missouri and eastward to western Ohio and extreme southern Ontario. Distribution in the Western Allegheny Plateau is uncertain.
IVC Nations: CA,US
IVC States/Provinces: AL, AR, GA, IA, IL, IN, KS, KY, MB, MI, MN, MO, MS, ND, NE, NY?, OH, OK, ON, PA, QC, SD, TN, VA, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G2 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline moderate to high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3708 *Acer rubrum* - *Fraxinus pennsylvanica* Floodplain Forest Alliance** [Red Maple - Green Ash Floodplain Forest Alliance] []
  This floodplain forest alliance is widely distributed in the central and eastern United States and may occur in southern Ontario and southern Quebec, Canada. *Acer rubrum* and *Fraxinus pennsylvanica* are consistently abundant overstory species, but *Quercus bicolor, Ulmus americana*, and *Celtis occidentalis* occur frequently.
- **A4472 *Acer saccharinum* - *Populus deltoides* Midwest Floodplain Forest Alliance** [Silver Maple - Eastern Cottonwood Midwest Floodplain Forest Alliance] []
- **A3713 *Fraxinus pennsylvanica* - *Tilia americana* - *Quercus* spp. Mesic Floodplain Alliance** [Green Ash - American Basswood - Oak species Mesic Floodplain Alliance] []
  This bur oak - hardwoods bottomland forest alliance occurs in the central midwestern United States and possibly southern Ontario, Canada. The tree canopy contains *Quercus macrocarpa, Quercus bicolor*, and *Carya laciniosa*.
- **A3712 *Platanus occidentalis* - *Betula nigra* Floodplain Forest Alliance** [American Sycamore - River Birch Floodplain Forest Alliance] []
  This sycamore - river birch floodplain forest alliance occurs along riverfronts in calcareous areas of the central midwestern United States and southern Ontario. Stands are dominated by *Platanus occidentalis* or *Betula nigra* with a mixture of other species, including *Acer negundo, Acer saccharinum, Fraxinus americana, Fraxinus pennsylvanica, Juglans nigra, Ulmus americana*, and *Ulmus rubra*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al.
IVC Description Author: D. Faber-Langendoen and S.E. Menard
IVC Description Date: 2015-05-19
IVC Acknowledgments:

A3708 Red Maple - Green Ash Floodplain Forest Alliance

[ ]
Acer rubrum - Fraxinus pennsylvanica Floodplain Forest Alliance
Midwest Red Maple - Green Ash Floodplain Forest

IVC Scientific Name: *Acer rubrum - Fraxinus pennsylvanica* Floodplain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is widely distributed in the central and eastern United States and may occur in southern Ontario and southern Quebec, Canada. Stands are dominated by broad-leaved deciduous trees and have well-developed shrub and herbaceous strata. *Acer rubrum* and *Fraxinus pennsylvanica* are consistently abundant overstory species, but *Quercus bicolor, Ulmus americana*, and *Celtis occidentalis* occur frequently. Sites which support stands of this alliance have level or nearly level soils that formed in water-deposited clayey or loamy sediments on floodplains of the rivers and streams. These soils are flooded or saturated for a significant portion of the growing season, and water may be ponded for most of the year in shallow depressions.
IVC Dynamics:
IVC Environment: Sites which support stands of this alliance have level or nearly level soils that formed in water-deposited clayey or loamy sediments on floodplains of the rivers and streams. These soils are flooded or saturated for a significant portion of the growing season, and water may be ponded for most of the year in shallow depressions.

DISTRIBUTION

IVC Geographic Range: This alliance is found within the central and north-central Midwest, and possibly southern Ontario and southern Quebec, Canada.
IVC Nations: CA,US
IVC States/Provinces: IA, IL, IN, KS, MB, MI, MN, ND, NE, OH, ON, QC, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002014 *Fraxinus pennsylvanica* - *Ulmus* spp. - *Celtis occidentalis* Floodplain Forest** [Green Ash - Elm species - Common Hackberry Floodplain Forest] []
  G3G5 (1998-06-22) IA, IL, IN, KS, MI, NE, OH, ON
- **CEGL002469 *Fraxinus pennsylvanica* / Mixed Herbs Floodplain Forest** [Green Ash / Mixed Herbs Floodplain Forest] []
  GNR. MB

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A4472 Silver Maple - Eastern Cottonwood Midwest Floodplain Forest Alliance

[ ]
Acer saccharinum - *Populus deltoides* Midwest Floodplain Forest Alliance
Midwest Silver Maple Floodplain Forest

IVC Scientific Name: *Acer saccharinum* - *Populus deltoides* Midwest Floodplain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AR, IA, IL, IN, KS, KY, MI, MN, MO, NE, NY?, OH, OK, ON, PA, SD, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002103 *Salix nigra* Central Floodplain Forest** [Black Willow Central Floodplain Forest] []
  G4 (2002-10-15) IA, IL?, IN?, KY, OH, OK, ON?, WV

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author:
IVC Description Date:

IVC Acknowledgments:

A3713 Green Ash - American Basswood - Oak species Mesic Floodplain Alliance

[ ]

Fraxinus pennsylvanica - Tilia americana - Quercus spp. Mesic Floodplain Alliance

Midwest Mesic Floodplain Forest

IVC Scientific Name: *Fraxinus pennsylvanica - Tilia americana - Quercus* spp. Mesic Floodplain Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This bur oak - swamp white oak hardwoods bottomland forest alliance occurs in the central midwestern United States and possibly southern Ontario, Canada. The tree canopy may be closed to moderately open. The dominant tree species include *Quercus macrocarpa* and *Quercus bicolor*. *Carya laciniosa* is often found in stands of this alliance, along with species such as *Fraxinus pennsylvanica, Quercus shumardii, Carya illinoinensis, Populus deltoides*, and *Ulmus americana*. Understory species include *Boehmeria cylindrica, Carex* spp., *Cinna* spp., *Leersia* spp., *Toxicodendron radicans*, and *Uvularia sessilifolia*. Stands of this alliance are found on slackwater deposits with moderately well-drained to poorly drained soils. In Kentucky, the dominant tree species are indicators of less acidic soils with a higher base status.

IVC Dynamics:

IVC Environment: Stands of this alliance are found on slackwater deposits with moderately well-drained to poorly drained soils.

DISTRIBUTION

IVC Geographic Range: This alliance ranges across the central midwestern U.S. from Oklahoma and Missouri east to Ohio and Kentucky, and northwest to southeast Minnesota.

IVC Nations: CA,US

IVC States/Provinces: IL, IN, KY, MN, MO, ND, OH, OK, ON, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002098 *Quercus macrocarpa - Quercus bicolor - Carya laciniosa / Leersia* spp. - *Cinna* spp. Floodplain Forest** [Bur Oak - Swamp White Oak - Shellbark Hickory / Cutgrass species - Woodreed species Floodplain Forest] []
  G2G3 (2007-02-06) IL, IN, KY, MN, MO, OH, ON, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: S. Menard and D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A3712 American Sycamore - River Birch Floodplain Forest Alliance

[ ]

Platanus occidentalis - Betula nigra Floodplain Forest Alliance

Midwest Sycamore - River Birch Floodplain Forest

IVC Scientific Name: *Platanus occidentalis - Betula nigra* Floodplain Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This sycamore - river birch floodplain forest alliance occurs along riverfronts in calcareous areas of the central midwestern United States and southern Ontario, Canada, but its overall distribution is uncertain. It also includes forests along small streams. These floodplain forests vary from small-statured (5-15 m tall) stands to taller (15-25 m) mature stands. Stands are dominated by *Platanus occidentalis* or *Betula nigra* with a mixture of other species, including *Acer negundo, Acer saccharinum, Fraxinus americana, Fraxinus pennsylvanica, Juglans nigra, Ulmus americana*, and *Ulmus rubra*.

IVC Dynamics: Occurrences may have a rather high percentage of standing dead trees, including remnant snags from earlier successional communities. A layer of sand is often deposited at the surface when streams overflow their banks during flash floods. Little or no clay is present in soils which support stands of this alliance. Flooding is seasonal and/or occasional and shallow, but never prolonged. Most of the short-duration flooding takes place in early spring.

IVC Environment: Stands of this alliance usually are found on the natural levees of watercourses and, therefore, are slightly elevated from the flats behind the levee. They are more common along small streams and blackwater streams than along alluvial floodplains, mostly because of the higher sustained flow rates of these larger rivers. The soils are deep, nearly level, well-drained, and moderately well-drained on bottomlands along streams. They have low organic matter content, moderate permeability, and moderate to high available water capacity. A layer of sand is often deposited at the surface when streams overflow their banks during flash floods. Little or no clay is present in soils which support stands of this alliance. Flooding is seasonal and/or occasional and shallow, but never prolonged. Most of the short-duration flooding takes place in early spring.

DISTRIBUTION

IVC Geographic Range: This sycamore - river birch floodplain forest alliance occurs along riverfronts in the central midwestern United States and southern Ontario, Canada.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, GA, IA, IL, IN, KY, MO, MS, OH, OK, ON?, PA, TN, VA, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002086 *Betula nigra - Platanus occidentalis* Floodplain Forest** [River Birch - American Sycamore Floodplain Forest] []
  G5 (1998-06-22) AR, IA, IL, IN, KY, MO, OH, OK, ON?, TN?, WV

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: S. Menard and D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

M503 Central Hardwood Swamp Forest

Forêts marécageuses du Centre

IVC Colloquial Name: Central Hardwood Swamp Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: These swamp forests include seepage, wet flatwood and depression, and lake or pond fringe forests (i.e., not associated with overbank flow from stream or river channels) found in the eastern United States and adjacent Canada, primarily exclusive of the coastal plains. Stands are dominated by hardwood trees, including *Acer rubrum var. trilobum, Acer saccharinum, Betula nigra, Fagus grandifolia, Fraxinus pennsylvanica, Liriodendron tulipifera, Liquidambar styraciflua, Nyssa biflora, Nyssa sylvatica, Platanus occidentalis, Quercus alba, Quercus bicolor, Quercus lyrata, Quercus michauxii, Quercus palustris*, and *Quercus phellos*. The collective range includes the northern glaciated midwestern United States ranging east into Lower New England, south into most of the south-central states, including the broad Appalachian region, the unglaciated Interior Low Plateau, and the Ouachitas and Ozarks. Examples of Central Interior-Appalachian Seepage Swamp Group (G044) generally occur where the substrate is saturated to the surface for extended periods during the growing season, but where surface water is seldom present for more than short periods of time. This includes streamhead swales or broad sandstone ridges where soils are sandy and saturated due to a combination of perched water table and seepage flow, as well as seepage-fed wetlands on gentle slopes, with substantial seepage flow which may be influenced by wildland fire, and along the bottom slopes of smaller valleys, as well as in the upper riparian zones of larger creeks, sometimes extending upslope along small ephemeral drainages. Examples of South-Central Flatwoods & Pond Forest Group (G654) are found in ponds, wet depressions, flats along small streams, and other related environments. Examples of Central Interior-Appalachian Flatwoods & Swamp Forest Group (G597) are found in ponds and depressions, and include various kinds of flatwoods (where soils often contain an impermeable clay layer or fragipan creating a shallow, perched water table, soils are poorly drained to very poorly drained, and surface water may be present for extended periods of time, rarely becoming dry).

IVC Geographic Range: The collective range includes the northern glaciated midwestern United States and adjacent Canada, ranging east into Lower New England, south into most of the south-central states, including the broad Appalachian region, including the Piedmont, from Alabama to Kentucky, and the Ouachitas and Ozarks of Arkansas and Oklahoma.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC, DE, GA, IA, IL, IN, KY, LB, MA, MD, ME, MI, MN, MO, MS, NB, NC, NH, NJ, NS, NY, OH, OK, ON, PA, QC, RI, SC, TN, VA, VT, WI, WV

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G902 Central Appalachian-Northeast Acidic Swamp []**
- **G918 Central Appalachian-Northeast Alkaline Swamp []**
- **G917 Central Interior-Great Lakes Flatwoods & Swamp Forest []**
- **G667 Northeastern Forest Vernal Pool []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2014)

IVC Description Author: M. Pyne

IVC Description Date: 2014-10-15

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by S. Menard and S. Gawler.

G902 Central Appalachian-Northeast Acidic Swamp

[ ]

IVC Colloquial Name: Central Appalachian-Northeast Acidic Swamp

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance contains swamp forests in which *Fraxinus pennsylvanica* and *Nyssa sylvatica* are characteristic, and *Acer rubrum* is nearly always present. Canopy composition differs sharply from the surrounding upland and varies with geography. Other canopy species across the range of this alliance include *Betula lenta, Fraxinus americana, Liquidambar styraciflua, Liriodendron tulipifera, Quercus bicolor, Quercus palustris, Ulmus americana*, and *Ulmus rubra*. Understory and shrub species include *Acer pensylvanicum, Alnus serrulata, Carpinus caroliniana, Cornus* spp., *Ilex verticillata, Lindera benzoin, Rhododendron maximum, Vaccinium corymbosum,* and *Viburnum nudum* var. *cassinoides*. Characteristic herbaceous species in hardwood stands are *Boehmeria cylindrica, Carex* spp., *Glyceria* spp., *Impatiens capensis, Juncus* spp., *Laportea canadensis, Leersia* spp., *Osmunda* spp., *Pilea* spp., *Symplocarpus foetidus*, and *Thelypteris palustris*. Hemlock-hardwood stands contain *Coptis trifolia, Cornus canadensis, Glyceria melicaria, Lycopodium obscurum, Maianthemum canadense, Onoclea sensibilis, Osmunda regalis* var. *spectabilis. Vitis* spp. are characteristic vines of stands of this alliance, but *Toxicodendron radicans* and, to the south, *Campsis radicans* are also prominent. *Sphagnum* spp. and other bryophytes are often abundant. Typical habitats include forested seeps on hillsides or along watercourses, edges and backswamps of floodplains that may be saturated by seepage from adjacent slopes, and other poorly drained depressions. Flooding occurs during the winter and spring and often extends into the growing season. Surface water is superficial, but the substrate is saturated to the surface by groundwater for extended periods during the growing season, or water may be ponded for most of the year. Soils supporting this alliance range from moderately acidic to moderately basic. The substrate is generally muck rather than peat, overlying mineral soils.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range: This group occurs in the Central Appalachian and Northeast United States, from North Carolina to central New England.

IVC Nations: CA,US

IVC States/Provinces: CT, DC, DE, GA, KY, MA, MD, ME, NC, NH, NJ, NY, OH, PA, RI, SC, TN, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G2 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, long-term decline moderate, and threats moderate to high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4460 *Acer rubrum* - *Nyssa sylvatica* Acidic Swamp Forest Alliance** [Red Maple - Blackgum Acidic Swamp Forest Alliance] []
  This alliance contains swamp forests of poorly drained acidic flats, watercourses, seepage areas, and backswamps of floodplains in the Central Appalachian, Allegheny, and Lower New England regions. *Nyssa sylvatica* is characteristic, and *Acer rubrum* is nearly always present. The substrate is generally muck rather than peat, overlying mineral soils.
- **A3416 *Betula alleghaniensis* - *Tsuga canadensis* Swamp Forest Alliance** [Yellow Birch - Eastern Hemlock Swamp Forest Alliance] []
  This alliance includes swamp forests of the Central Appalachian - Allegheny and New England regions, often dominated by *Tsuga canadensis, Betula alleghaniensis*, and *Acer rubrum*, with closed to open canopies and an open to dense shrub layer, interspersed with small *Sphagnum* - herb-dominated depressions. Forests in this alliance are typically at elevations below 1200 m (4000 feet), in poorly drained bottomlands, generally with visible microtopography of ridges and sloughs or depressions. They often occur near streams and are undoubtedly occasionally flooded.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments: L. Sneddon

A4460 Red Maple - Blackgum Acidic Swamp Forest Alliance

[ ]
Acer rubrum - Nyssa sylvatica Acidic Swamp Forest Alliance
Central Appalachian-Northeast Red Maple - Blackgum Acidic Swamp

IVC Scientific Name: *Acer rubrum - Nyssa sylvatica* Acidic Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance contains swamp forests of poorly drained acidic flats, watercourses, seepage areas, and backswamps of floodplains in the Central Appalachian, Allegheny, and Lower New England regions. *Nyssa sylvatica* is characteristic, and *Acer rubrum* is nearly always present. The substrate is generally muck, rather than peat, overlying mineral soils.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance contains acidic swamp forests in the Central Appalachian, Allegheny, and Lower New England regions.
IVC Nations: CA,US
IVC States/Provinces: CT, KY, MA, MD, ME, NH, NJ, NY, PA, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL006220 *Acer rubrum / Ilex mucronata - Vaccinium corymbosum* Swamp Forest** [Red Maple / Catberry - Highbush Blueberry Swamp Forest] []
  G4G5 (2006-06-20) MA?, ME?, NH, NJ, NY, PA, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen and L. Sneddon
IVC Description Date:
IVC Acknowledgments:

A3416 Yellow Birch - Eastern Hemlock Swamp Forest Alliance

[ ]
Betula alleghaniensis - Tsuga canadensis Swamp Forest Alliance
Central Appalachian-Northeast Hemlock - Hardwood Acidic Swamp Forest

IVC Scientific Name: *Betula alleghaniensis - Tsuga canadensis* Swamp Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes swamp forests of the Central Appalachian - Allegheny and New England regions. Stands are often dominated by *Tsuga canadensis, Betula alleghaniensis*, and *Acer rubrum*, with closed to open canopies and an open to dense shrub layer, interspersed with small *Sphagnum* - herb-dominated depressions. Canopies are composed of various mixtures of evergreen and deciduous species. Minor canopy associates include *Acer rubrum, Fraxinus americana, Fraxinus pennsylvanica, Pinus strobus*, and *Nyssa sylvatica*; *Liriodendron tulipifera* may be a component at the southern limit, while *Picea rubens* may occur as scattered individuals in the north. Shrubs include *Acer pensylvanicum, Alnus incana ssp. rugosa, Hamamelis virginiana, Ilex montana, Ilex verticillata, Kalmia latifolia, Lindera benzoin, Ilex mucronata, Rhododendron maximum, Vaccinium corymbosum, Viburnum lantanoides*, and *Viburnum nudum var. cassinoides*. Herbs in the forested areas include *Coptis trifolia, Cornus canadensis, Glyceria melicaria, Lycopodium obscurum, Maianthemum canadense, Onoclea sensibilis, Osmunda regalis var. spectabilis*, and *Thelypteris noveboracensis*. Soils of this alliance vary from saturated muck to imperfectly drained mineral soils and are often acidic. Communities in this alliance occur in upland valleys created by bedrock depressions, on lower slopes, or adjacent to streams and lakes.

IVC Dynamics: In the south, defoliation by the hemlock woolly adelgid (*Adelges tsugae*) has resulted in 90-100% hemlock mortality, and the virtual elimination of the hemlock component of these swamps. This near-complete removal of *Tsuga canadensis* from the canopy has led to the release of massive numbers of shrub and birch seedlings in the understory. Tip-up mounds are often created by uprooted trees.

IVC Environment: Communities in this alliance occur in upland valleys created by bedrock depressions, on lower slopes, or adjacent to streams and lakes. In some cases they are transitional between wetland and upland vegetation. Microtopography is sometimes characterized by mounds and depressions caused by uprooted trees. Soils of this alliance vary from saturated muck to imperfectly drained mineral soils (Kotar et al. 1988) and are often acidic. In the south, sites are usually located in high-elevation valleys or slope concavities, in diffuse stream headwaters and lateral, groundwater-saturated flats along larger streams. Occasionally, stands occupy gentle depressions or basins influenced by seasonally perched groundwater but without flowing streams. Elevation ranges from 670-1200 m (2200-4000 feet), though most occurrences are above 900 m (3000 feet).

DISTRIBUTION

IVC Geographic Range: This alliance ranges from the Northern Blue Ridge and Ridge and Valley provinces of Virginia, the high Allegheny Mountains of Virginia and West Virginia, the Maryland Blue Ridge, and the Ridge and Valley of east-central West Virginia, ranging north to the mid-Atlantic and New England states and perhaps into southeastern Canada.

IVC Nations: CA,US

IVC States/Provinces: CT, GA, KY, MA, MD, ME, NC, NH, NJ, NY, OH, PA, RI, SC, TN, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006226 *Tsuga canadensis - Betula alleghaniensis / Ilex verticillata / Sphagnum* spp. Swamp Forest** [Eastern Hemlock - Yellow Birch / Common Winterberry / Peatmoss species Swamp Forest] []
  G5 (1997-12-01) CT, MA, ME, NH, NJ, NY, PA, RI, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: L. Sneddon et al. (1996) and Midwestern Ecology Group

IVC Description Author: L. Sneddon

IVC Description Date: 2014-01-08

IVC Acknowledgments:

G918 Central Appalachian-Northeast Alkaline Swamp

[ ]

IVC Colloquial Name: Central Appalachian-Northeast Alkaline Swamp
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group contains swamp forests of poorly drained flats, watercourses, seepage areas, and backswamps of floodplains in the Central Appalachian and Northeast region of the United States and adjacent Canada. *Acer rubrum* and *Fraxinus nigra* are typical and *Quercus bicolor* is particularly diagnostic. Other canopy species across the range of this alliance include *Betula lenta, Fraxinus americana, Liquidambar styraciflua, Liriodendron tulipifera, Quercus palustris, Ulmus americana*, and *Ulmus rubra*. Understory and shrub species include *Alnus serrulata, Carpinus caroliniana, Cornus* spp., *Ilex verticillata, Lindera benzoin*, and *Vaccinium corymbosum*; *Ilex mucronata* often occurs in the northern portion of the range. Typical habitats include forested seeps on hillsides or along watercourses, edges and backswamps of floodplains that may be saturated by seepage from adjacent slopes, and other poorly drained depressions. Flooding occurs during the winter and spring and often extends into the growing season. Surface water is superficial, but the substrate is saturated to the surface by groundwater for extended periods during the growing season, or water may be ponded for most of the year. The substrate is generally muck rather than peat, overlying mineral soils.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range: This group is found in the Central Appalachian and Northeast region of the United States and adjacent Canada, ranging from North Carolina to central New England and southern Ontario, Canada.

IVC Nations: CA,US

IVC States/Provinces: CT, DC, DE, IA?, IL, IN, KY, MA, MD, ME, MI, MN, NH, NJ, NY, OH, ON, PA, QC, RI, VA, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G3 rank that was calculated from closely related ecological system global ranks. A rank of G3G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4461 *Acer rubrum* - *Fraxinus pennsylvanica* Northeast Alkaline Swamp Forest Alliance** [Red Maple - Green Ash Northeast Alkaline Swamp Forest Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author: D. Faber-Langendoen, M. Pyne, and S. Menard.

IVC Description Date:

IVC Acknowledgments:

A4461 Red Maple - Green Ash Northeast Alkaline Swamp Forest Alliance

[ ]

Acer rubrum - Fraxinus pennsylvanica Northeast Alkaline Swamp Forest Alliance

Central Appalachian-Northeast Red Maple - Green Ash Alkaline Swamp

IVC Scientific Name: *Acer rubrum - Fraxinus pennsylvanica* Northeast Alkaline Swamp Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: CT, DC, DE, IN, KY, MA, MD, ME, NH, NJ, NY, OH, ON, PA, QC, RI, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G917 Central Interior-Great Lakes Flatwoods & Swamp Forest

[ ]

IVC Colloquial Name: Central Interior-Great Lakes Flatwoods & Swamp Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This wooded wetland vegetation group encompasses various primarily non-alluvial wetlands of the central to east-central United States. It is a diverse group, containing types associated with ponds and depressions, as well as various kinds of flatwoods. Ponded examples vary from open water to herb-, shrub-, or tree-dominated. The vegetation may be zoned, with an outer ring of trees, a more interior ring of shrubs, herbs, and vines, and possibly a deeper central area with or without standing water year-round depending on precipitation. *Quercus* species, including *Quercus bicolor* and *Quercus palustris*, dominate the canopy in many examples of this group. In addition, *Acer rubrum, Acer saccharinum, Fraxinus pennsylvanica, Nyssa* spp., *Platanus occidentalis, Ulmus americana*, or a combination of these, may dominate. *Cephalanthus occidentalis* is a typical shrub component in areas with a longer hydroperiod. The herbaceous layer is widely variable depending on geography and hydroperiod. In flatwoods examples, across the upper Midwest and Lower New England, *Quercus bicolor* and/or *Quercus palustris* are the common oak species. South of the glaciated Midwest (e.g., in the Ozarks), *Quercus stellata* is more common. Drier examples of flatwoods across the range of this group may have *Acer rubrum, Fagus grandifolia, Nyssa sylvatica, Quercus alba, Quercus rubra*, and *Quercus velutina*. Understory shrub and herbaceous species vary with moisture level and canopy density. Flooding, drought, and fire can impact examples of this vegetation. Fire is particularly important in flatwoods examples found in the south-central United States.
IVC Dynamics: The dynamics of water levels are the most important factor in these communities, differentiating them from the surrounding uplands and differentiating the various alliances and associations within the group. Most depressions and basins have a very limited watershed area, so water comes largely from rainfall. Variation in rainfall patterns will drive variation in duration of flooding, though most basins have an outlet that ultimately limits water depth. Fire is presumably naturally rare in these systems. Though they would naturally be exposed to fires in the surrounding uplands, standing water and lack of

continuous fuel would limit fires to the edges of ponds, with greater influence in flatwoods. The migration of amphibians is presumably important as a dynamic process, as they concentrate in these areas for breeding. Ecosystem dynamics may be strongly affected by the suitability of surrounding uplands for amphibian adult habitat. Flooding and periodic drought can influence flatwoods examples; invasive shrubs are a problem in some areas. Very few flatwoods examples remain as almost all have been drained, tiled, and converted to agriculture.

IVC Environment: *Soil/substrate/hydrology:* Soils are poorly drained to very poorly drained, and have a dense clay hardpan or some other impermeable clay layer or fragipan that limits internal drainage and can create a shallow, perched water table. Some soils may be deep (100 cm or more), consisting of peat or muck, with parent material of peat, muck, or alluvium. Rainwater accumulates in the basins and persists through the wet season, occasionally persisting all year. Some examples become dry, with drought possible during the summer and autumn months. These fluctuating moisture levels can lead to complexes of forest upland and wetland species occurring within this group, particularly in flatwoods. Only a few kinds of rock are known to form these depressions.

DISTRIBUTION

IVC Geographic Range: This diverse group of wooded wetland vegetation types encompasses primarily non-alluvial wetlands of the glaciated central to east-central United States and adjacent Canada.

IVC Nations: CA,US

IVC States/Provinces: AR, IA, IL, IN, KY, MI, MN, MO, NY, OH, ON, PA, QC?, TN?, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G2 rank that was calculated from component association global ranks, and a G1 rank that was calculated from closely related ecological system global ranks. A rank of G2 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range relatively restricted, long-term decline high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3881 *Acer rubrum* - *Fraxinus* spp. - *Quercus bicolor* Swamp Forest Alliance** [Red Maple - Ash species - Swamp White Oak Swamp Forest Alliance] []
  This swamp forest is found in shallow depressions or seepage areas in the north-central (Midwest) region of the U.S. Stands are dominated by *Acer rubrum, Acer saccharinum, Fraxinus pennsylvanica, Fraxinus nigra, Ulmus americana*, and *Quercus bicolor*.
- **A0230 *Quercus alba* - *Fagus grandifolia* Flatwoods & Swamp Forest Alliance** [White Oak - American Beech Flatwoods & Swamp Forest Alliance] []
  These are flatwood and pond forests dominated by *Acer saccharum, Acer rubrum, Fagus grandifolia, Liriodendron tulipifera, Quercus alba, Quercus bicolor, Quercus michauxii, Quercus macrocarpa, Quercus palustris*, and *Ulmus americana*, found in the northern Piedmont of New Jersey and the Chesapeake region of Maryland, Delaware, and the District of Columbia, as well as in the eastern Great Lakes region.
- **A4477 *Quercus alba* - *Quercus bicolor* - *Acer* spp. Clayplain Forest** [White Oak - Swamp White Oak - Maple species Clayplain Forest] []
  This mesic, deciduous forest occurs on clay, sand over clay, and silt plains of the Champlain Valley in Vermont. The closed canopy is composed of *Quercus alba, Quercus rubra, Acer rubrum, Carya ovata, Fraxinus americana*, and *Pinus strobus*. Associated species can include *Tsuga canadensis* (sometimes a dominant)*, Acer saccharum, Fagus grandifolia, Quercus bicolor*, and *Quercus macrocarpa*.
- **A4475 *Quercus bicolor* - *Acer rubrum* Great Lakes Flatwoods Group** [Swamp White Oak - Red Maple Great Lakes Flatwoods Group] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author: D. Faber-Langendoen, M. Pyne, and S. Menard.

IVC Description Date:

IVC Acknowledgments:

A3881 Red Maple - Ash species - Swamp White Oak Swamp Forest Alliance

[ ]

Acer rubrum - Fraxinus spp. - *Quercus bicolor* Swamp Forest Alliance

Midwest Red Maple - Ash Rich Swamp

IVC Scientific Name: *Acer rubrum - Fraxinus* spp. - *Quercus bicolor* Swamp Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes shallow depressional or seepage swamp forests in the north-central region of the U.S. Hardwood swamp stands are dominated by *Acer rubrum, Acer saccharinum, Fraxinus pennsylvanica*, and *Ulmus americana*. Other swamp tree species that may be present include *Fraxinus nigra* and *Quercus bicolor*. Swamps are seasonally wet. Flooding typically occurs during the winter and spring and often extends into the growing season; water may be ponded for most of the year in shallow depressions.

IVC Dynamics: The stress of prolonged saturation may contribute to high tree mortality. Pioneer species are quick to colonize any openings as soon as conditions are favorable. *Ulmus americana* may have been the dominant species in some stands prior to the introduction of Dutch elm disease (*Ceratostomella ulmi*). *Fraxinus* spp. are now declining rapidly from emerald ash borer (*Agrilus planipennis*).

IVC Environment: Sites include flat poorly drained areas, wet poorly drained depressions, wetland depressions on level or undulating topography, as well as in backwater sloughs. Many stands are seasonally wet, with a seasonally saturated hydrology. Soils are often deep and fine-grained (silt loam, silty clay loam, to clay loam), and of lacustrine origin. This vegetation is primarily, but not exclusively, found in unglaciated terrain.

DISTRIBUTION

IVC Geographic Range: This swamp forest alliance is found from southeast Minnesota and southern Wisconsin, south to central Illinois and Indiana and east to southern Ontario, Ohio, Pennsylvania, New York and Vermont.

IVC Nations: CA,US

IVC States/Provinces: IA?, IL, IN, MI, MN, NY, OH, ON, PA, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005038 *Acer (rubrum, saccharinum) - Fraxinus* spp. - *Ulmus americana* Swamp Forest** [(Red Maple, Silver Maple) - Ash species - American Elm Swamp Forest] []
  G4? (1996-10-03) IL, IN, MI, NY, OH, ON, PA, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen and M. Pyne

IVC Description Date: 2016-05-12

IVC Acknowledgments: We have incorporated information compiled by D. J. Allard and D. Faber-Langendoen.

A0230 White Oak - American Beech Flatwoods & Swamp Forest Alliance

[ ]

Quercus alba - Fagus grandifolia Flatwoods & Swamp Forest Alliance

South-Central Midwest Flatwoods Forest

IVC Scientific Name: *Quercus alba - Fagus grandifolia* Flatwoods & Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The canopies of stands of this alliance may contain *Acer saccharum, Acer rubrum, Fagus grandifolia, Liriodendron tulipifera, Quercus alba, Quercus bicolor, Quercus michauxii, Quercus macrocarpa, Quercus palustris*, and *Ulmus americana*. It is found in the northern Piedmont of New Jersey and the Chesapeake region of Maryland, Delaware, and the District of Columbia, as well as in the eastern Great Lakes region. Its habitats include flat to gently sloping sites with imperfectly to poorly drained soils. An impermeable layer beneath the topsoil slows drainage, often resulting in wet soil conditions. In droughty periods, the upper soil dries out, and the impermeable subsoil limits the availability of deeper water sources. In the eastern Great Lakes region, stands of this alliance occur on loess-covered glacial drift of Illinoisan age or over Wisconsin age till.

IVC Dynamics:

IVC Environment: Stands of this alliance are found on flat to gently sloping sites with imperfectly to poorly drained soils (Braun 1936). An impermeable layer beneath the topsoil slows drainage, often resulting in wet soil conditions (Chapman 1942). In droughty periods, the upper soil dries out, and the impermeable subsoil limits the availability of deeper water sources. Stands of this alliance can occur on loess-covered glacial drift of Illinoisan age or over Wisconsin age till.

DISTRIBUTION

IVC Geographic Range: Examples of this alliance are found in the eastern Great Lakes region as well as from the northern Piedmont of New Jersey and the Chesapeake region of Maryland, Delaware, and the District of Columbia. It also may occur in Ontario and Quebec in Canada.

IVC Nations: CA,US

IVC States/Provinces: IN, MI, OH, ON?, QC?

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005173** ***Fagus grandifolia - Acer saccharum - Quercus bicolor - Acer rubrum*** **Flatwoods Forest** [American Beech - Sugar Maple - Swamp White Oak - Red Maple Flatwoods Forest] []
  G2G3 (1998-06-22) IN, MI, OH, ON?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M. Pyne, in Faber-Langendoen et al. (2013)

IVC Description Author: M. Pyne

IVC Description Date: 2014-12-18

IVC Acknowledgments: We have incorporated information compiled by the Midwestern Ecology Group.

A4477 White Oak - Swamp White Oak - Maple species Clayplain Forest

[ ]

Quercus alba - Quercus bicolor - Acer spp. Clayplain Forest

Champlain Valley Clayplain Forest

IVC Scientific Name: *Quercus alba - Quercus bicolor - Acer* spp. Clayplain Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This clayplain forest of hardwood to mixed hardwood-conifer trees occurs on mesic to wet clay, sand over clay, and silt plains of the Champlain Valley in Vermont. Soils are deep and fertile, and soil moisture varies with texture and topographic position. The closed canopy in mesic settings is composed of *Quercus alba, Quercus bicolor, Quercus rubra, Acer rubrum, Carya ovata, Fraxinus americana*, and *Pinus strobus*. Associated species can include *Tsuga canadensis* (sometimes a dominant), *Acer saccharum, Fagus grandifolia*, and *Quercus macrocarpa. Tilia americana, Ostrya virginiana*, and *Carpinus caroliniana* may also be locally present. Wetter areas are dominated by *Fraxinus pennsylvanica*, along with many of the above listed species. The shrub layer is typically well-developed, with mesic site dominated by *Viburnum acerifolium, Hamamelis virginiana, Lindera benzoin, Rhus aromatica*, and *Rosa carolina*, and wetter sites by *Ilex verticillata, Vaccinium corymbosum*, and *Cornus amomum*. The herbaceous layer can be diverse and abundant. Characteristic species in mesic conditions include *Waldsteinia fragarioides* and *Moehringia lateriflora*. Also common are *Uvularia sessilifolia, Geranium maculatum, Brachyelytrum erectum, Circaea lutetiana, Carex gracillima, Carex laxiculmis, Carex rosea, Carex pensylvanica, Rubus pubescens*, and *Rubus hispidus*. Wetter sites may have *Carex lacustris, Carex tenera, Carex intumescens, Carex tribuloides, Carex baileyi*, and *Thelypteris palustris*. Invasive, exotic shrubs can be problematic, including *Lonicera morrowii, Lonicera tatarica, Berberis thunbergii, Rhamnus cathartica*, and *Frangula alnus*. The deep, fertile soils are comprised of glaciolacustrine silts, sand over clay, and clays. Topographic variation of several centimeters to less than 0. 5m may be sufficient to cause a shift from mesic to wet conditions.

IVC Dynamics: *Pinus strobus, Fraxinus pennsylvanica*, and *Populus tremuloides* may be prevalent or dominate early successional areas.

IVC Environment: Soils are deep, fertile, glaciolacustrine silts, sand over clay, and clays. In some areas, thin to deep lenses of sand lie over the clay. Soil moisture varies from mesic to wet with soil texture and topographic position.

DISTRIBUTION

IVC Geographic Range: This type occurs on the clayplains of the Champlain Valley in Vermont, and possibly extends into Ontario.

IVC Nations: CA,US

IVC States/Provinces: ON?, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G2? (2021-08-16) Upon European settlement, much of this forest, especially the most well-drained areas, were cleared for agriculture. In Vermont, the remaining examples of clayplain forest are generally on moister sites, though they typically contain a mosaic of wet and less-wet areas. Each of the four component associations, based on endemic Vermont state types, are ranked G2.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006122 *Quercus alba - Acer rubrum - Carya ovata / Viburnum acerifolium / Waldsteinia fragarioides* Clayplain Forest**
  [White Oak - Red Maple - Shagbark Hickory / Mapleleaf Viburnum / Appalachian Barren Strawberry Clayplain Forest] []
  This mesic, deciduous forest occurs on clay and silt plains of the Champlain Valley in Vermont. The closed canopy is composed of *Quercus alba, Quercus rubra, Acer rubrum, Carya ovata, Fraxinus americana*, and *Pinus strobus*. Associated species can include *Tsuga canadensis, Acer saccharum, Fagus grandifolia, Quercus bicolor*, and *Quercus macrocarpa*. G1 (2021-09-30) ON?, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author: D. Faber-Langendoen and R.J. Zaino.

IVC Description Date:

IVC Acknowledgments: E.H. Thompson, E.R. Sorenson

A4475 Swamp White Oak - Red Maple Great Lakes Flatwoods Group

[ ]

Quercus bicolor - Acer rubrum Great Lakes Flatwoods Group

Great Lakes Wet Flatwoods

IVC Scientific Name: *Quercus bicolor - Acer rubrum* Great Lakes Flatwoods Group

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: IL, IN, MI, OH, ON
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005037** ***Quercus palustris - Quercus bicolor - Acer rubrum*** **Flatwoods Forest** [Pin Oak - Swamp White Oak - Red Maple Flatwoods Forest] []
  G2G3 (1998-06-22) IL, MI, OH, ON
- **CEGL002100** ***Quercus palustris - Quercus bicolor - Nyssa sylvatica - Acer rubrum*** **Sand Wet Flatwoods Forest** [Pin Oak - Swamp White Oak - Blackgum - Red Maple Sand Wet Flatwoods Forest] []
  G2? (1998-06-22) IL, IN, MI, OH, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021c)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G667 Northeastern Forest Vernal Pool

[ ]

IVC Colloquial Name: Northeastern Forest Vernal Pool

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This broadly defined group comprises sparsely vegetated northeastern vernal woodland pools that are important breeding habitats for amphibians and invertebrates; vegetation is widely variable. The association in this group is characterized by seasonally fluctuating water levels; the substrate may dry out completely in the summer. Hydrology may be affected by impermeable soils, seasonally high water tables, seasonal flooding in nearby streams and drainages, and/or impervious bedrock at or near the surface. The substrate is mineral soil with or without a layer of muck. The species composition is variable among sites, as well as annually and seasonally. Larger examples of this community type may exhibit strong zonation. Many smaller, shaded vernal ponds are unvegetated, their bottoms consisting of dead leaves and algae.

IVC Dynamics: These pools are usually isolated, with rainwater and groundwater the sources of inundation. Water levels decrease through the growing season and are often lacking standing water by late summer.

IVC Environment: This group occurs in small isolated depressions that flood in the early spring from groundwater or rainwater; some pools also occur on floodplain backswamps. The substrate is variable, ranging from sand to loam to bedrock, with or without a significant organic layer. Stands occur in shallow basins that flood in the spring and draw down later in the season, or in alluvial backswamps that are also dry late in the growing season.

DISTRIBUTION

IVC Geographic Range: This group ranges broadly in the northeastern and midwestern United States and adjacent Canada.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, LB, MA, MD, ME, NB, NH, NJ, NS, NY, ON, PA, RI, VA, VT, WV
IVC Omernik Ecoregions: 5.2.1.50:C, 5.3.1.58:C, 5.3.3.62:C, 8.1.1.83:C, 8.1.3.60:C, 8.1.6.56:C, 8.1.8.82:C, 8.1.10.61:C, 8.2.2.57:C, 8.2.4.55:C, 8.3.3.71:C, 8.3.4.45:C, 8.3.5.65:C, 8.4.3.70:C, 8.4.4.66:C, 8.5.1.63:C, 8.5.4.84:C

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3686 Eastern North American Vernal Pool Alliance** [Eastern North American Vernal Pool Alliance] []
  This broadly defined alliance comprises sparsely vegetated northeastern vernal woodland pools that are important breeding habitats for amphibians and invertebrates; vegetation is widely variable.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: E.A. Colburn (2004); A. Cutko and T.J. Rawinski (2008)
IVC Description Author: L.A. Sneddon
IVC Description Date: 2015-05-19
IVC Acknowledgments:

A3686 Eastern North American Vernal Pool Alliance

[ ]
Eastern North American Vernal Pool Alliance
Eastern North American Vernal Pool

IVC Scientific Name: Eastern North American Vernal Pool Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This broadly defined alliance comprises sparsely vegetated northeastern vernal woodland pools that are important breeding habitats for amphibians and invertebrates; vegetation is widely variable. The association in this alliance is characterized by seasonally fluctuating water levels; the substrate may dry out completely in the summer. Hydrology may be affected by impermeable soils, seasonally high water tables, seasonal flooding in nearby streams and drainages, and/or impervious bedrock at or near the surface. The substrate is mineral soil with or without a layer of muck. The species composition is variable among sites, as well as annually and seasonally. Larger examples of this community type may exhibit strong zonation. Many smaller, shaded vernal ponds are unvegetated, their bottoms consisting of dead leaves and algae.
IVC Dynamics: This alliance is characterized by a shallow depression that intersects the groundwater table, or receives intermittent alluvial flooding but is shallow and isolated from the main channel as the water level drops through the season.
IVC Environment: This alliance occurs in small isolated depressions that flood in the early spring from groundwater or rainwater; some pools also occur on floodplain backswamps. The substrate is variable, ranging from sand to loam to bedrock, with or without a significant organic layer. Stands occur in shallow basins that flood in the spring and draw down later in the season, or in alluvial backswamps that are also dry late in the growing season.

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout the northeastern United States and adjacent Canada.
IVC Nations: CA,US

IVC States/Provinces: CT, MA, MD, ME, NH, NJ, NY, PA, RI, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006453 Eastern Woodland Vernal Pool** [Eastern Woodland Vernal Pool] []
  G3 (2011-05-23) CT, MA, MD, ME, NH, NJ, NY, PA, RI, VT, WV

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L.A. Sneddon after E.A. Colburn (2004)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M504 Laurentian-Acadian Flooded & Swamp Forest

Forêts inondées et marécageuses laurentiennes, acadiennes et de la côte atlantique nord

IVC Colloquial Name: Laurentian-Acadian Flooded & Swamp Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This swamp forest macrogroup ranges from temperate regions of northwest Ontario east to Atlantic Canada, and from central Minnesota east to northern New England. It includes deciduous and coniferous trees, including *Betula alleghaniensis, Fraxinus nigra, Larix laricina, Picea rubens, Pinus strobus, Thuja occidentalis*, and *Tsuga canadensis* to the north, and *Chamaecyparis thyoides* and *Nyssa sylvatica* to the south, with *Acer rubrum* usually present throughout the range and often strongly dominant in more successional stands. Occasionally, colder conditions favor *Abies balsamea, Picea glauca*, or *Picea mariana*, mixed with temperate trees, shrubs, and herbs. This macrogroup covers a wide pH range, and includes alkaline to circumneutral swamps and floodplains characterized by *Fraxinus nigra, Thuja occidentalis*, and *Ulmus americana* and acidic swamps characterized by *Chamaecyparis thyoides, Picea rubens*, and/or lacking *Thuja occidentalis* and *Fraxinus nigra*. Common shrubs may include *Clethra alnifolia, Gaylussacia dumosa, Ilex glabra, Eubotrys racemosa, Rhododendron viscosum* in the south; *Alnus incana, Ilex mucronata, Viburnum nudum var. cassinoides* in the north, with *Ilex verticillata* and *Vaccinium corymbosum* over much of the range. Ferns may be common, including *Dryopteris cristata, Osmunda cinnamomea, Onoclea sensibilis, Thelypteris palustris*, and others. Sedges and *Sphagnum* mosses are common. Hummock-and-hollow microtopography is characteristic, and trees are often primarily confined to hummocks, with more hydrophytic herbaceous vegetation in hollows. These swamps form in basin wetlands that remain saturated for all or nearly all of the growing season, and may have standing water seasonally. Some occur on gently sloping seepage lowlands, and even basin settings may have some seepage influence, especially near the periphery.

IVC Geographic Range: This macrogroup ranges from New England west to Minnesota, south along the Appalachian Mountains to Virginia, and east to the Atlantic Coastal Plain.

IVC Nations: CA,US

IVC States/Provinces: CT, DE, IL, IN, MA, MB, MD, ME, MI, MN, NB, NC, ND, NH, NJ, NS, NY, OH, ON, PA, QC, RI, SD, TN, VA, VT, WI, WV

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G653 Laurentian-Acadian Floodplain Forest []**
- **G046 Laurentian-Acadian Alkaline Swamp []**
- **G045 Acadian-Appalachian Red Spruce Acidic Swamp []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: L. Sneddon and C. Lea

IVC Description Date: 2015-06-05

IVC Acknowledgments: Sue Gawler authored two groups contributing to this description. Josh Cohen provided additional edits and the extended quoted text from Slaughter et al. (2007). Sean Basquill provided review comments.

G653 Laurentian-Acadian Floodplain Forest

[ ]

IVC Colloquial Name: Laurentian-Acadian Floodplain Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group occurs in the northeastern U.S. and temperate regions of eastern Canada, west to the upper Great Lakes region of Minnesota and Ontario. Forest canopy dominants can vary but typically are a combination of *Acer rubrum, Acer*

saccharinum, Acer saccharum, Fraxinus americana, Fraxinus nigra, Fraxinus pennsylvanica, Prunus serotina, Quercus rubra, and *Ulmus americana*. Northward stands with *Picea glauca* or *Populus balsamifera* may occur. Shrub layer ranges from dense in patches to sparse. The herbaceous layer is typically diverse. Some common species include *Boehmeria cylindrica, Matteuccia struthiopteris*, and *Onoclea sensibilis*. It occurs along small and large rivers on slightly elevated alluvial terraces and active floodplains, along streams with small watersheds (<2 square miles), high-gradient or submontane portions of major rivers, and beside lakes. Soils range from alluvial sands to sand and alluvial loams to silt loams. Flooding occurs during spring runoff periods and during other peak floods.

IVC Dynamics: Forests are flooded during spring runoff periods and during other peak floods.

IVC Environment: Stands occur along slightly elevated to higher alluvial terraces and active floodplains, streams with small watersheds (<2 square miles), high-gradient or submontane portions of major rivers. It often occurs as a linear band within terraces, backwaters, bars, and islands of minor rivers and smaller tributaries, creeks, and drainages. Soils are typically well-drained to imperfectly drained and range from alluvial sands to sand and alluvial loams to silt loams. Soils can be temporarily inundated during spring floods, although some examples tend to be more mesic and may be considered uplands rather than wetlands.

DISTRIBUTION

IVC Geographic Range: This group occurs across the northern U.S., from northern Minnesota and southern Manitoba eastward to New England and from temperate regions of northwest Ontario to Atlantic Canada. It possibly extends somewhat further south in some parts of its range. The core of its range is in Ecoprovince 212 and extreme northern 251 (Cleland et al. 2007).

IVC Nations: CA,US

IVC States/Provinces: CT, DE, MA, MB, MD, ME, MI, MN, NB, ND, NH, NJ, NS, NY, ON, PA, QC, RI, SD, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a G3 rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate. Better understanding of threats, such as altered hydrology from channelization and dams, deer herbivory, and invasive species, could raise the rank.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3715 *Acer saccharinum - Acer rubrum - Ulmus americana* Floodplain Forest Alliance** [Silver Maple - Red Maple - American Elm Floodplain Forest Alliance] []
  This alliance is dominated by *Acer rubrum, Acer saccharinum, Ulmus americana*, and occasionally *Fraxinus pennsylvanica* and occurs in the northeastern U.S. and temperate regions of eastern Canada, west to the upper Great Lakes region of Minnesota and Ontario, where it occurs along small and large rivers, on higher terraces, and beside lake and larger streams.
- **A3714 *Acer saccharum - Tilia americana* Mesic Floodplain Forest Alliance** [Sugar Maple - American Basswood Mesic Floodplain Forest Alliance] []
  Varying canopy dominants typically include some combination of *Acer saccharum, Tilia americana, Fraxinus* spp., *Fraxinus pennsylvanica, Prunus serotina, Quercus rubra*, and *Ulmus americana*. This alliance ranges across the northeastern United States and the St. Lawrence and Atlantic regions of Canada along slightly elevated alluvial terraces and active floodplains, streams with small watersheds, high-gradient or submontane portions of major rivers.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al.

IVC Description Author: S.E. Menard and D. Faber-Langendoen

IVC Description Date: 2015-06-05

IVC Acknowledgments: Sean Basquill

A3715 Silver Maple - Red Maple - American Elm Floodplain Forest Alliance

[ ]

Acer saccharinum - Acer rubrum - Ulmus americana Floodplain Forest Alliance

Silver Maple - Red Maple - American Elm Floodplain Forest

IVC Scientific Name: *Acer saccharinum - Acer rubrum - Ulmus americana* Floodplain Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Characteristic dominant species include *Acer rubrum, Acer saccharinum, Ulmus americana*, and occasionally *Fraxinus pennsylvanica*. In the northern Great Lakes region of the Midwest and Canada, *Fraxinus nigra* can be dominant. Shrub layer ranges from high in patches to generally sparse. *Onoclea sensibilis* and *Boehmeria cylindrica* are characteristic in the herb layer. This alliance occurs in the northeastern U.S. and temperate regions of eastern Canada, west to the upper Great Lakes region of Minnesota and Ontario. It includes communities along small and large rivers, on higher terraces of river bottoms and floodplains and beside lakes and larger streams. The terrain is relatively flat, and hummock-and-hollow microtopography is absent or poorly developed. The soils are alluvial loams to silt loams typically temporarily inundated during spring floods. The soils are well-drained to imperfectly drained mineral soils but a limited organic horizon may occur in some examples.

IVC Dynamics: This community is adapted to the periodic flooding of the associated river or stream system. The soil is saturated for at least part of the growing season and may stay inundated for extended periods of time.

IVC Environment: This alliance is found on higher terraces along the lower reaches of larger rivers, and along smaller rivers and large streams, often as a linear band within lower alluvial terraces, backwaters, bars, and islands of minor rivers and smaller tributaries, creeks and drainages. The terrain is relatively flat, and hummock-and-hollow microtopography is absent or poorly developed. The soils are alluvial loams to silt loams, temporarily inundated during spring floods, and ranges from well-drained to imperfectly drained. They can range from acidic to being associated with calcareous or sedimentary bedrock and with fine-grained surficial deposits. Soils may be organic, especially in the northern Great Lakes region, or mineral, especially in the Northeast and ranging into the Great Lakes.

DISTRIBUTION

IVC Geographic Range: This alliance is found across the northern Great Lakes states in the Midwest ranging to northeastern U.S. and adjacent Canadian provinces.

IVC Nations: CA,US

IVC States/Provinces: CT, DE, MA, MB, ME, MI, MN, NB, ND, NH, NJ, NY, ON, PA, QC, RI, SD, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006501** ***Acer rubrum - Abies balsamea / Viburnum nudum var. cassinoides*** **Floodplain Forest** [Red Maple - Balsam Fir / Withe-rod Floodplain Forest] []
  GNR. ME, NH, VT
- **CEGL006503** ***Acer rubrum - Prunus serotina / Cornus amomum*** **Floodplain Forest** [Red Maple - Black Cherry / Silky Dogwood Floodplain Forest] []
  GNR. MA, ME, NB, NH, NY?, VT
- **CEGL006176** ***Acer saccharinum / Onoclea sensibilis - Boehmeria cylindrica*** **Floodplain Forest** [Silver Maple / Sensitive Fern - Small-spike False Nettle Floodplain Forest] []
  GNR. CT, MA, ME, NB, NH, NJ?, NY, VT
- **CEGL006147** ***Acer saccharinum - (Populus deltoides) / Matteuccia struthiopteris - Laportea canadensis*** **Floodplain Forest** [Silver Maple - (Eastern Cottonwood) / Ostrich Fern - Canadian Woodnettle Floodplain Forest] []
  G4G5 (2012-02-14) CT, MA, NH, NJ, NY, ON, VT
- **CEGL005488** ***Fraxinus nigra - Acer saccharinum*** **Upper Great Lakes Floodplain Forest** [Black Ash - Silver Maple Upper Great Lakes Floodplain Forest] []
  GNR. MI, MN, ON, QC, WI?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.J. Metzler and A.W.H. Damman (1985); Minnesota Department of Natural Resources (2003)
IVC Description Author: S. Menard
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3714 Sugar Maple - American Basswood Mesic Floodplain Forest Alliance

[ ]
Acer saccharum - Tilia americana Mesic Floodplain Forest Alliance
Sugar Maple - American Basswood Mesic Floodplain Forest

IVC Scientific Name: *Acer saccharum - Tilia americana* Mesic Floodplain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: The canopy dominants can vary from site to site but are usually some combination of *Acer saccharum, Tilia americana, Quercus rubra, Ulmus americana, Fraxinus americana, Fraxinus pennsylvanica*, and *Prunus serotina*. Shrubs are typically minor. The herbaceous layer is typically diverse and often features *Matteuccia struthiopteris* along with a variety of graminoids, ferns and forbs. This alliance ranges across the northeastern United States and the St. Lawrence and Atlantic regions of southern Canada. It occurs along slightly elevated alluvial terraces and active floodplains, streams with small watersheds (<2 square miles), high-gradient or submontane portions of major rivers. Soils range from alluvial sands to sand and silt loams.
IVC Dynamics: Forests are flooded during spring runoff periods and perhaps during other peak floods and less regularly inundated than the soils supporting silver maple floodplain forests.
IVC Environment: It occurs along slightly elevated alluvial terraces and active floodplains, streams with small (<2 square mile) watersheds, high-gradient or submontane portions of major rivers. Soils range from alluvial sands to sand and silt loams and range from well-drained to poorly drained with very shallow or no organic horizons. These soils are typically less regularly inundated than the soils supporting silver maple floodplain forests. Even with the floodplain setting, some examples may be considered uplands rather than wetlands.

DISTRIBUTION

IVC Geographic Range: This alliance is found across northeastern U.S. and the St. Lawrence and Atlantic regions of Canada.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, MD, ME, NB, NH, NJ, NY, PA, QC, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard, in Faber-Langendoen et al. (2013)
IVC Description Author: S. Menard
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G046 Laurentian-Acadian Alkaline Swamp

[ ]

IVC Colloquial Name: Laurentian-Acadian Alkaline Swamp
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These forested wetlands are found across the temperate regions of eastern to south-central Canada, southward from northern New England to the upper Midwest and down to the high plateau of the Allegheny Mountains. They occur in areas where circumneutral to alkaline pH and/or higher nutrient levels are associated with a rich flora. Examples of this group also occur within swales along the dunes of the Great Lakes. The substrate is typically mineral soil, but there may be extensive peat in examples occurring on the margins of peatland complexes. *Thuja occidentalis* is a diagnostic canopy species and may dominate the canopy or be mixed with other conifers or with deciduous trees, most commonly *Acer rubrum* or *Fraxinus nigra*. Some examples are strongly dominated by deciduous hardwoods, such as *Fraxinus nigra* (less often *Fraxinus americana*) and *Acer rubrum*. *Larix laricina*, a deciduous conifer, may dominate some stands within this group. Shrub species commonly occur and range in cover from sparse to dense depending on canopy cover. The herb layer tends to be more diverse than in acidic swamps and some examples may have extensive bryophytes. Examples of this group may occur on seepages, in a basin setting, or alluvial settings. A hummock-and-hollow topography is typical. Logging, especially of *Thuja occidentalis*, has influenced the structure and dominance of many examples of this group.

IVC Dynamics: Tip-up mounds caused by blowdowns are common, in part because the very wet soils permit only shallow rooting by *Thuja occidentalis*. Logging, especially of *Thuja occidentalis*, has influenced the structure and dominance of this group. Acreage of hardwood-conifer swamp has been reduced by conversion of wetlands for agriculture and other human uses (Kost et al. 2007).

IVC Environment: Stands occur on level to gently sloping ground with wet, organic or mineral soil. Typical stands occur along the margins of peatlands, in drainage courses, shores of lakes and rivers above flooding level, or in shallow depressions. Some examples occur in swales within dunal areas of the Great Lakes. Stands occur on wet, saturated soils. Substrate is either wet mineral soils or well-decomposed peat, and hummocky topography is present. The groundwater is moderately minerotrophic and has circumneutral to alkaline pH.

DISTRIBUTION

IVC Geographic Range: This group is located in northern New England and the Midwest, and southern regions of eastern and central Canada. It ranges into the southern Great Lakes and south-central Minnesota south to northern Illinois, Indiana, Ohio, and West Virginia. Examples are can be found along the high, flat plateau of the Allegheny Mountains.

IVC Nations: CA,US

IVC States/Provinces: CT, DE, IL, IN, MA, MB, MD, ME, MI, MN, NB, ND, NH, NJ, NY, OH, ON, PA, QC, RI, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate. Better understanding of threats, such as deer herbivory and invasive species, could raise the rank.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4462 *Acer rubrum* - *Fraxinus* spp. - *Betula papyrifera* Laurentian Swamp Forest Alliance** [Red Maple - Ash species - Paper Birch Laurentian Swamp Forest Alliance] []
- **A4463 *Fraxinus nigra* - *Acer rubrum* - *Larix laricina* Acadian-Appalachian Swamp Forest Alliance** [Black Ash - Red Maple - Tamarack Acadian-Appalachian Swamp Forest Alliance] []
  This alliance is found in the Northern Appalachian and Acadian regions of the United States and eastern temperate Canada in poorly drained depressions or seepage zones and is typically dominated by *Acer rubrum* and *Fraxinus nigra*.
- **A4397 *Larix laricina* - *Pinus strobus* - *Acer rubrum* Swamp Alliance** [Tamarack - Eastern White Pine - Red Maple Swamp Alliance] []

- **A4465 *Thuja occidentalis - Acer rubrum - Abies balsamea* Acadian-Appalachian Swamp Forest Alliance** [Northern White-cedar - Red Maple - Balsam Fir Acadian-Appalachian Swamp Forest Alliance] []
  This alliance is found in the Northern Appalachian and Acadian regions of the United States and eastern temperate Canada on poorly drained, mostly mineral soils, with *Thuja occidentalis* the consistently abundant tree.
- **A4464 *Thuja occidentalis - Acer rubrum - Larix laricina* Laurentian Swamp Forest Alliance** [Northern White-cedar - Red Maple - Tamarack Laurentian Swamp Forest Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S.C. Gawler and S. Menard, in Faber-Langendoen et al. (2011)
IVC Description Author: S. Menard and D. Faber-Langendoen
IVC Description Date: 2013-05-28
IVC Acknowledgments: Sean Basquill

A4462 Red Maple - Ash species - Paper Birch Laurentian Swamp Forest Alliance

[ ]
Acer rubrum - Fraxinus spp. - *Betula papyrifera* Laurentian Swamp Forest Alliance
Laurentian Hardwoods Alkaline Swamp

IVC Scientific Name: *Acer rubrum - Fraxinus* spp. - *Betula papyrifera* Laurentian Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: MB, MI, MN, ND, ON, QC?, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005036 *Populus tremuloides - Populus balsamifera* - Mixed Hardwoods Lowland Wet Forest** [Quaking Aspen - Balsam Poplar - Mixed Hardwoods Lowland Wet Forest] []
  G5 (1996-10-03) MI, MN, ON, WI
- **CEGL002105 *Fraxinus nigra* - Mixed Hardwoods - Conifers / *Cornus sericea / Carex* spp. Swamp Forest** [Black Ash - Mixed Hardwoods - Conifers / Red-osier Dogwood / Sedge species Swamp Forest] []
  G4 (1996-10-03) MB, MI, MN, ND, ON, WI
- **CEGL002071 *Acer rubrum - Fraxinus* spp. - *Betula papyrifera / Cornus canadensis* Swamp Forest** [Red Maple - Ash species - Paper Birch / Bunchberry Dogwood Swamp Forest] []
  G4 (1996-10-03) MI, MN, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4463 Black Ash - Red Maple - Tamarack Acadian-Appalachian Swamp Forest Alliance

[ ]

Fraxinus nigra - Acer rubrum - Larix laricina Acadian-Appalachian Swamp Forest Alliance

Acadian-Appalachian Hardwoods Alkaline Swamp

IVC Scientific Name: *Fraxinus nigra - Acer rubrum - Larix laricina* Acadian-Appalachian Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is found in the Northern Appalachian and Acadian regions of the United States and eastern temperate Canada. It contains communities known as "calcareous seepage swamps," "hardwood swamps," and "red maple - black ash swamps" in which *Acer rubrum* and *Fraxinus nigra* are dominant or prominent canopy members. Total canopy cover ranges from nearly closed to open. Where the tree canopy is open, the understory vegetation is patchy, ranging from shrub-dominated patches to minerotrophic sedge meadows. Associated canopy trees are *Betula alleghaniensis, Ulmus rubra, Ulmus americana*, and *Pinus strobus*. Some examples are dominated by *Populus tremuloides* and *Populus balsamifera. Lindera benzoin* (east), *Toxicodendron vernix, Alnus incana* (north), *Salix* spp., and *Rhamnus alnifolia* often occur in the shrub layer. The herbaceous layer is often quite diverse. Stands are typically found in poorly drained depressions and in seepage zones. Soils are generally muck and, although *Sphagnum* spp. may occur, there is generally not substantial peat development. Stands often occur in areas where soil pH is generally higher than that of other alliances containing *Acer rubrum*.

IVC Dynamics:

IVC Environment: Stands are typically found in poorly drained depressions (sometimes as narrow zones or small inclusions in wetland complexes, sometimes as large swamps), and occasionally in seepage zones at the base of river terraces or draws. Soils are generally muck and, although *Sphagnum* spp. may occur, there is generally not substantial peat development. Stands often occur in areas where there is influence by calcareous bedrock, and soil pH is generally higher than that of other alliances containing *Acer rubrum*.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Northern Appalachian and Acadian regions of the United States and eastern temperate Canada.

IVC Nations: CA,US

IVC States/Provinces: CT, MA, ME, NB, NH, NJ, NY, PA, QC?, RI, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006009 *Acer rubrum - Fraxinus nigra - (Larix laricina) / Rhamnus alnifolia* Swamp Forest** [Red Maple - Black Ash - (Tamarack) / Alderleaf Buckthorn Swamp Forest] []
  GNR. CT, MA, ME, NH, NJ, NY, RI, VT
- **CEGL006395 *Acer rubrum - Larix laricina / Alnus incana - Ilex verticillata / Osmunda regalis* Swamp Forest** [Red Maple - Tamarack / Gray Alder - Common Winterberry / Royal Fern Swamp Forest] []
  GNR. ME, NB, NH?, NY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4397 Tamarack - Eastern White Pine - Red Maple Swamp Alliance

[ ]
Larix laricina - Pinus strobus - Acer rubrum Swamp Alliance
Southern Tamarack - Pine - Hardwood Rich Swamp

IVC Scientific Name: *Larix laricina - Pinus strobus - Acer rubrum* Swamp Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: IL, IN, MI, MN, OH, ON, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002455 *Larix laricina - Thuja occidentalis* Swamp Forest** [Tamarack - Northern White-cedar Swamp Forest] []
  G3G4 (1998-06-22) IL, IN, MI, MN, OH, ON, WI
- **CEGL005232 *Larix laricina - Acer rubrum / (Rhamnus alnifolia, Vaccinium corymbosum)* Swamp Forest** [Tamarack - Red Maple / (Alderleaf Buckthorn, Highbush Blueberry) Swamp Forest] []
  G2G3 (2002-10-24) IN, MI, MN, OH?, ON, WI
- **CEGL002472 *Larix laricina / Aronia melanocarpa / Sphagnum* spp. Swamp Forest** [Tamarack / Black Chokeberry / Peatmoss species Swamp Forest] []
  G4? (1996-10-03) IL, IN, MI, OH, ON, WI, WV
- **CEGL002482 *Pinus strobus - (Acer rubrum) / Osmunda* spp. Swamp Forest** [Eastern White Pine - (Red Maple) / Royal Fern species Swamp Forest] []
  G3G4 (1998-06-22) MI, OH, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021c)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4465 Northern White-cedar - Red Maple - Balsam Fir Acadian-Appalachian Swamp Forest Alliance

[ ]
Thuja occidentalis - Acer rubrum - Abies balsamea Acadian-Appalachian Swamp Forest Alliance

Acadian-Appalachian White Cedar - Hardwood Alkaline Swamp

IVC Scientific Name: *Thuja occidentalis - Acer rubrum - Abies balsamea* Acadian-Appalachian Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is found in the Northern Appalachian and Acadian regions of the United States and eastern temperate Canada. The tree layer is dominated by a mix of conifers and deciduous species. Most of the deciduous species are not abundant, but taken together, they make up a substantial proportion of the canopy. *Thuja occidentalis* is a consistently abundant tree. *Acer rubrum* can be absent to codominant. Other common trees include *Betula alleghaniensis, Fraxinus nigra*, and *Abies balsamea*. The shrub layer varies from sparse to moderately well-developed. The herbaceous layer can be diverse with a variable moss layer. Stands of this alliance are found on poorly drained, mostly mineral soils. It is commonly associated with wetlands influenced by calcareous groundwater, in poorly drained depressions with substantial peat accumulation, along streams, or on slopes with emergent groundwater seepage evident as rivulets at the surface. Soils range from organic to mineral. The groundwater is usually moderately to strongly minerotrophic and has circumneutral pH.

IVC Dynamics: *Thuja occidentalis* stands often become established on *Alnus* spp. thickets following fire, but they may also be stable and long-lived without disturbance (Eyre 1980).

IVC Environment: This vegetation is commonly associated with wetlands influenced by calcareous groundwater, in poorly drained depressions with substantial peat accumulation, along streams, or on slopes with emergent groundwater seepage evident as rivulets at the surface. Soils range from organic to mineral. The groundwater is usually moderately to strongly minerotrophic and has circumneutral to alkaline pH.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Northern Appalachian and Acadian regions of the United States and eastern temperate Canada.

IVC Nations: CA,US

IVC States/Provinces: CT, ME, NB, NH, NY, ON, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006175 *Thuja occidentalis - (Picea rubens) / Tiarella cordifolia* Swamp Forest** [Northern White-cedar - (Red Spruce) / Heartleaf Foamflower Swamp Forest] []
  GNR. ME, NB, NH, NY, VT
- **CEGL006507 *Thuja occidentalis - Abies balsamea / Ledum groenlandicum / Carex trisperma* Swamp Woodland** [Northern White-cedar - Balsam Fir / Bog Labrador-tea / Three-seeded Sedge Swamp Woodland] []
  GNR. ME, NB, NH, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author: S. Menard and D. Faber-Langendoen

IVC Description Date:

IVC Acknowledgments:

A4464 Northern White-cedar - Red Maple - Tamarack Laurentian Swamp Forest Alliance

[ ]

Thuja occidentalis - Acer rubrum - Larix laricina Laurentian Swamp Forest Alliance

Laurentian White Cedar - Hardwood Alkaline Swamp

IVC Scientific Name: *Thuja occidentalis - Acer rubrum - Larix laricina* Laurentian Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: MB, MI, MN, ON, QC?, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005003 *Tsuga canadensis - Betula alleghaniensis* Swamp Forest** [Eastern Hemlock - Yellow Birch Swamp Forest] []
  G3 (1998-06-22) MI, OH, ON, WI
- **CEGL002471 *Larix laricina / Alnus incana* Swamp Forest** [Tamarack / Gray Alder Swamp Forest] []
  G4 (1996-10-03) MB, MI, MN, ON, WI
- **CEGL005165 *Thuja occidentalis - Fraxinus nigra* Swamp Forest** [Northern White-cedar - Black Ash Swamp Forest] []
  GNR. MI, MN, ON, WI
- **CEGL002456 *Thuja occidentalis - (Picea mariana, Abies balsamea) / Alnus incana* Swamp Forest** [Northern White-cedar - (Black Spruce, Balsam Fir) / Gray Alder Swamp Forest] []
  G4 (1996-10-03) MB, MI, MN, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G045 Acadian-Appalachian Red Spruce Acidic Swamp

[ ]

IVC Colloquial Name: Acadian-Appalachian Red Spruce Acidic Swamp
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group includes north-temperate acidic, nutrient-poor swamps of the northeastern U.S. and adjacent Canada, from southeastern Canada and New England to New York through the Central Appalachians south to Virginia and west to Ohio. They occur on mineral soils that are nutrient-poor; there may be an organic epipedon, and the substrate may be shallow to deep peat. Most are basin wetlands that remain saturated for all or nearly all of the growing season, and may have standing water seasonally. Some occur on gently sloping seepage lowlands, and even basin settings may have some seepage influence, especially near the periphery. *Acer rubrum* is a nearly constant and often dominant to codominant tree species. It may form a mostly deciduous canopy with *Fraxinus* spp., *Betula alleghaniensis*, or *Nyssa sylvatica*, or it may be mixed with conifers. *Tsuga canadensis* is the most widespread conifer in associations of this group. From central New England and New York north, *Picea*

rubens is a characteristic associate (less commonly *Picea mariana*). *Larix laricina, Pinus strobus*, and *Abies balsamea* are occasional and in some places may be locally important. The herbaceous and shrub layers tend to be fairly species-poor. *Ilex mucronata, Viburnum nudum var. cassinoides, Ilex verticillata*, and *Vaccinium corymbosum* are typical shrubs through much of the range of this group, and *Rhododendron maximum* is often important in the central and southern portions of this group's range. Typical herbs include *Osmunda* spp., *Onoclea sensibilis, Dryopteris cristata, Carex folliculata, Carex intumescens, Carex stricta*, and *Carex scabrata*, among others. *Sphagnum* is an important component of the bryoid layer. In many swamps, species richness tends to be higher near the periphery where seepage waters influence the hydrology.

IVC Dynamics:

IVC Environment: These swamps develop in depressions within the landscape where soils are poorly to very poorly drained. The soils remain saturated for most or all of the growing season, and in most of these swamps, standing water is present for at least part of the season. The pH is weakly to moderately acidic. Stands occur on nutrient-poor mineral soils, or on shallow to deep peat.

DISTRIBUTION

IVC Geographic Range: This group ranges from New England and adjacent Canada west through New York to Ohio and south to western Virginia (the Central Appalachians region).

IVC Nations: CA,US

IVC States/Provinces: CT, DE, MA, MD, ME, NB, NC, NH, NJ, NS?, NY, ON, PA, QC, RI, TN, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a G4 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3418 *Picea rubens* Acadian-Appalachian Swamp Forest Alliance** [Red Spruce Acadian-Appalachian Swamp Forest Alliance] [] This alliance includes swamp forests of the Northern Appalachians and southern Canada dominated by *Picea rubens*, often admixed with *Abies balsamea, Acer rubrum* and *Betula alleghaniensis*.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen and S. Menard (2006)

IVC Description Author: S.C. Gawler and D. Faber-Langendoen

IVC Description Date: 2015-06-05

IVC Acknowledgments:

A3418 Red Spruce Acadian-Appalachian Swamp Forest Alliance

[ ]

Picea rubens Acadian-Appalachian Swamp Forest Alliance

Acadian-Appalachian Acidic Swamp Forest

IVC Scientific Name: *Picea rubens* Acadian-Appalachian Swamp Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes swamp forests of the Northern Appalachians and southern Canada dominated by *Picea rubens*, often admixed with *Abies balsamea, Acer rubrum*, and *Betula alleghaniensis*. These swamp forests are generally not "boggy" in nature, and lack significant peat, although deep muck may overlie mineral soil. The shrub layer is characterized by *Ilex mucronata, Vaccinium corymbosum, Ilex verticillata*, and *Sorbus americana*. The herbaceous layer is characterized by *Carex*

trisperma, Clintonia borealis, Gaultheria hispidula, and others of northern climates. This alliance includes red spruce-fir- or fir-dominated swamps of northern and/or montane regions of the eastern United States and Canada. Canopy associates may include *Acer rubrum, Betula alleghaniensis, Tsuga canadensis*, and *Larix laricina*. Communities of this alliance are "swamps" as opposed to "bog forests" in that they lack significant *Sphagnum* peat accumulation. Soils are saturated mucks over generally acidic outwash materials and other mineral soils in the glaciated and unglaciated portions of the range. Although *Picea rubens* is the predominant spruce, *Picea mariana* or *Picea glauca* are occasionally dominant in the northern portion of the range. Typical understory species include *Vaccinium corymbosum, Ilex mucronata, Viburnum nudum var. cassinoides*, and, in the southern portion of the range, *Rhododendron maximum* or *Hypericum densiflorum*. Ground flora includes *Carex trisperma, Coptis trifolia, Cornus canadensis, Maianthemum canadense, Osmunda cinnamomea, Oxalis montana*, and *Gaultheria hispidula*. Feathermosses are common and *Sphagnum* is patchy.

IVC Dynamics: Trees are shallow-rooted and are often uprooted by strong winds.

IVC Environment: Associations of this alliance are "swamps" as opposed to "bog forests" in that they lack significant *Sphagnum* peat accumulation. Soils are saturated mucks over generally acidic outwash materials and other mineral soils in the glaciated and unglaciated portions of the range. These swamp forests occur in poorly drained flats, topographic basins, or in streamside wetland complexes that do not receive alluvial flooding.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from southeastern Canada to Massachusetts and Connecticut, where it generally occurs at higher elevations.

IVC Nations: CA,US

IVC States/Provinces: CT, MA, ME, NB, NH, NJ, NY, ON, PA, QC, RI, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006312 *Picea rubens - Abies balsamea / Gaultheria hispidula / Osmunda cinnamomea / Sphagnum* spp. Swamp Forest** [Red Spruce - Balsam Fir / Creeping Snowberry / Cinnamon Fern / Peatmoss species Swamp Forest] []
  GNR. CT, MA, ME, NB, NH, NY, VT
- **CEGL006198 *Picea rubens - Acer rubrum / Ilex mucronata* Swamp Forest** [Red Spruce - Red Maple / Catberry Swamp Forest] []
  GNR. CT, MA, ME, NB, NH, NY, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: L. Sneddon, in Faber-Langendoen et al. (2013)

IVC Description Author: L. Sneddon

IVC Description Date: 2014-01-08

IVC Acknowledgments:

M028 Great Plains Floodplain Forest

Forêts alluviales des Grandes Plaines

IVC Colloquial Name: Great Plains Flooded & Swamp Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M028 describes North American Great Plains floodplain forests and woodlands. The Canadian expression of this vegetation occurs on river floodplains throughout the Great Plains region in southern Alberta, Saskatchewan and Manitoba. In Canada, floodplain forests are dominated by cold-deciduous broad-leaved tree species, including eastern cottonwood (*Populus deltoides* ssp. *monilifera*), Manitoba maple (*Acer negundo*) and red ash (*Fraxinus pennsylvanica*), with other species locally important. Dense understory vegetation comprises broad-leaved shrubs, forbs and graminoids. Common species include red-osier dogwood (*Cornus stolonifera*), willows (*Salix* spp.), cranberry viburnum (*Viburnum opulus*), saskatoon (*Amelanchier alnifolia*), chokecherry (*Prunus virginiana*), wolf-willow (*Elaeagnus commutata*), silver buffaloberry (*Shepherdia argentea*), bluejoint reedgrass (*Calamagrostis canadensis*), slender wildrye (*Elymus trachycaulus*), fowl bluegrass (*Poa palustris*), Canada goldenrod (*Solidago canadensis*), star-flowered false Solomon's seal (*Maianthemum stellatum*), wild licorice (*Glycyrrhiza lepidota*), poison ivy (*Toxicodendron radicans*), stinging nettle (*Urtica dioica*), Maryland sanicle (*Sanicula marilandica*) and American cow parsnip (*Heracleum maximum*).

In Canada, M028 occurs in a dry to subhumid continental temperate climate with cold winters and warm summers. Mean annual temperatures average approximately 3ËšC, and precipitation varies from approximately 300 to 500 mm. Sites supporting stands of M028 are characterized by extra moisture as a result of high water tables, run-off from valley slopes and/or stream overflow. Sediment and dissolved materials carried by inflowing water can make floodplain sites relatively nutrient rich. Soils are usually Regosols, lacking horizon development because of ongoing deposition of alluvium.

IVC Geographic Range: This macrogroup is found along permanent rivers throughout the western and central Great Plains from the southern Prairie Provinces of Canada to the panhandle of Texas and from the Rocky Mountains east to the eastern Dakotas, Nebraska and Kansas.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, IA, KS, MB, MN?, MO?, MT, ND, NE, NM, OK, SD, SK, TX, UT, WY

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: *Populus deltoides* here refers to subspecies *monilifera* (plains cottonwood, peuplier deltoïde de l'Ouest).

Toxicodendron radicans here refers to variety r*ydbergii* (Rydberg's poison ivy, sumac de Rydberg).

Viburnum opulus here refers to subspecies *trilobum* (cranberry viburnum, viorne obier).

Groups in Canada:

- **G147 Great Plains Cottonwood - Green Ash Floodplain Forest []**

CNVC Concept Author: Ken Baldwin, Jeff Thorpe, Lorna Allen, USNVC

CNVC Concept Date: 2015-02-01

CNVC Description Author: Jeff Thorpe, Ken Baldwin, Lorna Allen

CNVC Description Date: 2016-03-01

IVC Primary Concept Source: S. Menard, K. Kindscher, P. Comer, G. Kittel, in Faber-Langendoen et al. (2014)

IVC Description Author: J. Drake

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G147 Great Plains Cottonwood - Green Ash Floodplain Forest

[ ]

IVC Colloquial Name: Great Plains Cottonwood - Green Ash Floodplain Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is composed of woodlands and forests found along medium and small rivers in the western and central Great Plains from southern Canada to the Texas panhandle. *Populus deltoides* is the most common tree and may be nearly the only species in the overstory in some stands. Other common trees are *Fraxinus pennsylvanica, Salix nigra, Salix amygdaloides*,

and, in the southeastern portion of this group's range, *Celtis laevigata* and *Platanus occidentalis*. The shrub and herbaceous layers are much more diverse than the canopy across the range of this group with no single species common throughout. Typical shrubs include *Artemisia cana ssp. cana, Cornus* spp., *Salix* spp., and *Symphoricarpos occidentalis*. The herbaceous stratum is strongly influenced by surrounding upland Great Plains grasslands and often contains mid and tallgrass species.

IVC Dynamics: Periodic flooding is important in establishing and maintaining stands of this group. Flooding regime (frequency, severity, duration) is also important in shaping the understory composition and structure. Scouring and deposition during flooding create areas of new bare mineral soil necessary for *Populus deltoides* regeneration. Fire may spread from surrounding uplands, particularly where the understory has a significant herbaceous component.

IVC Environment: This group is found in floodplains and riparian settings along medium and small rivers. Soils are primarily alluvial and range from sandy to clay. This group can occur in deep or shallow river valleys but slopes within stands of this group are typically gentle or nonexistent. Stands are flooded periodically but do not remain submerged for long periods.

DISTRIBUTION

IVC Geographic Range: This group is found along permanent rivers throughout the western and central Great Plains from the southern Prairie Provinces of Canada to the panhandle of Texas and from the Rocky Mountains east to the eastern Dakotas, Nebraska and Kansas.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, IA, KS, MB, MN?, MO?, MT, ND, NE, NM, OK, SD, SK, TX, UT, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline moderate to high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4131 *Fraxinus pennsylvanica - Ulmus americana - Populus deltoides* Floodplain Forest Alliance** [Green Ash - American Elm - Eastern Cottonwood Floodplain Forest Alliance] []
  This alliance includes forests dominated or codominated by *Fraxinus pennsylvanica* occurring on infrequently flooded floodplains and terraces in the northern Great Plains.
- **A3423 *Populus deltoides* Floodplain Forest Alliance** [Eastern Cottonwood Floodplain Forest Alliance] []
  This alliance, found throughout the Great Plains, contains riverfront floodplain forests with a canopy nearly always dominated by *Populus deltoides* and occurring on alluvial soils.
- **A0636 *Populus deltoides* Floodplain Woodland Alliance** [Eastern Cottonwood Floodplain Woodland Alliance] []
  This alliance occurs near rivers and large streams throughout the Great Plains of the U.S. and Canada and extends west into Wyoming and New Mexico. It is dominated by *Populus deltoides* throughout its range. Secondary canopy species include *Acer negundo* throughout, *Salix nigra* (in the eastern part of its range), *Fraxinus pennsylvanica* and *Ulmus americana* (central and eastern), and *Salix amygdaloides* (central and western). The understory composition and structure are variable.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: S. Menard, K. Kindscher, P. Comer, G. Kittel, in Faber-Langendoen et al. (2011)

IVC Description Author: J. Drake

IVC Description Date: 2015-05-19

IVC Acknowledgments:

A4131 Green Ash - American Elm - Eastern Cottonwood Floodplain Forest Alliance

[ ]

Fraxinus pennsylvanica - Ulmus americana - Populus deltoides Floodplain Forest Alliance
Great Plains Ash - Elm Floodplain Forest

IVC Scientific Name: *Fraxinus pennsylvanica - Ulmus americana - Populus deltoides* Floodplain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These floodplain woodlands and forests are found in the northern Great Plains. They have a medium-tall to tall (8-20 m) tree canopy which ranges from open to closed (25-60+%). A tree subcanopy may be present. A deciduous shrub layer is common and can be dense, especially under more open tree canopies. Most shrubs range from 1-3 m tall. The herbaceous stratum is typically moderate to dense, though shading by dense tree or shrub canopies can limit the growth of this stratum. *Fraxinus pennsylvanica* is usually the dominant tree and is nearly always present in stands. *Acer negundo, Tilia americana*, and *Ulmus americana* are commonly present and can be dominant or codominant. Remnant *Populus deltoides* from earlier successional forest stages may be present, usually significantly taller than the main canopy layer. When a tree subcanopy is present it is composed of canopy species, tall shrubs of *Amelanchier alnifolia, Cornus* spp., *Juniperus scopulorum*, and *Prunus virginiana*. Shorter shrubs, particularly *Symphoricarpos occidentalis*, are present to abundant. Graminoids include *Elymus canadensis, Elymus virginicus, Leersia* spp., *Muhlenbergia racemosa*, and *Poa pratensis*. Many forbs can be present but common ones are *Rudbeckia laciniata, Galium* spp., and *Viola* spp. This alliance occurs on floodplains or terraces and sometimes along lakes or ponds on sites that are flooded periodically but are not subject to frequent scouring or deposition from flood events. Soils are alluvium and deep and usually silty.
IVC Dynamics: Flooding is important in maintaining this alliance but intense, frequent floods favor other floodplain alliances. Fires occur in nearby upland prairies but this alliance is not tolerant of burning.
IVC Environment: This alliance occurs on floodplains or terraces and sometimes along lakes or ponds on sites that are flooded periodically but are not subject to frequent scouring or deposition from flood events. Soils are alluvium and deep and usually silty.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the northern Great Plains from the Red River valley to southern Saskatchewan, the western Dakotas, and eastern Wyoming. It probably extends into Montana.
IVC Nations: CA,US
IVC States/Provinces: AB, CO, MB, MN?, MT, ND, SD, SK, UT, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL000628 *Acer negundo / Prunus virginiana* Floodplain Forest** [Box-elder / Chokecherry Floodplain Forest] []
  G3 (1996-02-01) AB, CO, MT, SD, UT, WY
- **CEGL002088 *Fraxinus pennsylvanica - (Ulmus americana) / Symphoricarpos occidentalis* Floodplain Forest** [Green Ash - (American Elm) / Western Snowberry Floodplain Forest] []
  G4? (2000-02-27) MB, ND, SD, SK
- **CEGL005400 *Fraxinus pennsylvanica - Ulmus americana - (Acer negundo, Tilia americana)* Great Plains Floodplain Forest** [Green Ash - American Elm - (Box-elder, American Basswood) Great Plains Floodplain Forest] []
  G3G4 (2013-06-24) MB, ND, SD, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2014)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3423 Eastern Cottonwood Floodplain Forest Alliance

[ ]

Populus deltoides Floodplain Forest Alliance

Eastern Cottonwood Floodplain Forest

IVC Scientific Name: *Populus deltoides* Floodplain Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance, found throughout the Great Plains, contains riverfront floodplain forests. The tree canopy height varies with time since last major disturbance and can reach as much as 30 m, though it is usually shorter. The canopy is nearly always dominated by *Populus deltoides*, often with few other abundant associates. *Fraxinus pennsylvanica* can be codominant, particularly in the northern part of this alliance's range. *Platanus occidentalis* and *Celtis laevigata* can be codominant to dominant in the southern part of this alliance's range. Other common associates are *Acer negundo* and *Ulmus americana*. Tree diversity is limited due to the dynamics of flooding and deposition/scouring of sediments. The shrub layer is sparse to dense, with species such as *Cornus drummondii, Cornus sericea, Prunus virginiana, Salix exigua*, and *Symphoricarpos occidentalis*. Herbaceous growth can be thick and lush but is often patchy and sparse due to frequent inundation. Herbaceous species found throughout the range of this alliance are not well known, but in parts of the range, species can include *Pascopyrum smithii* and *Panicum virgatum* (throughout the range), *Carex* spp., *Juncus* spp., *Leymus cinereus*, and *Elymus canadensis* (common in the northern Great Plains), and *Amphicarpaea bracteata, Carex blanda, Geum canadense, Parietaria pensylvanica*, and others in the central Great Plains. Due to the frequent disturbance, weedy species are almost ubiquitous in the understory, especially *Poa pratensis, Bromus inermis, Melilotus officinalis, Ambrosia* spp., and *Urtica* spp. Stands are found primarily along riverfronts, where they develop on bare, moist soil on newly made sandbars, front-land ridges, and well-drained flats. Soils are formed in alluvium, are deep, medium-textured, and with adequate or excessive moisture available for vegetation during the growing season.

IVC Dynamics: Cottonwood forests grow within an alluvial environment that is continually changing due to the ebb and flow of the river. Riparian vegetation is constantly being "re-set" by flooding disturbance. Cottonwood communities are early-, mid- or late-seral, depending on the age class of the trees and the associated species of the stand. Mature cottonwood stands do not regenerate in place, but regenerate by "moving" up and down a river reach. Over time, a healthy riparian area supports all stages of cottonwood communities. The process of cottonwood regeneration is well-documented. Periodic flooding events can leave sandbars of bare, mineral substrate. Cottonwood seedlings germinate and become established on newly-deposited, moist sandbars. In the absence of large floods in subsequent years, seedlings begin to trap sediment. In time, the sediment accumulates and the sandbar rises. The young forest community is then above the annual flood zone of the river channel. In this newly elevated position, with an absence of excessive browsing, fire, or agricultural conversion, this cottonwood community can grow into a mature riparian forest. At the same time, the river channel continually erodes streambanks and creates fresh, new surfaces for cottonwood establishment. This results in a dynamic patchwork of different age classes, plant associations and habitats. As cottonwoods mature, other tree species may become established. If the land surface is subject to reworking by the river, the successional processes will start over with erosion and subsequent flooding deposition. If the land surface is not subject to alluvial processes, for example on a high terrace, the cottonwoods will be replaced by upland shrub or tree species from adjacent areas.

IVC Environment: Stands of this alliance are found primarily along riverfronts, where they develop on bare, moist soil on newly formed sandbars, front-land ridges, low streambanks, overflow areas, and well-drained flats along major streams and rivers. Stands can also be found on abandoned fields and well-drained ridges in the first bottoms. These sites tend to be further from the main channel. Elevations range from 300 m in the central Great Plains to 1300 m in the western Great Plains. Soils are formed in alluvium, are deep, medium-textured, and with adequate or excessive moisture available for vegetation during the growing season. Typically, the soil profile is highly stratified, but with distinct soil development (B) layers. Textures are predominately loose, friable sands interspersed with narrow bands of clay loams and sandy clays.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Great Plains from southeastern Alberta and southern Saskatchewan, through the Dakotas and Montana south to the Texas Panhandle and Oklahoma.

IVC Nations: CA,US

IVC States/Provinces: AB, KS, MT, ND, NE, OK, SD, SK, TX, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000657 *Populus deltoides / Cornus sericea* Floodplain Forest** [Eastern Cottonwood / Red-osier Dogwood Floodplain Forest] []
  G2G3 (2000-12-19) AB, MT, ND?, SK
- **CEGL000658 *Populus deltoides - Fraxinus pennsylvanica* Floodplain Forest** [Eastern Cottonwood - Green Ash Floodplain Forest] []
  G2G3 (2000-02-27) MT, ND, NE, SD, SK?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A0636 Eastern Cottonwood Floodplain Woodland Alliance

[ ]
Populus deltoides Floodplain Woodland Alliance
Eastern Cottonwood Floodplain Woodland

IVC Scientific Name: *Populus deltoides* Floodplain Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance occurs near rivers and large streams throughout the Great Plains and extends west into Wyoming and New Mexico. It is dominated by *Populus deltoides* throughout its range. Secondary canopy species include *Acer negundo* throughout, *Salix nigra* (in the eastern part of its range), *Fraxinus pennsylvanica* and *Ulmus americana* (central and eastern), and *Salix amygdaloides* (central and western). *Fraxinus pennsylvanica* and *Ulmus americana* often increase in abundance and dominance as stands of this alliance age. *Populus deltoides* does not reproduce well in established stands. The understory composition and structure are variable. A shrub layer may be present, with species such as *Salix* spp., *Symphoricarpos occidentalis*, and *Prunus virginiana* predominating. Sites experience seasonal floods, which, after receding, leave areas available for colonization. This process often favors the establishment of aggressive native and exotic plants. Among the species that are common in this alliance are *Carex* spp., *Juncus* spp., *Spartina pectinata* (in the east), *Pascopyrum smithii* (in the west), *Elymus* spp., *Cenchrus longispinus, Melilotus officinalis*, and *Equisetum* spp. Typical exotics found in this alliance are *Poa pratensis* and *Bromus* spp. Stands of this alliance are found on level to gently sloping topography near rivers, streams, lakes, and ponds. The areas may have been very recently deposited by water action, or they may have been deposited earlier and occupied by other communities. The water table fluctuates with the level of the adjacent waterbody. This can lead to periods of flooding and soil saturation in the spring and after heavy rains and also to periods of drought when the water level falls in the summer and fall. The soils are silts, loams, and sands, and are derived from alluvial material.

IVC Dynamics: Cottonwood forests grow within an alluvial environment that is continually changing due to the ebb and flow of the river. Riparian vegetation is constantly being "re-set" by flooding disturbance. Cottonwood communities are early-, mid- or late-seral, depending on the age class of the trees and the associated species of the stand. Mature cottonwood stands do not regenerate in place, but regenerate by "moving" up and down a river reach. Over time, a healthy riparian area supports all stages of cottonwood communities. The process of cottonwood regeneration is well-documented. Periodic flooding events can leave sandbars of bare, mineral substrate. Cottonwood seedlings germinate and become established on newly-deposited, moist sandbars. In the absence of large floods in subsequent years, seedlings begin to trap sediment. In time, the sediment accumulates and the sandbar rises. The young forest community is then above the annual flood zone of the river channel. In this newly elevated position, with an absence of excessive browsing, fire, or agricultural conversion, this cottonwood community can grow into a mature riparian forest. At the same time, the river channel continually erodes streambanks and creates fresh, new surfaces for cottonwood establishment. This results in a dynamic patchwork of different age classes, plant associations and habitats. As cottonwoods mature, other tree species may become established. If the land surface is subject to reworking by the river, the successional processes will start over with erosion and subsequent flooding deposition. If the land surface is not

subject to alluvial processes, for example on a high terrace, the cottonwoods will be replaced by upland shrub or tree species from adjacent areas.

IVC Environment: Stands of this alliance are found on level to gently sloping topography near rivers, streams, lakes, and ponds throughout the Great Plains, extending west into Wyoming and New Mexico to the western slope of Colorado and extending into mountain valleys and on to Colorado Plateau. The areas may have been very recently deposited by water action or they may have been deposited earlier and occupied by other communities (Wilson 1970). The water table fluctuates with the level of the adjacent waterbody. This can lead to periods of flooding and soil saturation in the spring and after heavy rains and also to periods of drought when the water level falls in the summer and fall. The soils are silts, loams, and sands, and are derived from alluvial material (Wilson 1970, Hansen et al. 1984, Thilenius et al. 1995).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Great Plains from southern Alberta and Saskatchewan and southwestern Manitoba, through the Dakotas and Montana south to the Texas Panhandle, Oklahoma, and northeastern New Mexico. This alliance probably extends east along the Missouri River and major tributaries into western Iowa and western Missouri.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, KS, MB, MO?, MT, ND, NE, NM, OK, SD, SK?, TX, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000659** ***Populus deltoides - (Salix amygdaloides) / Salix (exigua, interior)*** **Floodplain Woodland** [Eastern Cottonwood - (Peachleaf Willow) / (Narrowleaf Willow, Sandbar Willow) Floodplain Woodland] []
  G3G4 (1998-06-22) CO, KS, MB?, ND, NE, NM, OK, SD, SK?, TX?, WY
- **CEGL000660** ***Populus deltoides / Symphoricarpos occidentalis*** **Floodplain Woodland** [Eastern Cottonwood / Western Snowberry Floodplain Woodland] []
  G2G3 (1998-06-22) AB, CO, MT, ND, SD, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Culver and K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake

IVC Description Date: 2017-06-30

IVC Acknowledgments:

M302 Eastern North American Ruderal Flooded & Swamp Forest

[ ]

IVC Colloquial Name: Eastern North American Ruderal Flooded & Swamp Forest
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup consists of forested wetlands throughout much of the eastern half of the United States and southern Canada north of Virginia, Tennessee, and Arkansas and east of the Great Plains. Sites where these forests are found have been extensively affected by disturbance such as logging, agricultural use, or a large change in the hydrologic regime. Sites are in depressional wetlands or along the edges of ponds, lakes or rivers. Dominant trees are early-successional native species adapted to wet conditions, especially *Acer negundo* (exotic in some parts of the range), *Acer rubrum, Acer saccharinum, Fraxinus pennsylvanica*, and *Salix* spp. In a few sites, exotic trees such as *Acer platanoides, Salix alba*, or *Salix fragilis* may be dominant. The understory is heavily invaded by exotic or invasive native shrub and herbaceous species, including exotics such as *Berberis thunbergii* (mostly in floodplains and temporarily flooded swamps), *Frangula alnus, Ligustrum sinense, Ligustrum vulgare, Rhamnus cathartica*, and *Rosa multiflora* (mostly in open floodplains), with occasional generalist native species such as *Cornus amomum* and *Cornus sericea*. Herbaceous species may include the exotics *Alliaria petiolata* (mostly in floodplains), *Barbarea vulgaris, Galeopsis* spp., *Glechoma hederacea, Hesperis matronalis, Hylotelephium telephium, Lysimachia nummularia, Microstegium vimineum* (more in floodplains but also basin wetlands), *Myosotis scorpioides, Phalaris arundinacea, Phlox paniculata, Phragmites australis*, and many others. They may be mixed with very generalist native herbaceous species, such as *Calamagrostis canadensis, Cirsium* spp., *Eupatorium* spp., *Galium* spp., *Geum canadense, Glyceria striata, Impatiens capensis, Leersia oryzoides, Solidago canadensis, Solidago rugosa*, and *Urtica dioica*.

IVC Geographic Range: These forested wetlands are found throughout much of the eastern half of the United States and southern Canada north of a line from Virginia to Arkansas and east of the Great Plains.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC, DE, GA, IA, IL, KY, LA, MA, MD, ME, MI, MN, MO, MS, NB, NH, NJ, NS, NY, OH, OK, ON, PA, PE, QC, RI, SC, SD?, TN, TX?, VA, VT, WI, WV

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G552 Eastern North American Ruderal Flooded & Swamp Forest []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: J. Drake and D. Faber-Langendoen

IVC Description Date: 2015-06-05

IVC Acknowledgments: Sean Basquill

G552 Eastern North American Ruderal Flooded & Swamp Forest

[ ]

IVC Colloquial Name: Eastern North American Ruderal Flooded & Swamp Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group consists of forested wetlands throughout much of the eastern half of the United States and southern Canada north of Virginia, Tennessee, and Arkansas and east of the Great Plains. Sites where these forests are found have been extensively affected by disturbance such as logging, agricultural use, or a large change in the hydrologic regime. Sites are in depressional wetlands or along the edges of ponds, lakes or rivers. Dominant trees are early-successional native species adapted to wet conditions, especially *Acer negundo* (exotic in some parts of the range), *Acer rubrum, Acer saccharinum, Fraxinus pennsylvanica, Ostrya virginiana, Populus balsamifera, Prunus serotina*, and *Salix* spp. Northward *Picea glauca* is an occasional

dominant. The understory is heavily invaded by exotic or invasive native shrub and herbaceous species, including exotics such as *Frangula alnus, Rhamnus cathartica, Rosa multiflora* (mostly in open floodplains), *Berberis thunbergii* (mostly in floodplains and temporarily flooded swamps), *Ligustrum sinense*, and *Ligustrum vulgare* with occasional generalist native species such as *Cornus amomum* and *Cornus sericea*. Herbaceous exotics include *Alliaria petiolata* (mostly in floodplains), *Barbarea vulgaris, Galeopsis* spp., *Glechoma hederacea, Hesperis matronalis, Hylotelephium telephium, Lysimachia nummularia, Microstegium vimineum* (more in floodplains but also basin wetlands), *Myosotis scorpioides, Phalaris arundinacea, Phlox paniculata, Phragmites australis*, and many others. They may be mixed with very generalist native herbaceous species such as *Calamagrostis canadensis, Cirsium* spp., *Eupatorium* spp., *Galium* spp., *Geum canadense, Glyceria striata, Impatiens capensis, Leersia oryzoides, Solidago canadensis*, and *Solidago rugosa*.

IVC Dynamics: These wetland forests are more likely than natural/ruderal forests to be affected by further anthropogenic disturbances. This can include logging or tree clearing of some sort, manipulation of hydrology, continued introduction of seeds of exotic species, etc. In addition, the normal dynamics common to wetland forests can affect examples of this group. Years of higher or lower than normal precipitation, windthrow, and disease can all affect the composition and physiognomy.

IVC Environment: This group is found on mineral soils or shallow peat (<30 cm) that are flooded for some or all of the growing season. Soils range from coarse (often alluvial soils) to fine-textured.

DISTRIBUTION

IVC Geographic Range: These forested wetlands are found throughout much of the eastern half of the United States and southern Canada north of a line from Virginia to Arkansas and east of the Great Plains.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC, DE, GA, IA, IL, KY, LA, MA, MD, ME, MI, MN, MO, MS, NB, NH, NJ, NS, NY, OH, OK, ON, PA, PE, QC, RI, SC, SD?, TN, TX?, VA, VT, WI, WV

IVC Omernik Ecoregions: 5.2.1.50:P, 5.2.2.49:P, 5.3.1.58:P, 5.3.3.62:P, 8.1.1.83:P, 8.1.3.60:P, 8.1.4.51:P, 8.1.5.52:P, 8.1.6.56:P, 8.1.7.59:P, 8.1.8.82:P, 8.1.10.61:P, 8.2.1.53:P, 8.2.2.57:P, 8.2.3.54:P, 8.2.4.55:P, 8.3.1.64:P, 8.3.2.72:P, 8.3.3.71:P, 8.3.4.45:P, 8.4.1.67:P, 8.4.2.69:P, 8.4.3.70:P, 8.4.4.66:P, 8.4.5.39:P, 8.4.6.38:P, 8.4.7.37:P, 8.4.8.36:P, 8.4.9.68:P, 8.5.4.84:P, 9.2.1.46:P, 9.2.2.48:P, 9.2.3.47:P, 9.2.4.40:P, 9.3.1.42:P, 9.3.4.44:P, 9.4.2.27:P, 9.4.4.28:P, 9.4.5.29:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2010-12-18)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4099 *Acer negundo - Betula nigra / Alliaria petiolata* Ruderal Floodplain Forest Alliance** [Box-elder - River Birch / Garlic Mustard Ruderal Floodplain Forest Alliance] []
  This alliance is composed of heavily disturbed floodplain or, less often, depressional wetlands in the eastern United States dominated by *Acer negundo, Betula nigra*, or other weedy native trees with an understory strongly dominated by exotic and generalist native species.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2011)
IVC Description Author: J. Drake and D. Faber-Langendoen
IVC Description Date: 2015-06-05
IVC Acknowledgments: Scott Franklin, Sean Basquill

A4099 Box-elder - River Birch / Garlic Mustard Ruderal Floodplain Forest Alliance

[ ]

Acer negundo - Betula nigra / Alliaria petiolata Ruderal Floodplain Forest Alliance

Ruderal Box-elder - Mixed Hardwood Floodplain Forest

IVC Scientific Name: *Acer negundo - Betula nigra / Alliaria petiolata* Ruderal Floodplain Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This semi-open to closed-canopy forest is found on floodplains in the southern, eastern, and midwestern United States. Stands are typically temporarily flooded in the spring. These early-successional forests are dominated by *Acer negundo*. Other characteristic species include *Acer rubrum, Acer saccharinum, Betula nigra, Carpinus caroliniana, Carya cordiformis, Celtis laevigata, Fraxinus pennsylvanica, Juglans nigra, Liquidambar styraciflua, Liriodendron tulipifera, Morus rubra, Platanus occidentalis, Populus deltoides, Robinia pseudoacacia, Ulmus alata*, and *Ulmus rubra*. The shrub and herb layers range from sparse to dense, and the vine component is often heavy. The herb layer consists of a mixture of weedy exotics and native floodplain generalists, including *Alliaria petiolata* and *Microstegium vimineum*. Stands occur on large rivers in active floodplains and on sandbars and also form farther from the riverfront in disturbed wet areas. Occurrences are mostly on higher floodplain terraces with less rocky soils that were cleared for agriculture or other development.

IVC Dynamics: This type is an early-successional community that arises from natural and anthropogenic disturbances on floodplains and wet depressional wetlands. Flooding or human-induced disturbances create open areas where this alliance can form.

IVC Environment: This alliance occurs on large rivers in the active floodplains and in depressional wetlands that have been cleared. In floodplains, it usually occurs on higher terraces with sandy or silty soil that were cleared for agriculture or other development. Stands are usually flooded temporarily in the spring or following heavy rains.

DISTRIBUTION

IVC Geographic Range: This floodplain forest is found on floodplains and disturbed wetlands in the southern, eastern, and midwestern United States, ranging from New York west to Iowa and Minnesota, south to Louisiana and east to Georgia.

IVC Nations: CA?,US

IVC States/Provinces: AL, AR, DC, DE, GA, IA, KY, LA, MD, MN, MO, MS, NJ, NY, OK, PA, QC?, SC, SD?, TN, TX?, VA, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2014-03-28)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005033 *Acer negundo* Ruderal Floodplain Forest** [Box-elder Ruderal Floodplain Forest] []
  GNA (2014-03-28) AL, AR, DC, DE, GA, IA, KY, LA, MD, MN, MO, MS, NJ, NY, OK, PA, SC, SD?, TN, TX?, VA, WV

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2014)

IVC Description Author: J. Drake

IVC Description Date: 2015-12-30

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by E. Largay and S. Gawler.

M034 Rocky Mountain - Great Basin Montane Riparian & Swamp Forest

Forêts montagnardes, riveraines et marécageuses des Rocheuses et du Grand Bassin

IVC Colloquial Name: Rocky Mountain-Great Basin Montane Riparian & Swamp Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M034 This macrogroup consists of riparian and permanently saturated forests and woodlands dominated by cottonwood trees, conifer trees or a mix. Typical canopy species are subalpine fir (Abies lasiocarpa), Engelmann spruce (Picea engelmannii), lodgepole pine (Pinus contorta), black cottonwood (Populus trichocarpa), trembling aspen (Populus tremuloides), western redcedar (Thuja plicata), hybrid white spruce (Picea glauca x engelmannii), peachleaf willow (Salix amygdaloides), or mountain alder (Alnus tenuifolia), depending upon ecological context. Stands usually have complex structure of tree, shrub and herbaceous layers. Shrubs species include willows (Salix spp.), water birch (Betula occidentalis), red-osier dogwood (Cornus sericea), black twinberry (Lonicera involucrata), and various gooseberries or currants (Ribes spp.). Herbaceous layers can be dominated by forbs, graminoids or be sparsely vegetated, depending on soil moisture, the amount of shading, and disturbance history. Dominant herbaceous species include lady fern (Athyrium filix femina), bluejoint reedgrass (Calamagrostis canadensis), horsetails (Equisetum arvense, E. pratense), oak fern (Gymnocarpium dryopteris), star-flowered false Soloman's-seal (Maianthemum stellatum), soft-leaved sedge (Carex disperma), triangle-leaved ragwort (Senecio triangularis), or wild ginger (Asarum caudatum). Introduced forage species such as creeping bentgrass (Agrostis stolonifera), Kentucky bluegrass (Poa pratensis), and timothy (Phleum pretense), can be abundant in areas where cattle graze. Sites include streambanks, hillside seeps and floodplain soils that are seasonally wet via high water tables or surface flooding. In Canada, this macrogroup occupies interior mountains and valleys of British Columbia and southwestern Alberta.

IVC Geographic Range: This macrogroup occurs in the northern and southern Rocky Mountains, northwestern Wyoming and central Montana, north into the Canadian Rockies of Alberta and British Columbia and west into Idaho, eastern Oregon and Washington, on the east slopes of the Cascades, in mountains surrounding the Columbia River Basin, along major tributaries and the main stem of the Columbia at relatively low elevations except west of the Cascades, on the Colorado Plateau, in the Great Basin basins and ranges as well as the eastern slope of the Sierra Nevada, extending to the mountains of Arizona, New Mexico and into Mexico (Szaro 1989).

IVC Nations: CA,MX,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, NM, NV, OR, SD, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: M034 characterizes wetland and riparian forests and woodlands of cool continental temperate climates of western North America. M035 Vancouverian Flooded & Swamp Forest occurs in temperate maritime climates to the west. In Canada, floodplain and swamp forests and woodlands to the east of M034 are included in either M504 Northern Flooded & Swamp Forest, which includes Silver maple - Green ash - Black ash floodplain forests, north temperate conifer & hardwood acidic swamp forests, and eastern Canadian temperate climate balsam poplar forests, or M028 Northern & Central Great Plains Floodplain Forest, where eastern cottonwood (Populus deltoides) predominates. Wetland and floodplain forests of boreal climates are in M299 North American Boreal Flooded, Swamp & Bog Forest.

Pinus contorta [see Comments],
Pseudotsuga menziesii [see Comments
***Acer** glabrum var. douglasii*

Groups in Canada:

- **G506 Rocky Mountain-Great Basin Montane Riparian Forest []**
- **G505 Rocky Mountain-Great Basin Swamp Forest []**
- **G796 Central Rocky Mountain Lowland & Foothill Riparian Forest []**

CNVC Concept Author: D. Meidinger, K. Baldwin, USNVC
CNVC Concept Date: 2015-04-01
CNVC Description Author: D. Meidinger, K. Baldwin
CNVC Description Date: 2020-02-01
IVC Primary Concept Source: Faber-Langendoen et al. (2014)
IVC Description Author: G. Kittel and M.S. Reid
IVC Description Date: 2015-05-11
IVC Acknowledgments:

G506 Rocky Mountain-Great Basin Montane Riparian Forest

[ ]

IVC Colloquial Name: Rocky Mountain-Great Basin Montane Riparian Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group contains woodlands dominated by cottonwood, conifer and aspen that line montane streams. Dominant tree species usually include *Abies lasiocarpa, Picea engelmannii, Pinus ponderosa, Juniperus scopulorum*, and/or *Populus angustifolia*; other important species include *Pseudotsuga menziesii, Picea pungens, Picea x albertiana*, and *Populus tremuloides*. Other trees possibly present but not usually dominant include *Alnus incana, Abies concolor, Abies grandis, Pinus contorta*, and *Juniperus osteosperma*. Shrub cover tends to be limited but may include *Alnus incana, Betula occidentalis, Cornus sericea, Crataegus rivularis, Forestiera pubescens var. pubescens, Ribes* spp., *Rosa woodsii, Salix* spp., and others. The herbaceous undergrowth can be lush to depauperate. Herbaceous species include *Calamagrostis canadensis, Carex aquatilis var. aquatilis, Carex obnupta, Carex pellita, Equisetum arvense, Heracleum maximum, Ranunculus alismifolius, Senecio bigelovii var. bigelovii, Streptopus amplexifolius*, and *Veratrum californicum*. This riparian group includes seasonally flooded forests found at montane to subalpine elevations of the Rocky Mountain cordillera, from southern New Mexico north into Montana, and west into the Intermountain West region and the Colorado Plateau. It occurs throughout the interior of British Columbia and the eastern slopes of the Cascade Range. These are communities tolerant of periodic flooding and high water tables. Snowmelt moisture may create shallow water tables or seeps for a portion of the growing season. Stands typically occur at elevations between 1500 and 3300 m (4920-10,830 feet); farther north, elevation ranges between 900 and 2000 m. This is confined to specific riparian environments occurring on floodplains or terraces of rivers and streams, in V-shaped, narrow valleys and canyons (where there is cold-air drainage). Less frequently, occurrences are found in moderately wide valley bottoms on large floodplains along broad, meandering rivers, and on pond or lake margins.

IVC Dynamics:

IVC Environment: *Climate*: Temperate cold. *Soil/substrate/hydrology:* Stands typically occur at elevations between 1500 and 3300 m (4920-10,830 feet); farther north, elevation ranges between 900 and 2000 m. This group is confined to specific riparian environments occurring on floodplains or terraces of rivers and streams, in V-shaped, narrow valleys and canyons (where there is cold-air drainage). Less frequently, occurrences are found in moderately wide valley bottoms on large floodplains along broad, meandering rivers, on pond or lake margins, and seeps on gentle slopes. Environmental information is compiled from several sources: for eastern Washington and Oregon (Kovalchik 1987, 1992, 2001, Crowe and Clausnitzer 1997); for Nevada (Manning and Padgett 1995); for Colorado (Baker 1988, 1989a, 1989b, 1990, Kittel et al. 1994, 1995, 1999a, 1999b); for Montana (Butler 1979, 1985, Malanson and Butler 1984, Hansen et al. 1989); for British Columbia (MacKenzie and Moran 2004); for Utah (Padgett et al. 1989, Tuhy et al. 2002); for New Mexico and Arizona (Szaro 1989, Muldavin et al. 2000a); and for Wyoming (Walford 1996, Walford et al. 2001).

DISTRIBUTION

IVC Geographic Range: This group is found at montane to subalpine elevations of the Rocky Mountain cordillera, from southern New Mexico north into Montana, Alberta and British Columbia, and west into the Intermountain West region and the Colorado Plateau.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, NM, NV, OR, SD, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 9.4.1.25:P, 9.4.3.26:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.4.24:P, 12.1.1.79:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G4* rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3762 *Abies grandis* Rocky Mountain Riparian Forest Alliance** [Grand Fir Rocky Mountain Riparian Forest Alliance] []
  This alliance consists of riparian areas dominated by *Abies grandis*, usually with other conifers. *Abies lasiocarpa, Larix occidentalis, Pinus monticola*, and *Pseudotsuga menziesii* may be present to codominant. *Betula papyrifera* or *Populus balsamifera ssp. trichocarpa* sometimes form a scattered subcanopy. It occupies sites on benches, toeslopes or valley bottoms along mountain streams. The alliance occurs in the Rocky Mountains of western Montana, Idaho and eastern Washington and eastern Oregon, possibly extending into British Columbia Elevations range from 790-1410 m.
- **A3757 *Abies lasiocarpa* - *Picea engelmannii* Riparian Forest Alliance** [Subalpine Fir - Engelmann Spruce Riparian Forest Alliance] []
  This alliance includes subalpine riparian or seep slope conifer forests characterized by the codominance of the conifers *Abies lasiocarpa* and *Picea engelmannii*. Other conifer species that may be present to codominant include *Picea engelmannii x glauca, Picea glauca, Pinus contorta*, and *Tsuga mertensiana* in the upper montane and subalpine areas of the Rocky Mountains. These forests occur in landscape positions where snowmelt moisture creates shallow water tables, seeps, or streamside flooding during much of the growing season.
- **A4154 *Acer negundo* - *Alnus incana ssp. tenuifolia* - *Cornus sericea* Riparian Woodland Alliance** [Box-elder - Thinleaf Alder - Red-osier Dogwood Riparian Woodland Alliance] []
- **A3759 *Populus angustifolia* Riparian Forest Alliance** [Narrowleaf Cottonwood Riparian Forest Alliance] []
  This alliance consists of riparian woodlands dominated by *Populus angustifolia* alone or codominated with other deciduous or coniferous trees. It occurs on narrow stream terraces and large floodplains in the Rocky Mountains of Montana, Idaho, Wyoming, Utah, Colorado and New Mexico. It is also found in the mountains of eastern Oregon, Nevada, California's Sierra Nevada, and the highlands of Arizona. Elevations range from 1200-2750 m (4000-9000 feet).
- **A3760 *Populus tremuloides* Riparian Forest Alliance** [Quaking Aspen Riparian Forest Alliance] []
  This alliance includes only those stands of *Populus tremuloides* that are truly wetlands and riparian in their setting. Most stands of this alliance are found in riparian zones. Some may be near lakes where the ground is flooded or saturated for a short time in the spring. The moderate to closed tree canopy is dominated by *Populus tremuloides*; sometimes other tress are codominant, such as *Populus angustifolia, Abies concolor, Pinus ponderosa*, and *Picea pungens*. More open stands have a prominent shrub layer containing species such as *Alnus incana, Cornus sericea*, and *Salix* spp. This alliance is found in the Rocky Mountains of Alberta, Montana, Idaho, Wyoming, Colorado, Utah, eastern Oregon and Washington, and Great Basin mountain ranges of Nevada, possibly extending into the Sierra Nevada of California. In addition it occurs on high plateaus and canyons of New Mexico.
- **A4432 *Thuja plicata* - *Tsuga heterophylla* Rocky Mountain Riparian Forest Alliance** [Western Red-Cedar - Western Hemlock Rocky Mountain Riparian Forest Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2011)
IVC Description Author: G. Kittel
IVC Description Date: 2015-05-11
IVC Acknowledgments:

A3762 Grand Fir Rocky Mountain Riparian Forest Alliance

[ ]
Abies grandis Rocky Mountain Riparian Forest Alliance
Rocky Mountain Grand Fir Riparian Forest

IVC Scientific Name: *Abies grandis* Rocky Mountain Riparian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This is an alliance of riparian woodlands dominated by *Abies grandis*, usually with other conifers. *Abies lasiocarpa, Larix occidentalis, Pinus monticola*, and *Pseudotsuga menziesii* may be present to codominant. *Betula papyrifera* or *Populus balsamifera ssp. trichocarpa* sometimes forms a scattered subcanopy. There is usually a rich and well-developed shrub layer. Common shrubs include *Acer glabrum, Linnaea borealis, Rosa gymnocarpa, Rubus parviflorus*, and *Symphoricarpos albus*. The herbaceous layer is characterized by a diverse assemblage of moist-site forbs and ferns, including *Aralia nudicaulis, Athyrium filix-femina, Galium triflorum, Goodyera oblongifolia, Maianthemum stellatum, Orthilia secunda, Osmorhiza berteroi, Senecio*

triangularis, and *Tiarella trifoliata*. This alliance occurs in the Rocky Mountains of western Montana, Idaho and eastern Washington and eastern Oregon, possibly extending into British Columbia. It occupies sites on benches, toeslopes or valley bottoms along mountain streams. Elevations where the alliance occurs range from 790-1410 m. Soils are typically very cobbly silt loams or sandy loam. Water tables are generally within 1 m of the soil surface in the spring, but the soils are well-drained.

IVC Dynamics: The nominal species of this alliance is a long-lived, shade-tolerant conifer which can regenerate under a dense forest canopy. This type is often adjacent to drier *Pseudotsuga menziesii* or drier *Abies grandis* forests. Although *Abies grandis* is regarded as a climax species at such sites, repeated fire or disturbance can allow early-seral, but long-lived species, such as *Picea engelmannii* to codominate for many years. In mature, wet stands of this alliance, regeneration may be limited to rotting logs or stumps which allow germination above the wet forest floor.

IVC Environment: This alliance generally occupies sites on benches, toeslopes or valley bottoms along mountain streams. Elevations where the alliance occurs range from 790-1410 m. Soils are typically very cobbly silt loams or sandy loam (Hansen et al. 1995). Water tables are generally within 1 m of the soil surface in the spring, but the soils are well-drained. Vegetation occurs within the maritime-influenced region of the northern Rocky Mountains.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the Rocky Mountains of western Montana, Idaho and eastern Washington and eastern Oregon, possibly extending into British Columbia.

IVC Nations: CA?,US

IVC States/Provinces: BC?, ID, MT, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A3757 Subalpine Fir - Engelmann Spruce Riparian Forest Alliance

[ ]

Abies lasiocarpa - Picea engelmannii Riparian Forest Alliance

Subalpine Fir - Engelmann Spruce Swamp Forest

IVC Scientific Name: *Abies lasiocarpa - Picea engelmannii* Riparian Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes subalpine riparian or seep slope conifer forests characterized by the codominance of the conifers *Abies lasiocarpa* and *Picea engelmannii*. Other conifer species that may be present to codominant include *Picea engelmannii x glauca, Picea glauca, Pinus contorta*, and *Tsuga mertensiana*. Additional conifers may also be present in small amounts. The shrub layer is often well-developed, occurring as a dense ribbon along streams or where there is a break in the forest canopy. Important shrubs include *Alnus incana, Alnus viridis ssp. sinuata, Ledum glandulosum, Lonicera* spp., *Oplopanax horridus, Ribes lacustre, Salix* spp., *Vaccinium* spp., and *Xerophyllum tenax*. The herbaceous layer is typically lush and dominated by a mixture of mesophytic mostly forbs and some graminoids, including *Arnica cordifolia, Calamagrostis* spp., *Caltha leptosepala, Cardamine cordifolia, Carex* spp., *Deschampsia cespitosa, Dodecatheon jeffreyi, Equisetum* spp., *Ligusticum porteri, Ligusticum* spp., *Linnaea borealis, Mertensia ciliata, Mitella pentandra, Orthilia secunda, Oxypolis fendleri, Senecio triangularis, Senecio triangularis*, and *Streptopus amplexifolius*. These forests occur in the upper montane and subalpine areas of the Rocky Mountains in landscape

positions where snowmelt moisture creates shallow water tables, seeps, or streamside flooding during much of the growing season. Sites include moist toeslopes, subirrigated stream terraces, alluvial benches, pond margins, wet meadows, or slopes and hillsides that are wet in spring and early summer. Soils often show evidence of podzolization processes and gleying due to seasonally saturated conditions, and tend to be acidic. They often have high organic matter content throughout the profile, but can vary from shallow to deep, and coarse to fine-textured.

IVC Dynamics: *Abies lasiocarpa* temporarily flooded forests develop at sites with cool summer temperatures and wet soils. Tree growth is very slow in these habitats, and forests are rapidly colonized by much more rapidly growing shade-intolerant species, such as *Pinus contorta, Populus tremuloides*, or *Alnus viridis ssp. sinuata*, following fire, clearcut logging, or windthrow disturbance. Extensive windthrow is not common due to the relatively sheltered topographic positions. Removal of the tree layer at these sites can lead to rising water tables and expansion of anaerobic wetland soils, precluding recolonization by trees.

IVC Environment: These are semi-riparian or seep slope forests in upper montane and subalpine areas of the northern and central Rocky Mountains. Annual precipitation generally exceeds 75 cm in these forests in the Northern Rockies, snowpacks are typically deep and late-lying, and summers are cool. Summer frosts are characteristic in these habitats, due to cold-air drainage. Elevations range from 1525-2290 m in the northern Rocky Mountains, and from 2500-3480 m in Colorado and New Mexico. These forests occur in landscape positions where snowmelt moisture creates shallow water tables or seeps for a portion of the growing season. Sites include lower and middle slopes, stream terraces, benches, narrow valleys, or seep slopes. Slope aspects vary, but are often northerly, and can be flat to moderately steep (up to 55%). When these forests occur along streams, they are usually within 5 m of the stream channel and within 2 m of channel bankfull height (Kittel et al. 1999a). Soils often show evidence of podzolization processes and gleying due to seasonally saturated conditions. They often have high organic matter content throughout the profile. These forests are a specialized type within the *Abies - Picea* matrix type in subalpine areas of the Rocky Mountains, but may extend into montane habitats due to cold-air drainage and cool, moist microhabitats. Adjacent upland forests include *Picea engelmannii* or *Abies lasiocarpa* forests at the upper elevation boundary and *Pseudotsuga menziesii, Abies grandis*, or *Tsuga heterophylla - Thuja plicata* forests at lower elevations. Wetter sites often support herbaceous, cold-deciduous, or ericaceous riparian plant communities, or *Abies lasiocarpa* seasonally flooded forest communities.

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout the Rocky Mountains from eastern Oregon and Washington, southern British Columbia and Alberta, Montana, Wyoming, Colorado, Utah, New Mexico, the Sky Islands of Arizona, as well as mountain ranges in Nevada.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CO, ID, MT, NM, NV, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002677 *Picea engelmannii / Cornus sericea* Riparian Woodland** [Engelmann Spruce / Red-Osier Dogwood Riparian Woodland] []
  G3 (2000-01-18) AB?, CO, ID, MT, OR, UT?, WA, WY
- **CEGL005843 *Picea engelmannii / Salix drummondiana* Riparian Woodland** [Engelmann Spruce / Drummond's Willow Riparian Woodland] []
  G2G3 (2004-03-17) AB?, MT
- **CEGL000336 *Abies lasiocarpa - Picea engelmannii / Streptopus amplexifolius* Riparian Forest** [Subalpine Fir - Engelmann Spruce / Clasping Twisted-Stalk Riparian Forest] []
  G4 (1996-02-01) AB, ID, MT, OR, UT, WA, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A4154 Box-elder - Thinleaf Alder - Red-osier Dogwood Riparian Woodland Alliance

[ ]

Acer negundo - Alnus incana ssp. tenuifolia - Cornus sericea Riparian Woodland Alliance

Box-elder - Thinleaf Alder - Red-osier Dogwood Riparian Woodland

IVC Scientific Name: *Acer negundo - Alnus incana ssp. tenuifolia - Cornus sericea* Riparian Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AZ, CO, ID, MT, NM, UT, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al.
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3759 Narrowleaf Cottonwood Riparian Forest Alliance

[ ]

Populus angustifolia Riparian Forest Alliance

Narrowleaf Cottonwood Riparian Forest

IVC Scientific Name: *Populus angustifolia* Riparian Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of riparian forests and woodlands dominated by *Populus angustifolia* alone or codominated with other deciduous or coniferous trees. Due to the broad north to south geographic scope of this alliance, as well as its elevational range from foothill to subalpine, many other tree species may be present within stands. These include *Abies lasiocarpa, Acer grandidentatum, Acer negundo, Juniperus scopulorum, Picea engelmannii, Picea pungens, Pinus ponderosa, Populus balsamifera, Populus deltoides, Pseudotsuga menziesii*, and *Salix amygdaloides*. The shrub layer is dominated by *Acer glabrum, Alnus incana, Alnus oblongifolia, Amelanchier alnifolia, Amelanchier utahensis, Artemisia tridentata, Brickellia californica, Cornus sericea, Crataegus rivularis, Juniperus deppeana, Lonicera involucrata, Quercus gambelii, Rosa woodsii, Salix* spp., and/or *Symphoricarpos occidentalis*. Woody vines may be present, such as *Clematis ligusticifolia, Humulus lupulus var. lupuloides,*

Parthenocissus quinquefolia, and *Vitis arizonica*. The herbaceous undergrowth is often dominated by non-native hay grasses and little forb cover. Common forbs that can be abundant include *Achillea millefolium, Heracleum maximum, Maianthemum stellatum, Osmorhiza depauperata*, and/or *Thalictrum fendleri*. This alliance occurs in the Rocky Mountains of Montana, Idaho, Wyoming, Utah, Colorado and New Mexico. It is also found in the mountains of eastern Oregon, Nevada, California's Sierra Nevada, and the highlands of Arizona. Stands occur on narrow stream terraces and large floodplains. Elevations range from 1200-2750 m (4000-9000 feet). Microtopography is often smooth to gently undulating with slopes between 2 and 5%. Stands generally occur within 1 m vertical distance of flooding high water mark, but can also occur on higher terraces, up to 3 m above the channel. Water tables fluctuate seasonally, subirrigating soils in spring, but often dropping and drying soils by late August. Soils are typically well-drained with large amounts of coarse fragments in the subsurface horizons. The soil textures are fine sandy loams, clay loams, silty clay loams, and silty clay, sometimes with buried thin organic layers. Stands have also been documented on pure sand, where streams bisected sand dunes.

IVC Dynamics: Cottonwood forests grow within an alluvial environment that is continually changing due to the ebb and flow of the river. Riparian vegetation is constantly being "re-set" by flooding disturbance. Cottonwood communities are early-, mid- or late-seral, depending on the age class of the trees and the associated species of the stand. Mature cottonwood stands do not regenerate in place, but regenerate by "moving" up and down a river reach. Over time, a healthy riparian area supports all stages of cottonwood communities. The process of cottonwood regeneration is well-documented. Periodic flooding events can leave sandbars of bare, mineral substrate. Cottonwood seedlings germinate and become established on newly-deposited, moist sandbars. In the absence of large floods in subsequent years, seedlings begin to trap sediment. In time, the sediment accumulates and the sandbar rises. The young forest community is then above the annual flood zone of the river channel.

In this newly elevated position, with an absence of excessive browsing, fire, and agricultural conversion, this cottonwood community can grow into a mature riparian forest. At the same time, the river channel continually erodes streambanks and creates fresh, new surfaces for cottonwood establishment. This results in a dynamic patchwork of different age classes, plant associations and habitats.

As cottonwoods mature, other tree species may become established. If the land surface is subject to reworking by the river, successional processes will start over with erosion and subsequent flooding deposition. If the land surface is not subject to alluvial processes, on for example a high terrace, the cottonwoods will be replaced by upland shrub or tree species from adjacent areas.

IVC Environment: Vegetation types in this alliance occur on terraces and floodplains immediately adjacent to streams. Elevations range from 1350 m in the southwest to 2400 m in Colorado. Microtopography is often smooth to gently undulating with slopes between 2 and 5%. Stands generally occur within 1 m of the high water mark, but can also occur on higher terraces, up to 3 m above the channel. Water tables are rarely within 50 cm of the soil surface, and stands are as much as 3-4 m above the stream level (Hansen et al. 1995). Soil pH levels range from slightly acidic to moderately alkaline (pH 6.2-8.4). Soils are typically well-drained with large amounts of coarse fragments in the subsurface horizons. The soil textures are fine sandy loams, clay loams, silty clay loams, and silty clay. Soils are frequently reworked by floods and beavers. Peat deposits, if present, are thin.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the Rocky Mountains and broad river plains of mountain valleys of Alberta, Montana, Idaho, Wyoming, Utah, Colorado and New Mexico. It is also found in the mountains of eastern Oregon, Nevada, California's Sierra Nevada, and the highlands of Arizona.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, CA, CO, ID, MT, NM, NV, OR, SD, UT, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002664** ***Populus angustifolia / Cornus sericea*** **Riparian Woodland** [Narrowleaf Cottonwood / Red-osier Dogwood Riparian Woodland] []
  G4 (1996-02-01) AB, CO, ID, MT, NM, NV, OR, SD, UT, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2016-09-29
IVC Acknowledgments:

A3760 Quaking Aspen Riparian Forest Alliance

[ ]
Populus tremuloides Riparian Forest Alliance
Quaking Aspen Riparian Forest

IVC Scientific Name: *Populus tremuloides* Riparian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes only those stands of *Populus tremuloides* that are truly wetlands and riparian in their setting. Most stands of this alliance are found in riparian zones. Some may be near lakes where the ground is flooded or saturated for a short time in the spring. The moderate to closed tree canopy is dominated by *Populus tremuloides*; sometimes other tress are codominant, such as *Populus angustifolia, Abies concolor, Pinus ponderosa*, and *Picea pungens*. More open stands have a prominent shrub layer containing species such as *Alnus incana, Cornus sericea*, and *Salix* spp. This alliance is found in the Rocky Mountains of Alberta, Montana, Idaho, Wyoming, Colorado, Utah, eastern Oregon and Washington, and Great Basin mountain ranges of Nevada, possibly extending into the Sierra Nevada of California. In addition it occurs on high plateaus and canyons of New Mexico.

IVC Dynamics: Stands in this alliance often originate, and likely are maintained by, stand-replacing disturbances such as crown fire, disease and windthrow, or clearcutting by man and beaver. The stems of these thin-barked, clonal trees are easily killed by surface fires. They can quickly and vigorously resprout in densities of up to 30,000 stems per hectare (Knight 1994). Stands are favored by fire in the conifer zone (Mueggler 1988). The stems are relatively short-lived (100-150 years) and individual stands will succeed to longer-lived conifer forest if undisturbed. With adequate disturbance, a clone may live many centuries. Although *Populus tremuloides* produces abundant seeds, seedling survival is rare because the long warm, moist conditions required to establish are rare in the habitats where it occurs.

IVC Environment: Forests included in this alliance occur in seasonally flooded areas in the Rocky Mountain region. Elevations range from 850-3170 m. Climate is temperate with a relatively long growing season, typically cold winters and often deep snow. Mean annual precipitation is greater than 38 cm and typically greater than 50 cm. The distribution of *Populus tremuloides* forests is primarily limited by adequate soil moisture required to meet its high evapotranspiration demand (Mueggler 1988). Secondarily, its range is limited by the length of the growing season or low temperatures (Mueggler 1988). Habitats vary in aspect according to elevation and latitude in respect to the most limiting factor. Stands in this alliance are restricted to sites saturated by seepage from springs and streams from snowmelt. They occur below seeps on gentle slopes, wet draws and flats, and in depressions along streambank terraces. Aspects are variable. In Colorado they are typically on cool, moist north and northeast aspects, whereas in northwestern Wyoming, aspects often are on warmer eastern or western slopes. Soils are often fine-textured, poorly drained, consisting of silts and clays, often forming an organic muck (Youngblood and Mueggler 1981). However, some the alluvial soils are coarse-textured and permit rapid groundwater movement (Hansen et al. 1995). The water table is typically at or near the soil surface in the spring but may drop more than 1 m by midsummer (Hansen et al. 1995). Parent materials are variable and may include sedimentary, metamorphic or igneous rocks, but it appears to grow best on limestone, basalt, and calcareous or neutral shales (Mueggler 1988).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Rocky Mountains of Alberta, Montana, Idaho, Wyoming, Colorado, Utah, eastern Oregon and Washington, and Great Basin mountain ranges of Nevada, possibly extending into the Sierra Nevada of California. It addition it occurs on high plateaus and canyons of New Mexico.

IVC Nations: CA,US
IVC States/Provinces: AB, BC, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000582 *Populus tremuloides / Cornus sericea* Riparian Forest** [Quaking Aspen / Red-osier Dogwood Riparian Forest] []
  G4 (1996-02-01) AB, CA?, CO, ID, MT, OR, UT, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A4432 Western Red-Cedar - Western Hemlock Rocky Mountain Riparian Forest Alliance

[ ]
Thuja plicata - Tsuga heterophylla Rocky Mountain Riparian Forest Alliance
[ ]

IVC Scientific Name: *Thuja plicata - Tsuga heterophylla* Rocky Mountain Riparian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC?, ID, MT, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000476 *Thuja plicata / Gymnocarpium dryopteris* Riparian Forest** [Western Red-Cedar / Western Oakfern Riparian Forest] []
  G3 (1996-02-01) BC?, ID, MT, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G505 Rocky Mountain-Great Basin Swamp Forest

[ ]

IVC Colloquial Name: Rocky Mountain-Great Basin Swamp Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This forested wetland/swamp group occurs in the northern Rocky Mountains from northwestern Wyoming north into the Canadian Rockies and west into eastern Oregon and Washington. It is dominated by conifers with diagnostic hydric undergrowth vegetation. Dominant conifers include *Abies grandis, Abies lasiocarpa, Picea engelmannii, Picea glauca* (and their hybrid), *Pinus contorta, Pseudotsuga menziesii, Thuja plicata*, and/or *Tsuga heterophylla*. Aquatic obligate herbs include *Alopecurus aequalis, Calamagrostis canadensis, Carex disperma, Carex vesicaria, Dryopteris* spp., *Eleocharis palustris, Lysichiton americanus, Mitella breweri, Mitella pentandra, Phalaris arundinacea, Senecio triangularis*, and/or *Streptopus amplexifolius*. Typical wetland shrubs such as *Alnus incana, Cornus sericea, Rhamnus alnifolia*, and *Salix* spp. may also be present. These occur on poorly drained soils that are saturated year-round or may have seasonal flooding in the spring. These are primarily on flat to gently sloping lowlands, but also occur up to near the lower limits of continuous forest (below the subalpine parkland), and can occur on steeper slopes where soils are shallow over unfractured bedrock (aka on seeps). This group is indicative of poorly drained, mucky areas, and areas are often bathed in a mosaic of moving and stagnant water. It can also occur around vernal ponds (usually <1 m but can be as much as 2 m deep) that usually fill with water over the fall, winter and early spring, but then at least partially dry up towards the end of the growing season. Trees that ring these ponds shade the water and influence the hydrology of the ponds themselves. Soils can be woody peat, muck or mineral but tend toward mineral. Stands generally occupy sites on benches, toeslopes or valley bottoms along mountain streams. Stands are usually dominated by conifers, but can have hardwoods mixed or dominant. These wetland types are generally distinguishable from other upland forests and woodlands by shallow water tables.

IVC Dynamics: These forests have permanently saturated soils that rarely dry out.

IVC Environment: *Climate:* Temperate cool. *Soil/substrate/hydrology:* This group is dominated by conifers on poorly drained soils that are saturated year-round or may have seasonal flooding in the spring. These are primarily on flat to gently sloping lowlands, but also occur up to near the lower limits of continuous forest (below the subalpine parkland). It can occur on steeper slopes where soils are shallow over unfractured bedrock. This group is indicative of poorly drained, mucky areas, and areas are often a mosaic of moving and stagnant water. These wetland types are generally distinguishable from other upland forests and woodlands by shallow water tables and mesic or hydric undergrowth vegetation. It can also occur around vernal ponds (usually <1 m but can be as much as 2 m deep) that usually fill with water over the fall, winter and early spring, but then at least partially dry up towards the end of the growing season. Trees that ring these ponds shade the water and influence the hydrology of the ponds themselves. Soils can be woody peat, muck or mineral but tend toward mineral. Stands generally occupy sites on benches, toeslopes or valley bottoms along mountain streams. Environmental descriptions are compiled from Crowe and Clausnitzer (1997), NCC (2002), MacKenzie and Moran (2004), and Mincemoyer (2005).

DISTRIBUTION

IVC Geographic Range: This group occurs in the northern Rocky Mountains from northwestern Wyoming and central Montana, north into the Canadian Rockies of Alberta and British Columbia and west into Idaho, eastern Oregon and Washington.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA, CO, ID, MT, NV, OR, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.8.12:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G2 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3775 *Picea engelmannii* Swamp Forest Alliance** [Engelmann Spruce Swamp Forest Alliance] []
  This alliance consists of riparian wetlands dominated by *Picea engelmannii, Picea glauca*, and their hybrids. *Betula papyrifera* is

occasionally present. It can be found in in riparian areas of Montana, Wyoming and Idaho where the climate has a maritime influence with moist air masses from the Pacific Ocean that release large amounts of snow and rain.

- **A3758 *Pinus contorta var. murrayana - Pinus contorta var. latifolia* Swamp Forest Alliance** [Sierra Lodgepole Pine - Tall Lodgepole Pine Swamp Forest Alliance] []
  This riparian woodland alliance is characterized by *Pinus contorta*. Other conifers sometimes present may include *Abies grandis, Abies lasiocarpa, Abies magnifica var. shastensis, Picea engelmannii, Pinus flexilis*, or *Tsuga mertensiana*. This forest alliance occurs in upper montane riparian or wetland areas in the Rocky Mountains and Sierra Nevada. Sites are flat, wet, relatively cold floodplain and basin landforms. Stands occur in forested margins of meadows, lake or forest basins, and along valley bottoms. In all cases, the sites are flat to gently sloping.
- **A4431 *Populus tremuloides - Betula papyrifera* Swamp Forest Alliance** [Quaking Aspen - Paper Birch Swamp Forest Alliance] []
- **A3776 *Thuja plicata - Tsuga heterophylla* Rocky Mountain Swamp Forest Alliance** [Western Red-cedar - Western Hemlock Rocky Mountain Swamp Forest Alliance] []
  These are seasonally flooded forests are dominated by conifer species such as *Thuja plicata* and/or *Tsuga heterophylla*. Other tree species that may be present include *Pseudotsuga menziesii, Abies grandis*, and *Abies lasiocarpa*. They occur in riparian areas and toeslopes that remain saturated throughout the growing season. These stands occur in the marine-influenced interior mountains of northeastern Washington, northern Idaho, southeastern British Columbia and northwestern Montana east of the Continental Divide.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Shaw and C.G. Fredine (1971)
IVC Description Author: G. Kittel and M.S. Reid
IVC Description Date: 2015-12-02
IVC Acknowledgments:

A3775 Engelmann Spruce Swamp Forest Alliance

[ ]
Picea engelmannii Swamp Forest Alliance
Engelmann Spruce Swamp Forest

IVC Scientific Name: *Picea engelmannii* Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance contains coniferous-dominated swampy riparian areas with *Picea engelmannii, Picea glauca*, and their hybrids. *Betula papyrifera* is occasionally present. Shrub layer includes *Alnus incana, Betula occidentalis*, and/or *Cornus sericea*. The herbaceous layer is dominated by the forb *Lysichiton americanus* or *Carex disperma, Cinna latifolia*, and/or *Athyrium filix-femina*. This alliance can be found on level sites that have a high water table such as adjacent to meandering streams and ponds; the water table is usually within 50 cm of the soil surface throughout the year. Standing water may be present in depressions. Soils are poorly drained and have a high organic matter content in the upper horizon. Stands are located in low-elevation (880-900 m) valleys. The vegetation in this alliance occurs in riparian areas in Montana, Wyoming and Idaho.
IVC Dynamics: The driving variable of greatest importance is permanent soil saturation (spring flooding common).
IVC Environment: Stands are located in low-elevation (880-900 m) valleys adjacent to meandering streams and ponds. They are found on level sites that have a high water table; the water table is usually within 50 cm of the soil surface throughout the year. Standing water may be present in depressions. Soils are poorly drained and have a high organic matter content in the upper horizon.

DISTRIBUTION

IVC Geographic Range: This alliance is found in Idaho, Wyoming, Montana, and may occur in Colorado.
IVC Nations: CA,US
IVC States/Provinces: AB, BC?, CO, ID, MT, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002630** ***Picea engelmannii / Carex scopulorum var. prionophylla*** **Swamp Woodland** [Engelmann Spruce / Fire-thread Sedge Swamp Woodland] []
  G3 (2000-12-11) BC?, ID, NV, WA
- **CEGL000322** ***Abies lasiocarpa - Picea engelmannii / Oplopanax horridus*** **Swamp Forest** [Subalpine Fir - Engelmann Spruce / Devil's-club Swamp Forest] []
  G3 (1997-11-14) AB?, ID, MT, WA
- **CEGL005927** ***Picea engelmannii / Equisetum arvense*** **Swamp Forest** [Engelmann Spruce / Field Horsetail Swamp Forest] []
  G4 (1996-02-01) AB, CO, ID, MT, OR, UT, WA, WY
- **CEGL000300** ***Abies lasiocarpa - Picea engelmannii / Calamagrostis canadensis*** **Swamp Forest** [Subalpine Fir - Engelmann Spruce / Bluejoint Swamp Forest] []
  G5 (1996-02-01) AB, CO, ID, MT, OR, UT, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3758 Sierra Lodgepole Pine - Tall Lodgepole Pine Swamp Forest Alliance

[ ]
Pinus contorta var. murrayana - Pinus contorta var. latifolia Swamp Forest Alliance
Sierra Lodgepole Pine - Tall Lodgepole Pine Swamp Forest

IVC Scientific Name: *Pinus contorta var. murrayana - Pinus contorta var. latifolia* Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This riparian woodland alliance is characterized by *Pinus contorta*. Other conifers sometimes present may include *Abies grandis, Abies lasiocarpa, Abies magnifica var. shastensis, Picea engelmannii, Pinus flexilis*, or *Tsuga mertensiana*. The short-shrub layer may be present with *Dasiphora fruticosa ssp. floribunda, Ledum glandulosum, Lonicera caerulea, Spiraea douglasii, Vaccinium cespitosum*, and/or *Vaccinium uliginosum*. Herbaceous species are not abundant in shrubby stands. Associate species often present can include *Carex angustata, Fragaria* spp., *Geum macrophyllum, Ligusticum grayi, Maianthemum stellatum, Thalictrum occidentale*, and *Trifolium longipes*. Some stands have a lush herbaceous layer is dominated by tall graminoids such as *Calamagrostis canadensis*. This forest alliance occurs in upper montane riparian or wetland areas in the Rocky Mountains and Sierra Nevada. Sites are flat, wet, relatively cold floodplain and basin landforms. Stands occur in forested margins of meadows, lake or forest basins, and along valley bottoms. In all cases, the sites are flat to gently sloping.
IVC Dynamics:
IVC Environment: Sites include edges of meadows, streamside terraces, lakeshores, and flat to slightly concave drainages and basins. Valleys where it occurs are broad, low-gradient, and usually flat-bottomed. Soils are silts, sandy loams and silty clay loams. Wetter stands will have a significant organic component, sometime with a peat layer (Kovalchik 1987). The soil surface will often be slightly flooded at snowmelt, but by late summer the water table will drop to >1 m depth (Kovalchik 1987).

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the Sierra Nevada of California and Nevada, and the Rocky Mountains of eastern Oregon, Idaho, Alberta, Montana, Wyoming, Colorado, and Utah.
IVC Nations: CA,US
IVC States/Provinces: AB, CA, CO, ID, MT, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005929 *Pinus contorta / Cornus sericea* Swamp Woodland** [Lodgepole Pine / Red-osier Dogwood Swamp Woodland] []
  G2G3 (2004-04-05) AB, CA?, MT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A4431 Quaking Aspen - Paper Birch Swamp Forest Alliance

[ ]
Populus tremuloides - Betula papyrifera Swamp Forest Alliance
[ ]

IVC Scientific Name: *Populus tremuloides - Betula papyrifera* Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, CA?, CO, ID, MT, NV?, OR, WA, WY?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000574 *Populus tremuloides / Calamagrostis canadensis* Swamp Forest** [Quaking Aspen / Bluejoint Swamp Forest] []
  G3 (1999-12-29) AB, CO, ID, MT, OR, WA, WY?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:

IVC Acknowledgments:

A3776 Western Red-cedar - Western Hemlock Rocky Mountain Swamp Forest Alliance

[ ]

Thuja plicata - Tsuga heterophylla Rocky Mountain Swamp Forest Alliance

Rocky Mountain Western Red-cedar - Western Hemlock Swamp Forest

IVC Scientific Name: *Thuja plicata - Tsuga heterophylla* Rocky Mountain Swamp Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These seasonally flooded forests are characterized by a dense to somewhat open coniferous canopy dominated by *Thuja plicata*. *Tsuga heterophylla* is a typical associate in these stands. *Pseudotsuga menziesii, Abies grandis*, and *Abies lasiocarpa* may also share the upper tree canopy. The herbaceous layer is diverse and dominated by wetland and moist forest species, including *Lysichiton americanus, Athyrium filix-femina, Achlys triphylla*, and *Senecio triangularis*. Mosses and lichens are common on trees, downed logs, and the forest floor. The alliance occurs in the marine-influenced coastal and interior mountains of northeastern Washington, northern Idaho, southeastern British Columbia and northwestern Montana east of the Continental Divide. This alliance is found from sea level in coastal areas to over 1800 m in the northern Rocky Mountains of Idaho and western Montana. Annual precipitation ranges from less than 100 cm in the Northern Rockies to 300 cm or more in the coastal ranges of Oregon and Washington. These forests occur on riparian, toeslope, or valley bottom sites that are flooded for a substantial portion of the growing season. The seasonal flooding originates mostly from precipitation and snowmelt collecting in basins, with a small amount of streamside flooding. The soils are organic and saturated for part of the growing season. These forests are often transitional to non-forested wetlands.

IVC Dynamics: Following disturbance, a variety of other conifer species can become established and dominate sites previously supporting stands of this forest alliance. *Pseudotsuga menziesii*, in particular, can become established and dominate sites for many years following disturbance. In the northern Rocky Mountains, stand-replacing disturbance can result in conversion to communities dominated by either *Larix occidentalis* or *Pinus monticola*. Typically, stand-replacement fire-return intervals are 150-500 years with moderate-severity fire intervals of 50-100 years. Specific fire influences vary with site characteristics. Generally, wetter sites burn less frequently and support older stands with more *Tsuga heterophylla* and *Thuja plicata*.

IVC Environment: Stands of the alliance generally occur on all slopes and aspects, but grow best on sites with high soil moisture, such as toeslopes and bottomlands (Cooper et al. 1987). These forests generally occur at moist, non-flooded or upland sites that are not saturated yearlong, such as riparian, toeslope, or valley bottom sites that are flooded for a substantial portion of the growing season. The seasonal flooding originates mostly from precipitation and snowmelt collecting in basins, with a small amount of streamside flooding. The soils are organic and saturated for part of the growing season.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the marine-influenced coastal and interior mountains of northeastern Washington, northern Idaho, southeastern British Columbia and northwestern Montana east of the Continental Divide.

IVC Nations: CA?,US

IVC States/Provinces: BC?, ID, MT, OR, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000479 *Thuja plicata - Tsuga heterophylla / Oplopanax horridus* Rocky Mountain Swamp Forest** [Western Red-cedar - Western Hemlock / Devil's-club Rocky Mountain Swamp Forest] []
  G3 (2002-10-16) BC?, ID, MT, OR, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

G796 Central Rocky Mountain Lowland & Foothill Riparian Forest

[ ]

IVC Colloquial Name: Central Rocky Mountain Lowland & Foothill Riparian Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation within this group is characterized by an open to moderately dense tree layer that is dominated by *Populus balsamifera ssp. trichocarpa* and *Populus balsamifera ssp. balsamifera*. Tree associates include *Populus deltoides, Populus angustifolia, Pinus ponderosa*, and *Picea* spp. A shrub layer is usually present and may be dominated by *Alnus incana, Betula papyrifera, Cornus sericea, Crataegus douglasii, Prunus virginiana, Ribes americanum, Salix exigua*, and *Symphoricarpos albus*. The herbaceous layer is usually relatively sparse and is dominated by either forbs or graminoids. Common species include *Actaea rubra, Cicuta douglasii, Equisetum sylvaticum, Mentha arvensis*, and *Symphyotrichum spathulatum*. This riparian forest group occurs on alluvial terraces along major streams and rivers throughout the northwestern United States. It can occur on alluvial terraces of major streams and rivers, margins of lakes, meadows, deltas, river mouths, and terraces. Stands can occupy broad floodplains or form narrow stringers adjacent to streams with a much steeper slope. Soils typically overlay river gravel and/or cobbles and are coarse-textured. Water tables may drop below 1 m of the soil surface in summer, but can remain moist due to capillary action.

IVC Dynamics: *Populus* species are dependent on flooding for successful sexual reproduction.

IVC Environment: This group occurs on alluvial terraces along major streams and rivers. It can occur on alluvial terraces of major streams and rivers, margins of lakes, meadows, deltas, river mouths, and terraces. Stands can occupy broad floodplains (1-3% slopes) or form narrow stringers adjacent to streams with a much steeper slope (10-15%). Soils are typically Entisols, usually up to 1 m of mineral soil overlying river gravel and/or cobbles. Soil texture varies from loam to coarse sand. Water tables usually drop below 1 m of the soil surface in summer, but can remain moist due to capillary action. A fluctuating water table in these soils is evidenced by the common presence of mottles.

DISTRIBUTION

IVC Geographic Range: This group is found throughout the northern Interior West from the foothills of the Sierra Nevada to Montana, and from southern British Columbia to Nevada, Utah and western Wyoming.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA?, ID, MT, OR, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.8.12:P

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G3G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline moderate to high, and threats high. This type has experienced a dramatic decline in extent due to woody vegetation removal for fuel and building materials, and clearing for agriculture. Water use and management in the Columbia Basin has likely affected some areas as well. Livestock grazing, both historical and contemporary, continue to degrade any remaining occurrences.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A0311 *Populus balsamifera ssp. trichocarpa* Northern Rocky Mountain Riparian Forest Alliance** [Black Cottonwood Northern Rocky Mountain Riparian Forest Alliance] []
  This alliance consists of riparian woodlands dominated by *Populus balsamifera ssp. trichocarpa* and *Populus balsamifera ssp.*

balsamifera. This riparian forest alliance occurs on alluvial terraces along major streams and rivers throughout the interior western United States. They can occur on alluvial terraces of major streams and rivers, margins of lakes, meadows, deltas, river mouths, and terraces. Stands can occupy broad floodplains or form narrow stringers adjacent to streams with a much steeper slope.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Culver
IVC Description Author: G. Kittel
IVC Description Date: 2015-05-11
IVC Acknowledgments:

A0311 Black Cottonwood Northern Rocky Mountain Riparian Forest Alliance

[ ]

Populus balsamifera ssp. trichocarpa Northern Rocky Mountain Riparian Forest Alliance

Central Rocky Mountain Black Cottonwood Riparian Forest

IVC Scientific Name: *Populus balsamifera ssp. trichocarpa* Northern Rocky Mountain Riparian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation within this alliance is characterized by an open to moderately dense tree layer that is dominated by *Populus balsamifera ssp. trichocarpa* and *Populus balsamifera ssp. balsamifera*. Tree associates include *Populus deltoides, Populus angustifolia, Pinus ponderosa*, and *Picea* spp. A shrub layer is usually present and may be dominated by *Alnus incana, Betula papyrifera, Cornus sericea, Crataegus douglasii, Prunus virginiana, Ribes americanum, Salix exigua*, and *Symphoricarpos albus*. The herbaceous layer is usually relatively sparse and is dominated by either forbs or graminoids. Common species include *Actaea rubra, Cicuta douglasii, Equisetum sylvaticum, Mentha arvensis*, and *Symphyotrichum spathulatum*. This riparian forest alliance occurs on alluvial terraces along major streams and rivers throughout the western United States. It can occur on alluvial terraces of major streams and rivers, margins of lakes, meadows, deltas, river mouths, and terraces. Stands can occupy broad floodplains or form narrow stringers adjacent to streams with a much steeper slope. Soils typically overlay river gravel and/or cobbles and are coarse-textured. Water tables may drop below 1 m of the soil surface in summer, but can remain moist due to capillary action.

IVC Dynamics: *Populus* species are dependent on flooding for successful sexual reproduction.

IVC Environment: This alliance occurs on alluvial terraces along major streams and rivers. It can occur on alluvial terraces of major streams and rivers, margins of lakes, meadows, deltas, river mouths, and terraces. Stands can occupy broad floodplains (1-3% slopes) or form narrow stringers adjacent to streams with a much steeper slope (10-15%). Soils are typically Entisols, usually up to 1 m of mineral soil overlying river gravel and/or cobbles. Soil texture varies from loam to coarse sand. Water tables usually drop below 1 m of the soil surface in summer, but can remain moist due to capillary action. A fluctuating water table in these soils is evidenced by the common presence of mottles.

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout the northern Interior West from the foothills of the Sierra Nevada to Montana, from southern British Columbia to Nevada, Utah and western Wyoming.
IVC Nations: CA,US
IVC States/Provinces: AB, BC, ID, MT, OR, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000482** ***Populus balsamifera ssp. trichocarpa / Oplopanax horridus - Acer glabrum*** **Riparian Forest** [Black Cottonwood / Devil's-club - Rocky Mountain Maple Riparian Forest] []
  G2 (2002-10-17) BC?, WA
- **CEGL005907** ***Populus balsamifera ssp. trichocarpa - Picea engelmannii / Equisetum arvense*** **Riparian Forest** [Black Cottonwood - Engelmann Spruce / Field Horsetail Riparian Forest] []
  G2? (2004-02-09) AB, MT
- **CEGL005906** ***Populus balsamifera ssp. trichocarpa - Populus tremuloides*** **- Conifer /** ***Clintonia uniflora*** **Riparian Forest** [Black Cottonwood - Quaking Aspen - Conifer / Bride's Bonnet Riparian Forest] []
  G3? (2004-02-09) AB?, ID?, MT
- **CEGL000672** ***Populus balsamifera ssp. trichocarpa / Cornus sericea*** **Riparian Forest** [Black Cottonwood / Red-osier Dogwood Riparian Forest] []
  G3G4 (2004-02-23) AB, ID, MT, OR, WA, WY
- **CEGL003431** ***Populus balsamifera ssp. trichocarpa / Salix lucida ssp. caudata*** **Riparian Woodland** [Black Cottonwood / Greenleaf Willow Riparian Woodland] []
  G2 (2002-10-18) BC?, ID, OR, WA
- **CEGL000677** ***Populus balsamifera (ssp. trichocarpa, ssp. balsamifera) / Symphoricarpos (albus, oreophilus, occidentalis)*** **Riparian Forest** [(Black Cottonwood, Balsam Poplar) / (Common Snowberry, Mountain Snowberry, Western Snowberry) Riparian Forest] []
  G2 (2002-10-22) BC?, ID, MT, OR, WA, WY
- **CEGL000542** ***Populus balsamifera ssp. trichocarpa - (Populus tremuloides) / Heracleum maximum*** **Riparian Forest** [Black Cottonwood - (Quaking Aspen) / Common Cow-parsnip Riparian Forest] []
  G2 (2004-02-23) AB, MT
- **CEGL005845** ***Populus balsamifera ssp. trichocarpa / Calamagrostis canadensis*** **Riparian Forest** [Black Cottonwood / Bluejoint Riparian Forest] []
  G2? (2004-02-23) AB, MT?
- **CEGL005905** ***Populus balsamifera ssp. trichocarpa - Populus tremuloides*** **- Conifer /** ***Cornus sericea*** **Riparian Forest** [Black Cottonwood - Quaking Aspen - Conifer / Red-osier Dogwood Riparian Forest] []
  G2G3 (2004-02-09) AB, MT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Culver, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

M036 Western Arid Lowland Riparian Forest

[ ]

IVC Colloquial Name: Western Arid Lowland Riparian Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup is of riparian, floodplain, seep and oases dominated by trees. Dominant include *Vachellia farnesiana, Acer negundo, Celtis laevigata, Celtis ehrenbergiana, Cordia boissieri, Diospyros texana, Ebenopsis ebano, Ehretia anacua, Fraxinus velutina, Haematoxylum brasiletto, Juglans major, Leucaena pulverulenta, Parkinsonia aculeata, Platanus racemosa, Platanus wrightii, Populus deltoides ssp. wislizeni, Populus deltoides ssp. monilifera, Populus fremontii, Prosopis glandulosa, Quercus lobata, Sabal mexicana, Salix amygdaloides, Salix gooddingii, Salix laevigata, Sapindus saponaria, Sideroxylon celastrinum, Tecoma stans, Ulmus crassifolia*, and *Washingtonia filifera*. It occurs from sea level to 2300 m (7500 feet) along foothill and mountain canyons and valleys where riparian corridors follow stream courses and spring-fed depressions along canyon waterways and tectonic faultlines. Most of the dominant woody species found in this macrogroup are phreatophytes and require the presence of a seasonally shallow water table. This macrogroup occurs from Central Valley of California south and east through the Sonoran and Chihuahuan deserts to the Rio Grande River, north into valleys of the lower Colorado Plateau, the San Luis Valley of Colorado and east into the western Great Plains and the Tamaulipan region of southern Texas. The Tamaulipan area is floristically variable with some components better classified with subtropical vegetation and others with temperate vegetation, so it is a transitional zone and is included within this macrogroup because of shared habitat, dynamics, physiognomic structure and tree genera.

IVC Geographic Range: This macrogroup occurs from Oregon's southern Coast Ranges, California's Central Valley, the foothills of the Sierra Nevada east into the Sonoran, Mojave, western Great Plains and Tamaulipan regions of Texas and Mexico.

IVC Nations: CA,MX,US

IVC States/Provinces: AB, AZ, BCN, BCS, CA, CHH, CO, COA, ID, MT, ND, NE, NLE, NM, NV, OK, OR, SD, SON, TAM, TX, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G107 Great Basin-Colorado Plateau Semi-Desert Riparian Forest []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel, P. Comer, T. Keeler-Wolf, J. Teague

IVC Description Date: 2015-05-11

IVC Acknowledgments:

G107 Great Basin-Colorado Plateau Semi-Desert Riparian Forest

[ ]

IVC Colloquial Name: Great Basin-Colorado Plateau Semi-Desert Riparian Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This Interior West cool semi-desert group consists of a mix of riparian woodlands dominated by trees and tall arborescent shrubs. Dominant and diagnostic tree species include *Acer negundo, Populus deltoides ssp. wislizeni, Populus fremontii,* and *Salix amygdaloides* with *Celtis laevigata var. reticulata, Fraxinus anomala, Fraxinus velutina,* and *Populus deltoides ssp. monilifera* often present to dominant. Associated tall shrubs include *Betula occidentalis, Salix exigua, Salix ligulifolia, Salix lucida,* and *Salix lutea.* Short shrubs typically contribute low cover and include *Baccharis salicifolia, Baccharis sarothroides, Brickellia* spp.*, Ericameria nauseosa, Rhus trilobata,* and *Symphoricarpos* spp. Herbaceous cover is variable depending on tree and shrub cover. Characteristic herbaceous species include obligate and facultative wetland species. Many stands have been disturbed and have been invaded by non-native species including noxious weeds such as *Cirsium arvense,*

Lepidium latifolium or *Tamarix* spp, and introduced forages species like *Agrostis stolonifera, Bromus inermis,* and *Poa pratensis*. Stands are found along streams, rivers, ponds, and lakes in floodplains and on lower alluvial terraces. They are restricted to the floodplains and corridors of perennial streams by the arid upland environment. Sites are flat to gently sloping and occur in lower canyons in desert mountains, alluvial fans, and valleys between 335-2500 m (1000-7500 feet) elevation. These are disturbance-driven systems that require flooding, scour and deposition for germination and maintenance. This group occurs throughout lowlands of the interior west, including southwest cool semi-deserts. Known occurrences include the following rivers and their tributaries: Colorado, Rio Grande, Truckee, and others.

IVC Dynamics: Stands in this group are dependent on a subsurface water supply and vary considerably with the water table levels. Major flood events and consequent flood scour, overbank deposition of water and sediments, and stream meandering are important factors that shape these woodlands. Cottonwood forests grow within an alluvial environment that is continually changing due to the ebb and flow of the river. The riparian vegetation successional stage is "re-set" by flooding disturbance. Cottonwood communities are early-, mid- or late-seral, depending on the age class of the trees and the associated species of the stand. Mature cottonwood stands do not regenerate in place, but regenerate in different settings up and down a river reach. Over time, a healthy riparian area supports all stages of cottonwood communities. The process of cottonwood regeneration is well-documented. Periodic flooding events can leave sandbars of bare, mineral substrate. Cottonwood seedlings germinate and become established on newly-deposited, moist sandbars. In the absence of large floods in subsequent years, seedlings begin to trap sediment. In time, the sediment accumulates, and the sandbar rises. The young forest community is then above the annual flood zone of the river channel. In addition, seasonal floods that leave fresh deposits of sediment are also areas available for colonization. This process often favors the establishment of aggressive native and non-native plants, as well as cottonwood seedlings. Peachleaf Willow also requires a moist, mineral substrate for seeds to germinate. Seeds can germinate under a sparse canopy of vegetation (Johnson 1992, cited in Jones and Walford 1995).

IVC Environment: This riparian group is found along streams and rivers, in floodplains, lakes, and ponds and on lower alluvial terraces along the perennial streams that occur in the Interior Western US. Elevations range from 335-2500 m. Sites are flat to gently sloping and occur in lower canyons in desert mountains, alluvial fans, and valleys. Stands are restricted to the floodplains and corridors of perennial streams by the arid upland environment. The variety of plant associations within this group reflects elevation, stream gradient, floodplain width, and flooding events. Stands may develop on bare, moist soil on newly formed sandbars, front-land ridges, low streambanks, overflow areas, and well-drained flats along major streams and lake margins. It may be found on abandoned fields and well-drained ridges in the first bottoms. These sites tend to be further from the main channel. Stands also occur in other mesic sites, such as near seeps, springs, and ephemeral stream channels, and on lower colluvial slopes where additional soil moisture is available.

Climate: Climate is arid to semi-arid with hot summers and cold winters with freezing temperatures common. Mean annual precipitation ranges from 15-28 cm but can vary greatly from year to year. Drought is not uncommon.

Soil/substrate/hydrology: Soils are typically formed in alluvium, are deep, medium-textured, and with adequate or excessive moisture available for vegetation during the growing season. Typically, the soil profile is highly stratified alluvium. Soil textures are predominately loose, friable sands interspersed with narrow bands of clay loams and sandy clays often with large amount of gravel and cobble. The soils may be slightly alkaline and saline. Substrates may also be derived from colluvium but typically have been transported or redistributed by water to form alluvial deposits. The water table is within 1 m of the soil surface during the growing season (Hansen et al. 1995), and the vegetation is tolerant of prolonged flooding.

DISTRIBUTION

IVC Geographic Range: The riparian group occurs in the Interior Western US and is characteristic of the lower valleys of Nevada, southern Idaho, and the Colorado Plateau. Specifically, it is known in western Colorado and southwestern Wyoming, Utah, Nevada, southern Idaho, eastern California, northern Arizona, and northwestern New Mexico. Elevations are typically below the montane zone (1800 m) but it occurs at higher elevations especially in southern stands.

IVC Nations: CA,MX,US

IVC States/Provinces: AB, AZ, CA, CHH, CO, COA, ID, MT, ND, NE, NM, NV, OK, OR, SD, SON, TX, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3798 *Populus deltoides ssp. wislizeni - Salix amygdaloides* Riparian Woodland Alliance** [Rio Grande Cottonwood - Peachleaf Willow Riparian Woodland Alliance] []
  This alliance consists of woodlands dominated by *Populus deltoides ssp. wislizeni, Populus deltoides ssp. monilifera*, or *Salix*

amygdaloides. Other tree species include *Acer negundo*. Stands are found on alluvial floodplains, terraces and streambanks of rivers and streams, and sometimes around lakes and ponds. These stands occur along rivers and streams of Wyoming, Colorado, New Mexico, and on to the Colorado Plateau of Utah.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Triepke et al. (2021)
IVC Description Author: K. Schulz
IVC Description Date:
IVC Acknowledgments: Julie Evens, Todd Keeler-Wolf, Gwen Kittel

A3798 Rio Grande Cottonwood - Peachleaf Willow Riparian Woodland Alliance

[ ]
Populus deltoides ssp. wislizeni - Salix amygdaloides Riparian Woodland Alliance
Rio Grande Cottonwood - Peachleaf Willow Riparian Woodland

IVC Scientific Name: *Populus deltoides ssp. wislizeni - Salix amygdaloides* Riparian Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is dominated by *Populus deltoides ssp. wislizeni, Populus deltoides ssp. monilifera*, or *Salix amygdaloides*. Other tree species include *Acer negundo*. Shrub species present many include *Artemisia tridentata, Prunus virginiana, Rhus trilobata, Salix exigua*, and *Symphoricarpos occidentalis*. Typical herbaceous species include *Carex* spp., *Distichlis spicata, Elymus* spp., *Equisetum* spp., *Juncus* spp., and *Pascopyrum smithii*. Exotics found in this alliance are *Poa pratensis, Melilotus officinalis*, and *Bromus inermis*, among many others. Stands of this alliance are found on alluvial floodplains and terraces of rivers and streams, and sometimes around lakes and ponds. These communities tolerate and depend on periodic flooding and seasonal soil saturation in the spring and after heavy rains. The soils are silts, loams, and sands, and are derived from alluvial material. This alliance occurs near rivers and large streams of Montana, Wyoming, Colorado, Idaho, Arizona and New Mexico; from the western slope of Colorado it extends into mountain valleys and on to the Colorado Plateau of Utah.

IVC Dynamics: Cottonwood forests grow within an alluvial environment that is continually changing due to the ebb and flow of the river. Riparian vegetation successional stage is "re-set" by flooding disturbance. Cottonwood communities are early-, mid- or late-seral, depending on the age class of the trees and the associated species of the stand. Mature cottonwood stands do not regenerate in place, but regenerate in different settings up and down a river reach. Over time, a healthy riparian area supports all stages of cottonwood communities. The process of cottonwood regeneration is well-documented. Periodic flooding events can leave sandbars of bare, mineral substrate. Cottonwood seedlings germinate and become established on newly-deposited, moist sandbars. In the absence of large floods in subsequent years, seedlings begin to trap sediment. In time, the sediment accumulates and the sandbar rises. The young forest community is then above the annual flood zone of the river channel. In addition, seasonal floods that leave fresh deposits of sediment are also areas available for colonization. This process often favors the establishment of aggressive native and exotic plants, as well as cottonwood seedlings.

Salix amygdaloides requires a moist, mineral substrate for seeds to germinate. Seeds can germinate under a sparse canopy of vegetation (Johnson 1992, cited in Jones and Walford 1995).

IVC Environment: Stands of this alliance are found on level to gently sloping topography along rivers, streams, lakes, and ponds. The areas may have been very recently deposited by water action or they may have been deposited earlier and occupied by other communities. The water table fluctuates with the level of the adjacent water body. This can lead to periods of flooding and soil saturation in the spring and after heavy rains and also to periods of drought when the water level falls in the summer and fall. The soils are silts, loams, and sands, and are derived from alluvial material. Stands are located on immediate streambanks, or on distance river terraces, in backwater areas and overflow channels of large rivers, on narrow floodplains of small creeks, and on the edges of ponds and lakes. The water table is within 1 m of the soil surface during the growing season (Hansen et al. 1995), and the vegetation is tolerant of prolonged flooding.

DISTRIBUTION

IVC Geographic Range: This alliance occurs near rivers and large streams of Montana, Wyoming, Colorado, Idaho, Arizona and New Mexico; from the western slope of Colorado it extends into mountain valleys and on to the Colorado Plateau of Utah.
IVC Nations: CA,US
IVC States/Provinces: AB, AZ, CO, ID, MT, ND, NE, NM, OK, OR, SD, TX, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000947 *Salix amygdaloides* Riparian Woodland** [Peachleaf Willow Riparian Woodland] []
  G3 (1996-02-01) AB, CO, ID, MT, NE, SD, WY?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2016-09-29
IVC Acknowledgments:

M035 Vancouverian Flooded & Swamp Forest

Forêts inondées et marécageuses de la région floristique de Vancouver

IVC Colloquial Name: Vancouverian Flooded & Swamp Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: Within the wet maritime temperate climate of the Pacific coast of North America, M035 describes forests of swamp, floodplain and estuarine sites that are influenced by high subsurface water levels. The Canadian expression of these forests occurs along the southern and central British Columbia (BC) coast and inland from the Alaska panhandle in northwestern BC. Forest canopies can be evergreen coniferous, cold-deciduous broad-leaved or a mixture. At low elevations, floodplain sites that have experienced recent disturbance (e.g., flooding or anthropogenic disturbance) are typically dominated by cold-deciduous broad-leaved trees, including red alder (*Alnus rubra*), black cottonwood (*Populus trichocarpa*), Sitka willow (*Salix sitchensis*), Pacific crabapple (*Malus fusca*) and/or bigleaf maple (*Acer macrophyllum*). On more stable sites, including swamps, the conifers Sitka spruce (*Picea sitchensis*), western hemlock (*Tsuga heterophylla*), western redcedar (*Thuja plicata*), amabilis fir (*Abies amabilis*) and/or yellow-cypress (*Callitropsis nootkatensis*) become prominent. At higher elevations, mountain hemlock (*Tsuga mertensiana*) is typically present. Floodplain forests are characterized by dense understories of cold-deciduous broad-leaved shrubs, including salmonberry (*Rubus spectabilis*), red-osier dogwood (*Cornus stolonifera*) and Devil's club (*Oplopanax horridus).* Lady fern (*Athyrium filix-femina*), three-leaved foamflower (*Tiarella trifoliata*), western sword fern (*Polystichum munitum*) and false lily-of-the-valley (*Maianthemum dilatatum*) are common herb species; the moss layer is poorly developed. Characteristic understory plants in M035 swamps include salmonberry, yellow skunk cabbage (*Lysichiton americanum*), sedges (*Carex* spp.), ferns (especially western sword fern) and salal (*Gaultheria shallon*). The moss layer is often well-developed in swamps, usually including large leafy moss (*Rhizomnium glabrescens*), lanky moss (*Rhytidiadelphus loreus*), stairstep moss (*Hylocomium splendens*), slender beaked moss (*Eurhynchium praelongum*) and common green peat moss (*Sphagnum girgensohnii*).

Flooded and estuarine forests are subject to floodplain dynamics, including erosion of banks, removal of established vegetation, channelization, scouring and sediment deposition. Treed swamps are generally small stable ecosystems that are maintained by persistently high local water tables. M035 forests occur in a maritime temperate climate, with cool summers, mild winters and high annual precipitation. Mean annual temperature varies from approximately 1° to 10° C. Mean annual precipitation is generally high, although locally variable, averaging >2200 mm. Floodplain soils are poorly to moderately developed, mostly Regosols, because of ongoing deposition of silty and sandy alluvium. Swamp soils are typically mineral Gleysols with a peaty surface layer although, depending on local site-scale hydrology, sometimes Organic soils develop.

IVC Geographic Range: This macrogroup occurs at low and high elevations throughout the coastal regions of the Pacific Northwest from southern Oregon north through British Columbia, Vancouver Island and Haida Gwaii to along the coast of the Gulf of Alaska, including central and southeastern Alaska. It occurs as far inward as the eastern slope of the Cascades and along tributaries of the Columbia River in Idaho, and in the Sierra Nevada of California.

IVC Nations: CA,MX?,US

IVC States/Provinces: AK, BC, BCN?, CA, ID, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: M035 describes forests of swamps, floodplains and estuarine sites influenced by high subsurface water levels within the wet maritime temperate climate of the Pacific coast of North America. Forests on stabilized floodplain or estuarine sites that are not strongly influenced by subsurface water are included with upland forests in M024 [Vancouverian Coastal Rainforest], M025 [Vancouverian Subalpine - High Montane Forest] and M886 [Southern Vancouverian Dry Foothill Forest & Woodland]. Floodplain and swamp forests of the continental temperate climate east of the Coast Mountains are described by M034 [Rocky Mountain-Great Basin Montane Riparian & Swamp Forest]. Forests and woodlands of temperate nutrient-poor to medium wetlands along the Pacific coast, including treed bogs and fens, are described by M063 [North Pacific Bog & Fen].

Vaccinium ovalifolium here includes *V. alaskaense* (Alaska blueberry), according to VASCAN.

Groups in Canada:

- **G851 North-Central Pacific Lowland Riparian Forest []**
- **G853 North-Central Pacific Maritime Lowland Swamp Forest []**
- **G507 North-Central Pacific Montane Riparian & Seepage Swamp Forest []**
- **G852 Alaskan Pacific Riparian Forest & Woodland []**
- **G854 Alaskan Pacific Swamp Forest []**

CNVC Concept Author: D. Meidinger, K. Baldwin, USNVC

CNVC Concept Date: 2015-04-01

CNVC Description Author: D. Meidinger, K. Baldwin
CNVC Description Date: 2020-02-01
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2014)
IVC Description Author: G. Kittel and D. Meidinger
IVC Description Date: 2017-03-29
IVC Acknowledgments: With contributions from T. Boucher, C. Chappell, M.S. Reid, and D. Faber-Langendoen.

G851 North-Central Pacific Lowland Riparian Forest

[ ]

IVC Colloquial Name: North-Central Pacific Lowland Riparian Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,MX?,US
IVC States/Provinces: BC, BCN?, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate to high, long-term decline moderate, and threats moderate. However, increased knowledge of the impacts of invasive species and hydrological alterations could raise the rank.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4430 *Alnus rubra - Acer macrophyllum - Alnus viridis* Lower Montane Riparian & Swamp Forest Alliance** [Red Alder - Bigleaf Maple - Green Alder Lower Montane Riparian & Swamp Forest Alliance] []
- **A3746 *Picea sitchensis - Tsuga heterophylla - Alnus rubra* Riparian Forest Alliance** [Sitka Spruce - Western Hemlock - Red Alder Riparian Forest Alliance] []
  These are riparian forests dominated by *Abies grandis, Picea sitchensis, Pseudotsuga menziesii, Thuja plicata*, and/or *Tsuga heterophylla* and may have *Alnus rubra* or *Acer macrophyllum* also present in the upper canopy. *Populus balsamifera ssp. trichocarpa* is absent or, if present, is not the only deciduous tree and has less than 5% relative cover. These forests have riparian wet soil-dependent understory species and are found adjacent to rivers, streams, or creeks. Soils may be saturated but are also well-aerated. This alliance occurs in the coastal lowlands of Alaska, British Columbia, Washington, and Oregon.
- **A4428 *Populus balsamifera ssp. trichocarpa - Alnus rubra - Fraxinus latifolia* Riparian Forest Alliance** [Black Cottonwood - Red Alder - Oregon Ash Riparian Forest Alliance] []
- **A3748 *Salix lucida* Riparian Scrub Alliance** [Shining Willow Riparian Scrub Alliance] []
  This alliance consists of woodlands or thickets dominated by tall willows (>4.5 m [15 feet]) such as *Salix lucida ssp. lasiandra, Salix sitchensis*, and/or *Salix hookeriana* that line lowland coastal and interior riparian areas and floodplains of Oregon, Washington and British Columbia.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4430 Red Alder - Bigleaf Maple - Green Alder Lower Montane Riparian & Swamp Forest Alliance

[ ]
Alnus rubra - Acer macrophyllum - Alnus viridis Lower Montane Riparian & Swamp Forest Alliance
[ ]

IVC Scientific Name: *Alnus rubra - Acer macrophyllum - Alnus viridis* Lower Montane Riparian & Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3746 Sitka Spruce - Western Hemlock - Red Alder Riparian Forest Alliance

[ ]
Picea sitchensis - Tsuga heterophylla - Alnus rubra Riparian Forest Alliance
Sitka Spruce - Western Hemlock - Red Alder Riparian Forest

IVC Scientific Name: *Picea sitchensis - Tsuga heterophylla - Alnus rubra* Riparian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These are lowland riparian forests dominated by conifer trees such as *Abies grandis, Picea sitchensis, Pseudotsuga menziesii, Thuja plicata*, and/or *Tsuga heterophylla* and may have *Alnus rubra* or *Acer macrophyllum* present in the upper canopy. This alliance also includes stands with just conifers present. *Populus balsamifera ssp. trichocarpa* is absent or, if present, is not the only deciduous tree and has less than 5% relative cover. The understory contains riparian wet soil-dependent

understory species and includes *Polystichum munitum, Rubus spectabilis, Scirpus microcarpus*, and others. This alliance occurs in the coastal lowlands of Alaska, British Columbia, Washington, and Oregon. Sites are adjacent to streams, creeks, or rivers. Soils may be saturated but are also well-aerated.

IVC Dynamics:

IVC Environment: This alliance can be found along streambanks, floodplains, valley floors or terraces with coarse well-drained alluvial soils with and without fine, poorly drained clay/loam lens. Annual overbank flooding or seasonal soil saturation characterizes the hydrology of these riparian sites.

DISTRIBUTION

IVC Geographic Range: This alliance is found in coastal lowlands of Alaska, British Columbia, Washington, and Oregon.
IVC Nations: CA,US
IVC States/Provinces: BC, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL007297** ***Picea sitchensis - (Alnus rubra) / Rubus spectabilis / Polystichum munitum*** **Forest** [Sitka Spruce - (Red Alder) / Salmonberry / Western Swordfern Forest] []
  GNR. BC, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A4428 Black Cottonwood - Red Alder - Oregon Ash Riparian Forest Alliance

[ ]
Populus balsamifera ssp. trichocarpa - Alnus rubra - Fraxinus latifolia Riparian Forest Alliance
[ ]

IVC Scientific Name: *Populus balsamifera ssp. trichocarpa - Alnus rubra - Fraxinus latifolia* Riparian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000639** ***Alnus rubra / Rubus spectabilis*** **Riparian Forest** [Red Alder / Salmonberry Riparian Forest] []
  G4G5 (2000-04-26) BC?, CA, OR, WA
- **CEGL003399** ***Alnus rubra / Oplopanax horridus - Rubus spectabilis*** **Riparian Forest** [Red Alder / Devil's-club - Salmonberry Riparian Forest] []
  G4G5 (2002-10-01) BC?, OR, WA
- **CEGL003403** ***Alnus rubra / Stachys chamissonis var. cooleyae - Tolmiea menziesii*** **Riparian Forest** [Red Alder / Cooley's Hedge-nettle - Piggyback Plant Riparian Forest] []
  G4 (2002-10-01) BC?, OR, WA
- **CEGL003362** ***Populus balsamifera ssp. trichocarpa - Alnus rubra / Symphoricarpos albus*** **Riparian Forest** [Black Cottonwood - Red Alder / Common Snowberry Riparian Forest] []
  G3 (2002-10-01) BC?, OR, WA
- **CEGL003397** ***Acer macrophyllum / Urtica dioica ssp. gracilis*** **Riparian Forest** [Bigleaf Maple / California Nettle Riparian Forest] []
  G3 (2002-10-01) BC, OR, WA?
- **CEGL003363** ***Populus balsamifera ssp. trichocarpa - Acer macrophyllum / Symphoricarpos albus*** **Riparian Forest** [Black Cottonwood - Bigleaf Maple / Common Snowberry Riparian Forest] []
  G3 (2002-10-01) BC?, OR, WA
- **CEGL000561** ***Acer macrophyllum / Rubus spectabilis*** **Riparian Forest** [Bigleaf Maple / Salmonberry Riparian Forest] []
  G4 (2000-04-24) BC?, OR, WA
- **CEGL002844** ***Populus balsamifera ssp. trichocarpa / Cornus sericea / Carex obnupta*** **Riparian Forest** [Black Cottonwood / Red-osier Dogwood / Slough Sedge Riparian Forest] []
  GNR. BC, OR, WA
- **CEGL003407** ***Populus balsamifera ssp. trichocarpa - Alnus rubra / Rubus spectabilis*** **Riparian Forest** [Black Cottonwood - Red Alder / Salmonberry Riparian Forest] []
  G2G3 (2002-10-17) BC?, OR, WA
- **CNVC00069** ***Populus balsamifera ssp. trichocarpa - Alnus rubra / Rubus spectabilis - Cornus stolonifera*** [Black Cottonwood - Red Alder / Salmonberry - *Cornus stolonifera*] [Peuplier de l'Ouest - Aulne rouge / Ronce remarquable - Cornouiller stolonifère]
  GNR.
- **CNVC00023** ***Populus balsamifera ssp. trichocarpa - Picea sitchensis - Acer macrophyllum / Oplopanax horridus - Rubus spectabilis / Maianthemum dilatatum*** [Black Cottonwood - Sitka Spruce - Bigleaf Maple / Devil's-Club - Salmonberry / False Lily-Of-The-Valley] [Peuplier de l'Ouest - Épinette de Sitka - Érable à grandes feuilles / Bois piquant - Ronce remarquable / Maïanthème dilaté]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3748 Shining Willow Riparian Scrub Alliance

[ ]
Salix lucida Riparian Scrub Alliance
Shining Willow Scrub Swamp

IVC Scientific Name: *Salix lucida* Riparian Scrub Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance consists of woodlands or thickets dominated by tall willows (>4.5 m [15 feet]) such as *Salix lucida ssp. lasiandra, Salix sitchensis*, and/or *Salix hookeriana* that line lowland coastal and interior riparian areas and floodplains of Oregon, Washington and British Columbia.

IVC Dynamics: These associations are dependent on a high water table for at least part of the growing season.

IVC Environment: Vegetation types within this alliance are located along streams, from near sea level to moderate elevations. These types typically occur immediately adjacent to small streams and rivers and are occasionally associated with abandoned beaver ponds and sloughs. Landforms diagnostic of these types include overflow channels of large rivers, alluvial deposits (point bars) of sands and gravels, and sloughs.

DISTRIBUTION

IVC Geographic Range: This alliance is found in lowland coastal British Columbia, Washington and Oregon.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003118 *Salix lucida ssp. lasiandra* Swamp Forest [Placeholder]** [Pacific Willow Swamp Forest] []
  G4Q (2000-05-03) BC?, CA, WA?
- **CNVC00073 *Salix lucida - S. sitchensis - Rubus spectabilis / Oenanthe sarmentosa - Lysichiton americanus*** [Shining Willow - *S. sitchensis* - Salmonberry / Water Parsley - American Skunk-Cabbage] [Saule brillant - Saule de Sitka - Ronce remarquable / Oenanthe sarmenteuse - Lysichiton d'Amérique]
  GNR.
- **CNVC00072 *Salix sitchensis / Equisetum arvense*** [Sitka Willow / Field Horsetail] [Saule de Sitka / Prêle des champs]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

G853 North-Central Pacific Maritime Lowland Swamp Forest

[ ]

IVC Colloquial Name: North-Central Pacific Maritime Lowland Swamp Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, BC, CA, ID, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate. Declines in ecological integrity of many occurrences is cause for concern.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3753 *Alnus rubra - Fraxinus latifolia / Lysichiton americanus* Swamp Woodland Alliance** [Red Alder - Oregon Ash / American Skunk-cabbage Swamp Woodland Alliance] []
  Low-elevation deciduous forests and woodlands generally dominated by *Alnus rubra, Fraxinus latifolia*, or *Populus balsamifera ssp. trichocarpa* in poorly drained swamps that are seasonally flooded much of the winter, spring, and early summer.
- **A4285 *Tsuga heterophylla - Picea sitchensis / Lysichiton americanus* Swamp Forest Alliance** [Western Hemlock - Sitka Spruce / American Skunk-cabbage Swamp Forest Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3753 Red Alder - Oregon Ash / American Skunk-cabbage Swamp Woodland Alliance

[ ]
Alnus rubra - Fraxinus latifolia / Lysichiton americanus Swamp Woodland Alliance
Pacific Northwest Alder - Ash Swamp Woodland

IVC Scientific Name: *Alnus rubra - Fraxinus latifolia / Lysichiton americanus* Swamp Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance occurs throughout the northern Puget Trough lowlands of Washington and British Columbia and in low-lying valleys of the western Oregon and northern California coasts. Forests are dominated by *Alnus rubra, Fraxinus latifolia*, or *Populus balsamifera ssp. trichocarpa* which are well-adapted to wet soil conditions. Overstory cover ranges from 40-80%. The forest undergrowth is usually dominated by a deciduous shrub layer with *Rubus spectabilis, Crataegus douglasii, Spiraea douglasii, Symphoricarpos albus, Rosa rubiginosa*, or *Rubus ursinus*. The herbaceous layer may be well-developed. Deciduous swamps typically occur along low-elevation (0-1000 m) valley bottoms, along the upland margins of wetlands, or poorly aerated sections of floodplains. Soils are seasonally flooded by spring snowmelt and/or winter rains, which can last well into early summer.
IVC Dynamics: These forests are seasonally flooded by spring snowmelt and rains, and the soils may be saturated year-round in some stands.
IVC Environment: This alliance typically occurs along low-elevation (0-1000 m) streams or valley bottoms, along the upland margins of wetlands, or on the floodplains of streams and rivers. Soils range from alluvium to veneers of muck and peat. Soils are saturated year-round and are composed of muck or peat, silts or clays with poor drainage, and gleying is often evident. Scour and active flooding are not features of these saturated woody wetlands. If this alliance is found on the active floodplains, it occurs around oxbow lakes, swales and other backwater/slackwater areas, and less frequently found along the active streambanks.

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout the northern Puget Trough lowlands of Washington and British Columbia and in low-lying valleys of the western Oregon and northern California coasts.
IVC Nations: CA,US
IVC States/Provinces: BC, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003371** ***Populus tremuloides / Carex obnupta*** **Swamp Forest** [Quaking Aspen / Slough Sedge Swamp Forest] []
  G2 (2002-10-01) BC, OR, WA
- **CEGL003389** ***Alnus rubra / Rubus spectabilis / Carex obnupta - Lysichiton americanus*** **Riparian Forest** [Red Alder / Salmonberry / Slough Sedge - Yellow Skunk-cabbage Riparian Forest] []
  G3G4 (2002-10-01) BC?, OR, WA
- **CEGL003388** ***Alnus rubra / Athyrium filix-femina - Lysichiton americanus*** **Swamp Forest** [Red Alder / Common Ladyfern - Yellow Skunk-cabbage Swamp Forest] []
  G3G4 (2002-10-01) BC?, OR, WA
- **CNVC00066** ***Alnus rubra / Rubus spectabilis - Ribes bracteosum*** [Red Alder / Salmonberry - Stink Currant] [Aulne rouge / Ronce remarquable - Gadellier bractéolé]
  GNR.
- **CNVC00064** ***Alnus rubra / Rubus spectabilis / Lysichiton americanus*** [Red Alder / Salmonberry / American Skunk-Cabbage] [Aulne rouge / Ronce remarquable / Lysichiton d'Amérique]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A4285 Western Hemlock - Sitka Spruce / American Skunk-cabbage Swamp Forest Alliance

[ ]
Tsuga heterophylla - Picea sitchensis / Lysichiton americanus Swamp Forest Alliance
North-Central Pacific Western Hemlock - Sitka Spruce Swamp Forest

IVC Scientific Name: *Tsuga heterophylla - Picea sitchensis / Lysichiton americanus* Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK?, BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL007311** ***Picea sitchensis - Tsuga heterophylla / Vaccinium (alaskaense, ovalifolium) / Dryopteris expansa*** **Swamp Forest** [Sitka Spruce - Western Hemlock / (Alaska Blueberry, Oval-leaf Blueberry) / Spreading Woodfern Swamp Forest] []
  GNR. BC
- **CEGL007939** ***Tsuga heterophylla - Thuja plicata / Vaccinium ovalifolium - Gaultheria shallon / Lysichiton americanus*** **Swamp Forest** [Western Hemlock - Western Red-cedar / Oval-leaf Blueberry - Salal / American Skunk-cabbage Swamp Forest] []
  GNR. AK, BC, WA
- **CEGL000497** ***Tsuga heterophylla - (Pseudotsuga menziesii) / Oplopanax horridus / Polystichum munitum*** **Forest** [Western Hemlock - (Douglas-fir) / Devil's-club / Western Swordfern Forest] []
  G4 (1996-02-01) BC, OR, WA
- **CEGL007322** ***Tsuga heterophylla - (Thuja plicata, Alnus rubra) / Lysichiton americanus - Athyrium filix-femina*** **Swamp Forest** [Western Hemlock - (Western Red-cedar, Red Alder) / American Skunk-cabbage - Common Ladyfern Swamp Forest] []
  GNR. BC, WA
- **CEGL002847** ***Thuja plicata - Alnus rubra / Sambucus racemosa / Lysichiton americanus*** **Swamp Forest** [Western Red-cedar - Red Alder / Red Elderberry / American Skunk-cabbage Swamp Forest] []
  GNR. BC, WA?
- **CEGL002829** ***Thuja plicata - Callitropsis nootkatensis - Tsuga heterophylla / Gaultheria shallon / Coptis aspleniifolia*** **Swamp Forest** [Western Red-cedar - Alaska-cedar - Western Hemlock / Salal / Fernleaf Goldthread Swamp Forest] []
  G4G5 (2005-09-19) BC
- **CEGL007940** ***Callitropsis nootkatensis - (Tsuga mertensiana) / Gaultheria shallon / Lysichiton americanus*** **Swamp Forest** [Alaska-cedar - (Mountain Hemlock) / Salal / American Skunk-cabbage Swamp Forest] []
  GNR. BC, WA
- **CEGL002780** ***Picea sitchensis / Malus fusca / Carex obnupta*** **Swamp Forest** [Sitka Spruce / Oregon Crabapple / Slough Sedge Swamp Forest] []
  G2G3 (2005-06-02) BC
- **CNVC00060** ***Tsuga heterophylla - Picea sitchensis / Vaccinium ovalifolium - V. alaskaense / Lysichiton americanus*** [Western Hemlock - Sitka Spruce / Oval-Leaf Blueberry - *V. alaskaense* / American Skunk-Cabbage] [Pruche de l'Ouest - Épinette de Sitka / Airelle à feuilles ovées - Airelle d'Alaska / Lysichiton d'Amérique]
  GNR.
- **CNVC00062** ***Tsuga heterophylla - Thuja plicata / Lysichiton americanus*** [Western Hemlock - Western Red-Cedar / American Skunk-Cabbage] [Pruche de l'Ouest - Thuya géant / Lysichiton d'Amérique]
  GNR.
- **CNVC00059** ***Thuja plicata - Alnus rubra - Tsuga heterophylla / Rubus spectabilis / Lysichiton americanus*** [Western Red-Cedar - Red Alder - Western Hemlock / Salmonberry / American Skunk-Cabbage] [Thuya géant - Aulne rouge - Pruche de l'Ouest / Ronce remarquable / Lysichiton d'Amérique]
  GNR.
- **CNVC00061** ***Chamaecyparis nootkatensis - Tsuga mertensiana - Tsuga heterophylla / Vaccinium ovalifolium - V. alaskaense / Lysichiton americanus*** [*Chamaecyparis nootkatensis* - Mountain Hemlock - Western Hemlock / Oval-Leaf Blueberry - *V. alaskaense* / American Skunk-Cabbage] [Cyprès jaune - Pruche subalpine - Pruche de l'Ouest / Airelle à feuilles ovées - Airelle d'Alaska / Lysichiton d'Amérique]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G507 North-Central Pacific Montane Riparian & Seepage Swamp Forest

[ ]

IVC Colloquial Name: North-Central Pacific Montane Riparian & Seepage Swamp Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This riparian woodland group occurs throughout mountainous areas of the Pacific Northwest coast from Oregon to northern British Columbia, and east into Idaho along the tributaries of the Columbia River and south into the Sierra Nevada foothills of California. Dominant species include *Abies amabilis, Abies concolor, Abies magnifica, Alnus rhombifolia, Alnus rubra, Pinus contorta var. murrayana, Pinus jeffreyi, Populus balsamifera ssp. trichocarpa, Populus tremuloides*, and *Tsuga mertensiana*. Shrubs include *Alnus viridis ssp. sinuata, Betula occidentalis, Crataegus douglasii, Frangula purshiana, Oplopanax horridus, Philadelphus lewisii, Salix* spp., *Spiraea douglasii*, and *Vaccinium uliginosum*. Herbaceous wetland indicator species include *Achlys triphylla, Athyrium filix-femina, Carex angustata, Carex disperma, Clintonia uniflora, Gymnocarpium dryopteris*, and others. It occurs on steep streams and narrow floodplains above foothills but below the alpine environments, e.g., above 1500 m (4550 feet) elevation in the Klamath Mountains and western Cascades of Oregon, between 2130 and 2440 m (7000-8000 feet) in Yosemite National Park in the Sierra Nevada, up as high as 3300 m (10,000 feet) in the southern Cascades, and above 610 m (2000 feet) in northern Washington. This group occurs for the most part on the west side of the Cascade crest, but also occurs around the Columbia Basin along the tributaries of the Columbia River. Surrounding habitats include subalpine parklands and montane forests. These woodlands are dependent on seasonally high water tables and frequent (once every 3-5 years) flooding to provide channel scour and deposition for germination and maintenance. They occur on streambanks and overflow channels, seeps and edges of waterbodies. They are distinguished from the surrounding forest by riparian/ wetland indicators, when dominated by deciduous tree species, are visually a sharp contrast to immediate upland conifer forests.

IVC Dynamics:

IVC Environment: *Climate:* Cool temperate. *Soil/substrate/hydrology:* This group occurs on steep streams and narrow floodplains above foothills but below the alpine environments, e.g., above 1500 m (4550 feet) elevation to as high as 3300 m (10,000 feet) in the south and central part of the range, between 2130 and 2440 m (7000-8000 feet) in Yosemite National Park in the Sierra Nevada, up as high as 3300 m (10,000 feet) in the southern Cascades, and above 610 m (2000 feet) in northern Washington. By the steep nature of the streams and adjacent slopes, these riparian forests are very narrow. Surrounding habitats include subalpine parklands and montane forests. These woodlands are dependent on seasonally high water tables and frequent (once every 3-5 years) flooding to provide channel scour and deposition for germination and maintenance. These woodlands occur on streambanks and overflow channels. They are distinguished from the surrounding forest by riparian/wetland understory species. When dominated by deciduous tree species, they are visually a sharp contrast to immediate upland conifer forests. Environmental information was compiled from several sources: from Washington (Hemstrom et al. 1982, Brockway and Topik 1984, Franklin et al. 1988, Henderson et al. 1989, 1992, Kovalchik and Clausnitzer 2004); and from Oregon (McCain and Diaz 2002b, Christy 2004, Crowe et al. 2004).

DISTRIBUTION

IVC Geographic Range: This group is found throughout high mountainous areas of the Pacific Northwest coast, and south into the foothills of the Cascade Range and Sierra Nevada.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, ID, OR, WA

IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.11.78:P, 7.1.7.2:P, 7.1.8.1:P, 7.1.9.3:P, 10.1.3.80:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3767 *Pinus contorta* - *Picea engelmannii* Cascadian Swamp Woodland** [Lodgepole Pine - Engelmann Spruce Cascadian Swamp Woodland] []
  This riparian woodland alliance has an overstory canopy of *Picea engelmannii* that is always present and usually is dominant.

Pinus contorta is often present and can be codominant, while *Abies lasiocarpa* is only occasional and is not abundant. This alliance is found throughout the Oregon Cascades and in the North Cascades and Selkirk Mountains of Washington and may occur in British Columbia. These montane woodlands are found on riparian and wetland landforms. Elevations range from 1280 to 2200 m.

- **A3766 *Tsuga (mertensiana, heterophylla) - Abies amabilis* Riparian & Swamp Forest Alliance** [(Mountain Hemlock, Western Hemlock) - Pacific Silver Fir Riparian & Swamp Forest Alliance] []
  This alliance consists of montane riparian areas dominated by mixed forests with several conifers such as *Tsuga mertensiana* and/or *Abies amabilis*. Vegetation within this alliance occurs in cold, snowy subalpine environments of high coastal mountains. It has been reported from Oregon, Washington and British Columbia, but probably also occurs northward. It occurs from 760-1500 m in elevation, primarily west of the Cascade crest where maritime climate influence is strong and deep winter snowpacks are typical.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2011)
IVC Description Author: G. Kittel and C. Chappell
IVC Description Date: 2015-12-02
IVC Acknowledgments:

A3767 Lodgepole Pine - Engelmann Spruce Cascadian Swamp Woodland

[ ]
Pinus contorta - Picea engelmannii Cascadian Swamp Woodland
Cascadian Engelmann Spruce Swamp Woodland

IVC Scientific Name: *Pinus contorta - Picea engelmannii* Cascadian Swamp Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These riparian/wetland woodland alliance are dominated by conifers, with tree canopy cover ranging from 30-70%. *Picea engelmannii* is always present in the canopy and usually is dominant. *Pinus contorta* is often present and can be codominant, while *Abies lasiocarpa* is only occasional and is not abundant. A low-shrub layer is often present, dominated by *Vaccinium uliginosum, Vaccinium cespitosum*, and *Spiraea douglasii*, with *Ledum glandulosum, Linnaea borealis, Lonicera caerulea, Salix boothii, Salix eastwoodiae, Salix geyeriana, Salix lemmonii*, or *Vaccinium membranaceum* occasionally present. The herbaceous layer is dominated by perennial sedges or forbs. The most common or abundant graminoids include *Calamagrostis canadensis, Carex aquatilis, Carex jonesii, Carex scopulorum var. prionophylla, Carex scopulorum, Deschampsia cespitosa*, and *Eleocharis quinqueflora*. Important forbs include *Clintonia uniflora, Dodecatheon* spp., *Equisetum arvense, Pedicularis groenlandica, Saxifraga oregana, Streptopus amplexifolius*, and *Trifolium longipes*. Mosses are abundant and in some stands form peaty mats; *Sphagnum* spp. are the most important.

This riparian woodland alliance is found throughout the Oregon Cascades and in the North Cascades and Selkirk Mountains of Washington and may occur in British Columbia. These montane woodlands are found on riparian and wetland landforms. Elevations range from 1280 to 2200 m. Sites include the relatively dry edges of mountain meadows, stream terraces, lake basins, or wetter sites on the margins of bogs, marshes, toeslopes, floodplains or headwaters basins. Stands can also be found as narrow stringers along the banks of steep subalpine streams. Valleys where the alliance occurs can be broad U- or trough-shaped or narrow and V-shaped. Most sites are flat or gently sloped, with alluvial soils. These woodlands experience seasonal high water tables and sometimes seasonal flooding, and in some cases, the water table may be high year-round. In the Cascades, parent materials include granitic alluvium, or air-laid pumice, pumice alluvium or pumice lacustrine deposits. They can be deep or have an impermeable or compacted mineral soil below. Soils often have a layer or lens of organic material (but less than 40 cm thick, so not considered a peat soil) with layers of cobbles and gravels.

IVC Dynamics: As with most riparian habitats, the majority of these woodlands are successional, dependent on periodic flooding events as well as fire for maintenance.

IVC Environment: These montane woodlands are found on riparian and wetland landforms in the Oregon and Washington Cascades and other mountains of eastern Washington. Elevations range from 1280 to 2200 m. Sites include the relatively dry edges of mountain meadows, stream terraces, lake basins, or wetter sites on the margins of bogs, marshes, floodplains or headwaters basins. Stands can also be found as narrow stringers along the banks of steep subalpine streams. Valleys where the alliance occurs can be broad U- or trough-shaped or narrow and V-shaped. Most sites are flat or gently sloped, with alluvial soils. These woodlands experience seasonal flooding, and in some cases, the water table may be high year-round. In the Cascades, parent

materials include granitic alluvium, or air-laid pumice, pumice alluvium or pumice lacustrine deposits. They can be deep or have an impermeable or compacted mineral soil below. There is often an organic layer of organic loam, sedge peat or moss peat, except in riparian sites, where cobbles and gravels make up a large component of the soils. Some stands may fit the definition of wooded bogs.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Cascade Range of Oregon, Washington, and possibly reaching into British Columbia.
IVC Nations: CA?,US
IVC States/Provinces: BC?, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CNVC00067 *Chamaecyparis nootkatensis - Pinus contorta var. contorta / Trichophorum cespitosum*** [*Chamaecyparis nootkatensis* - Beach Pine / Tufted Bulrush] [Cyprès de Nootka - Pin tordu côtier / Trichophore cespiteux] GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3766 (Mountain Hemlock, Western Hemlock) - Pacific Silver Fir Riparian & Swamp Forest Alliance

[ ]
Tsuga (mertensiana, heterophylla) - Abies amabilis Riparian & Swamp Forest Alliance
Mountain Hemlock - Pacific Silver Fir Swamp Woodland

IVC Scientific Name: *Tsuga (mertensiana, heterophylla) - Abies amabilis* Riparian & Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of communities that are typically mixed forests with several conifers in the overstory often dominated by *Tsuga mertensiana* and/or *Abies amabilis*. Additional tree species include *Callitropsis nootkatensis, Pseudotsuga menziesii, Thuja plicata* and *Tsuga heterophylla*. The shrub layer is moderately dense and is dominated by *Acer circinatum, Menziesia ferruginea, Oplopanax horridus, Ribes bracteosum, Rubus parviflorus, Rubus pedatus, Rubus spectabilis, Vaccinium deliciosum, Vaccinium membranaceum*, and/or *Vaccinium ovalifolium*. The sparse herbaceous layer is dominated by shade-tolerant forbs and ferns, such as *Athyrium filix-femina, Blechnum spicant, Clintonia uniflora, Gymnocarpium dryopteris, Streptopus lanceolatus var. curvipes*, and *Tiarella trifoliata var. unifoliata*. Vegetation within this alliance occurs in cold, snowy subalpine environments of high coastal mountains. It has been reported from Oregon, Washington and British Columbia, but probably also occurs northward. It occurs from 760-1500 m in elevation, primarily west of the Cascade crest where maritime climate influence is strong and deep winter snowpacks are typical. In the Olympic Mountains, this alliance occurs from 300-1200 m in elevation, reaching lowest elevations on the moist windward slope. Precipitation ranges from 150-400 cm annually, falling largely as snow, and snowpacks usually linger into June or later. These forests typically occur in subalpine habitats near the ecotone with subalpine parklands. Sites are cold, poorly drained and saturated because of shallow subirrigation, seeps, springs or small streams. Stands are found on gentle to steep, lower slopes, toeslopes, in ravines on terraces along streams, in depressions, around edges of lakes and valley bottoms. Substrates are moderately deep soils derived from colluvium, alpine till,

glacial outwash, with volcanic ash overlaying granite. These soils are acidic, coarse-textured with a substantial organic component because of high moisture and low temperatures.

IVC Dynamics: Stands in this alliance are typically late-seral, mixed-age communities which can persist for very long periods under the present climate. Following fire or other disturbance, *Pseudotsuga menziesii* or *Abies procera* commonly become established and can persist in the canopy for centuries. Although these species are considered seral to *Abies amabilis*, their longevity allows them to persist as important species in forests of this alliance. Fire is infrequent in these forests, however, and rotation intervals for this type have been estimated at approximately 1000 years in central Washington (Henderson et al. 1989). Windthrow is the most common agent of disturbance, due to wet soils and shallow rooting of the trees, and creates gaps in the canopy for regeneration.

IVC Environment: These communities occur in moist habitats at approximately 300-1500 m in elevation. These forests are located in ravines, on terraces along streams, in depressions, around edges of lakes, and on subirrigated slopes, which can be steep. Most stands are hydrated with seasonal ponding or flooding from snowmelt and runoff. Some sites are saturated with groundwater year-round. Podzolization is the dominant soil formation process and organic soil layers are generally well-developed. Fires are infrequent in these forests, due to high fuel moisture and sheltered topographic position.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Coastal Mountains of British Columbia, and Coast and Cascade ranges of Oregon and Washington.

IVC Nations: CA,US

IVC States/Provinces: BC, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000501** ***Tsuga mertensiana - Abies amabilis / Caltha leptosepala ssp. howellii*** **Swamp Woodland** [Mountain Hemlock - Pacific Silver Fir / Howell's Marsh-marigold Swamp Woodland] []
  G3 (2000-11-09) BC?, WA
- **CEGL007325** ***Tsuga mertensiana - Callitropsis nootkatensis - Abies amabilis / Veratrum viride - Lysichiton americanus*** **Swamp Woodland** [Mountain Hemlock - Alaska-cedar - Pacific Silver Fir / Green False Hellebore - American Skunk-cabbage Swamp Woodland] []
  GNR. BC
- **CEGL000004** ***Abies amabilis - Tsuga heterophylla / Oplopanax horridus*** **Swamp Forest** [Pacific Silver Fir - Western Hemlock / Devil's-club Swamp Forest] []
  G5 (1996-02-01) BC, OR, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-12-18

IVC Acknowledgments:

G852 Alaskan Pacific Riparian Forest & Woodland

[ ]

IVC Colloquial Name: Alaskan Pacific Riparian Forest & Woodland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, BC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate. A major threat is from logging.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3747 *Picea sitchensis* Riparian Forest Alliance** [Sitka Spruce Riparian Forest Alliance] []
  This alliance consists of lowland coastal and foothill riparian forests dominated by *Picea sitchensis* or other conifer species such as *Tsuga heterophylla* or *Pseudotsuga menziesii*. Understory species are flood-tolerant, such as *Alnus viridis, Oplopanax horridus*, and *Rubus spectabilis*. Forests within this alliance occur in the outer coastal regions from Oregon to southeastern Alaska.
- **A3744 *Populus balsamifera ssp. trichocarpa* - *Picea sitchensis* - *Tsuga heterophylla* Riparian Forest Alliance** [Black Cottonwood - Sitka Spruce - Western Hemlock Riparian Forest Alliance] []
  This alliance comprises streamside riparian forests dominated by *Populus balsamifera ssp. trichocarpa* and may be codominated by coniferous trees such as *Pseudotsuga menziesii, Picea sitchensis, Tsuga heterophylla*, and/or *Pinus ponderosa*. Stands are found in Oregon, Washington, British Columbia and Alaska and occur on active floodplains on well-drained alluvial soils that either experience overbank flooding or high water tables during snowmelt and rainy seasons.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3747 Sitka Spruce Riparian Forest Alliance

[ ]
Picea sitchensis Riparian Forest Alliance
Sitka Spruce Riparian Forest

IVC Scientific Name: *Picea sitchensis* Riparian Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of lowland coastal and foothill riparian forests dominated by *Picea sitchensis* or other conifer species such as *Tsuga heterophylla* or *Pseudotsuga menziesii*. Understory species are flood-tolerant, such as *Alnus viridis, Oplopanax horridus*, and *Rubus spectabilis*. The undergrowth is typically dense with a moderate to dense short-shrub canopy dominated by *Cornus sericea, Rubus spectabilis, Oplopanax horridus, Salix hookeriana, Salix sitchensis*, or *Vaccinium ovalifolium*. The herbaceous layer is usually sparse to moderately dense with moisture-loving forbs and ferns such as *Athyrium filix-femina, Blechnum spicant, Lysichiton americanus, Maianthemum dilatatum, Rubus pedatus, Streptopus lanceolatus var. curvipes*, and

Tiarella trifoliata var. unifoliata. Forests within this alliance occur in the outer coastal regions from Oregon to southeastern Alaska. Most stands are below 500 m elevation. The climate is strongly maritime, wet and relatively mild. Sites are typically within riparian zones and include braided stream channels, alluvial fans and footslopes. Abundant moisture is present, and substrates are typically deep, well- to moderately well-drained soils derived from alluvium with a thin organic duff layer. Stream-deposited cobbles and boulders are often present.

IVC Dynamics: Fires tend to be infrequent in stands of this alliance due to high average humidities and low lightning frequencies. When they do burn, these forests are susceptible to high-intensity crown fires. Windthrow is a common, and occasionally catastrophic, agent of disturbance, which can result in forest turnover. Following disturbance, stands of this alliance are often colonized by shade-intolerant tree species such as *Pinus contorta* or *Alnus rubra*. Shrubs such as *Rubus spectabilis, Sambucus racemosa var. melanocarpa*, and *Vaccinium* spp. can also invade. *Alnus rubra* and *Rubus spectabilis* in particular can form semi-persistent communities in disturbed forests of this alliance. Regeneration and growth of *Picea sitchensis* can be severely limited in such disclimax stands. In mature forests such as these, regeneration often occurs on downed "nurse logs" on the forest floor.

IVC Environment: Vegetation occurs within the maritime-influenced region of the Pacific Northwest, from Oregon to southeastern Alaska, usually within 50 km of tidewater and below 1000 m in elevation. Most stands are below 500 m elevation. The climate is strongly maritime, wet and relatively mild. Annual precipitation ranges from 100-300 cm, with the majority falling in winter as rain. Summer rain decreases to the south, but coastal fogs and drizzle are characteristic throughout the region and minimize drought stress. The vegetation of this alliance is usually associated with river floodplains near the coast. Sites are typically within riparian zones and include braided stream channels, alluvial fans and footslopes. Abundant moisture is present, and substrates are typically deep, well- to moderately well-drained soils derived from alluvium with a thin organic duff layer. Stream-deposited cobbles and boulders are often present. Adjacent stands include forests dominated by *Tsuga heterophylla* or *Pseudotsuga menziesii*.

DISTRIBUTION

IVC Geographic Range: Forests within this alliance occur in the outer coastal regions from Oregon to southeastern Alaska.
IVC Nations: CA,US
IVC States/Provinces: AK, BC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003258** ***Picea sitchensis - Tsuga heterophylla / Oplopanax horridus / Athyrium filix-femina*** **Riparian Forest** [Sitka Spruce - Western Hemlock / Devil's-club / Common Ladyfern Riparian Forest] []
  G5 (1995-11-15) AK, BC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3744 Black Cottonwood - Sitka Spruce - Western Hemlock Riparian Forest Alliance

[ ]

Populus balsamifera ssp. trichocarpa - Picea sitchensis - Tsuga heterophylla Riparian Forest Alliance

Black Cottonwood - Sitka Spruce - Western Hemlock Riparian Forest

IVC Scientific Name: *Populus balsamifera ssp. trichocarpa - Picea sitchensis - Tsuga heterophylla* Riparian Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance comprises streamside riparian forests dominated by *Populus balsamifera ssp. trichocarpa* in the upper canopy. The canopy can be codominated by coniferous trees such as *Pseudotsuga menziesii, Picea sitchensis, Tsuga heterophylla*, and/or *Pinus ponderosa*. *Populus balsamifera ssp. trichocarpa* is always present and is always mixed with equal to at least half as much conifer cover in the upper canopy. This alliance is found in Oregon, Washington, British Columbia and Alaska at low elevations along major rivers on middle and high terraces. Stands occur on active floodplains on well-drained alluvial soils that either experience overbank flooding or high water tables during snowmelt and rainy seasons. Stands may also occur on higher terraces that are less likely to flood. Channels may be large like the Columbia and Willamette rivers, or occur along smaller tributaries. Stands may be far from an active channel, but are well within the active 100-year floodplain. This alliance does not include isolated hillside springs or seeps.

IVC Dynamics:

IVC Environment: Stands occur on active floodplains on well-drained alluvial soils that either experience overbank flooding or high water tables during snowmelt and rainy seasons. Stands may also occur on higher terraces that are less likely to flood.

DISTRIBUTION

IVC Geographic Range: This alliance is found in coastal lowlands west of the Coast Mountains of southern and southeastern Alaska and British Columbia and coastal lowlands and interior valleys of the coastal mountains west of the Cascadian divide in Washington and Oregon.

IVC Nations: CA,US

IVC States/Provinces: AK, BC?

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-09-26

IVC Acknowledgments:

G854 Alaskan Pacific Swamp Forest

[ ]

IVC Colloquial Name: Alaskan Pacific Swamp Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: AK, BC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4286 *Tsuga heterophylla - Picea sitchensis* Alaskan Swamp Forest Alliance** [Western Hemlock - Sitka Spruce Alaskan Swamp Forest Alliance] []
- **A3724 *Tsuga mertensiana - Tsuga heterophylla - Callitropsis nootkatensis* Forest & Woodland Alliance** [Mountain Hemlock - Western Hemlock - Alaska-cedar Forest & Woodland Alliance] []
  This alliance covers forests dominated by *Tsuga mertensiana* with *Callitropsis nootkatensis* and/or *Tsuga heterophylla*. Other tree species present include *Picea sitchensis* and/or *Pinus contorta*. Stands have with heavy snowfall in the winter, and occur within the subalpine Wet Hypermaritime Mountain Hemlock Subzone (MHwh) along the outer coast of British Columbia (elevations of 500-1100 m) and at still snowy but lower elevations in southeastern Alaska.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4286 Western Hemlock - Sitka Spruce Alaskan Swamp Forest Alliance

[ ]
Tsuga heterophylla - Picea sitchensis Alaskan Swamp Forest Alliance
Alaskan Pacific Swamp Forest

IVC Scientific Name: *Tsuga heterophylla - Picea sitchensis* Alaskan Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, BC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005627 *Abies amabilis - Callitropsis nootkatensis - Tsuga mertensiana / Lysichiton americanus* Swamp Forest** [Pacific Silver Fir - Alaska-cedar - Mountain Hemlock / American Skunk-cabbage Swamp Forest] []
  G4G5 (2017-01-13) BC
- **CEGL003221 *Tsuga mertensiana - Tsuga heterophylla / Vaccinium ovalifolium / Nephrophyllidium crista-galli* Swamp Forest** [Mountain Hemlock - Western Hemlock / Oval-leaf Blueberry / Deer-cabbage Swamp Forest] []
  GNR. AK, BC?
- **CEGL003265 *Picea sitchensis - Tsuga heterophylla / Vaccinium (alaskaense, ovalifolium) / Lysichiton americanus* Swamp Forest** [Sitka Spruce - Western Hemlock / (Alaska Blueberry, Oval-leaf Blueberry) / American Skunk-cabbage Swamp Forest] []
  G5 (1995-11-15) AK, BC
- **CEGL003235 *Tsuga heterophylla / Oplopanax horridus / Lysichiton americanus* Swamp Forest** [Western Hemlock / Devil's-club / American Skunk-cabbage Swamp Forest] []
  G4G5 (1995-11-15) AK, BC?
- **CEGL003216 *Tsuga mertensiana - Callitropsis nootkatensis / Lysichiton americanus - Athyrium filix-femina* Swamp Forest** [Mountain Hemlock - Alaska-cedar / American Skunk-cabbage - Common Ladyfern Swamp Forest] []
  G3 (2009-08-14) AK, BC?
- **CEGL003220 *Tsuga mertensiana - Tsuga heterophylla / Vaccinium ovalifolium / Lysichiton americanus* Swamp Forest** [Mountain Hemlock - Western Hemlock / Oval-leaf Blueberry / American Skunk-cabbage Swamp Forest] []
  G5 (1995-11-15) AK, BC?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3724 Mountain Hemlock - Western Hemlock - Alaska-cedar Forest & Woodland Alliance

[ ]
Tsuga mertensiana - Tsuga heterophylla - Callitropsis nootkatensis Forest & Woodland Alliance
Mountain Hemlock - Western Hemlock - Alaska-cedar Forest & Woodland

IVC Scientific Name: *Tsuga mertensiana - Tsuga heterophylla - Callitropsis nootkatensis* Forest & Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance covers forests dominated by *Tsuga mertensiana* with *Callitropsis nootkatensis* and/or *Tsuga heterophylla*. Other tree species present include *Picea sitchensis* and/or *Pinus contorta*. Understory shrubs include *Alnus viridis ssp. sinuata, Calamagrostis nutkaensis, Caltha leptosepala ssp. howellii, Coptis aspleniifolia, Gaultheria shallon, Harrimanella stelleriana, Maianthemum dilatatum, Menziesia ferruginea, Nephrophyllidium crista-galli, Vaccinium alaskaense, Vaccinium ovalifolium, Vaccinium parvifolium*, and/or *Veratrum viride*. Stands receive heavy snowfall in the winter, and occur within the subalpine Wet Hypermaritime Mountain Hemlock Subzone (MHwh) along the outer coast of British Columbia (elevations of 500-1100 m) and at still snowy but lower elevations in southeastern Alaska. All occur on steep mid to upper slopes and well-drained productive sites with organic to mineral soils.
IVC Dynamics:
IVC Environment: These are stands have with heavy snowfall in the winter, and occur within the subalpine Wet Hypermaritime Mountain Hemlock Subzone (MHwh) along the outer coast of British Columbia (elevations of 500-1100 m) and at still snowy but lower elevations in southeastern Alaska. All occur on steep mid to upper slopes and well-drained productive sites with organic to mineral soils.

DISTRIBUTION

IVC Geographic Range: This alliance is found in southeastern coastal Alaska and British Columbia coastal mountains on islands and the mainland.
IVC Nations: CA,US

IVC States/Provinces: AK, BC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002840** ***Tsuga mertensiana - Tsuga heterophylla - Picea sitchensis / Vaccinium ovalifolium - Vaccinium parvifolium*** **Forest** [Mountain Hemlock - Western Hemlock - Sitka Spruce / Oval-leaf Blueberry - Red Huckleberry Forest] []
  G4 (2005-09-19) BC
- **CEGL002841** ***Tsuga mertensiana - Picea sitchensis - Callitropsis nootkatensis - Pinus contorta / Calamagrostis nutkaensis*** **Woodland** [Mountain Hemlock - Sitka Spruce - Alaska-cedar - Lodgepole Pine / Pacific Reedgrass Woodland] []
  G4G5 (2005-09-19) BC
- **CEGL002839** ***Tsuga mertensiana - Callitropsis nootkatensis - Picea sitchensis / Veratrum viride - Nephrophyllidium crista-galli*** **Forest** [Mountain Hemlock - Alaska-cedar - Sitka Spruce / Green False Hellebore - Deer-cabbage Forest] []
  G3G4 (2005-09-19) BC
- **CEGL002838** ***Tsuga mertensiana - Callitropsis nootkatensis / Vaccinium (alaskaense, ovalifolium) / Coptis aspleniifolia*** **Forest** [Mountain Hemlock - Alaska-cedar / (Alaska Blueberry, Oval-leaf Blueberry) / Fernleaf Goldthread Forest] []
  G3G4 (2007-01-23) BC
- **CEGL007376** ***Thuja plicata - Callitropsis nootkatensis - Tsuga heterophylla / Gaultheria shallon / Lysichiton americanus*** **Forest** [Western Red-cedar - Alaska-cedar - Western Hemlock / Salal / American Skunk-cabbage Forest] []
  GNR. AK, BC
- **CEGL003784** ***Tsuga mertensiana - Callitropsis nootkatensis / Calamagrostis nutkaensis - Maianthemum dilatatum*** **Woodland** [Mountain Hemlock - Alaska-cedar / Pacific Reedgrass - False Lily-of-the-Valley Woodland] []
  G3G4 (2006-04-11) BC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-18
IVC Acknowledgments:

1.B.4. Boreal Forest & Woodland

Boreal Forest & Woodland (or taiga) is dominated by needle-leaved (usually evergreen, conical-shaped) conifers, and broad-leaved deciduous hardwoods that cover the northern regions of North America and Eurasia, with extended cold winters and short mild summers.

Macrogroups in Canada:

- **M495 Eastern North American Boreal Forest [Forêts boréales de l'Est de l'Amérique du Nord]**
  This macrogroup describes upland boreal forests in eastern Canada, ranging from northwestern Ontario to Newfoundland and Labrador. On mesic, well-drained sites with moderate nutrient status, these are primarily closed coniferous forests, although hardwood and mixed conifer-hardwood forests are also common. Dominant tree species include *Abies balsamea, Betula papyrifera, Picea glauca, Picea mariana, Pinus banksiana*, and *Populus tremuloides*.
- **M496 West-Central North American Boreal Forest [Forêts boréales du Centre-ouest de l'Amérique du Nord]**
  This type includes upland boreal and foothill forests in west-central Canada, ranging from northeastern British Columbia to northwestern Ontario. Dominant tree species include *Populus tremuloides, Picea glauca, Picea mariana, Pinus banksiana, Pinus contorta var. latifolia*, and *Betula papyrifera*.
- **M156 Alaskan-Yukon North American Boreal Forest & Woodland [Forêts et terres boisées boréales nord américaines d'Alaska et du Yukon]**
  This Alaskan-Yukon North American subboreal and boreal forest ranges from western Alaska to southwestern Yukon Territories, dominated by the conifers *Picea glauca* and *Picea mariana*, and hardwoods *Betula neoalaskana, Betula papyrifera var. kenaica*, and *Populus tremuloides*.
- **M179 North American Northern Boreal Woodland [Terres boisées boréales nordiques de l'Amérique du Nord]**
  Open-canopy, short-statured woodlands in subalpine and subarctic North America on cool, dry sites on well-drained to excessively well-drained substrates. Canopies are sparse to open and dominated by *Picea glauca* and *Pinus banksiana*, and codominated by *Picea mariana*. Isolated stands of *Populus tremuloides* or *Populus balsamifera ssp. balsamifera* that occur above conifer treeline are included.

M495 Eastern North American Boreal Forest

Forêts boréales de l'Est de l'Amérique du Nord

IVC Colloquial Name: Eastern North American Boreal Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M495 describes upland boreal forests and woodlands in eastern Canada, ranging from southeastern Manitoba to Atlantic Canada. Forest canopies can be evergreen coniferous, cold-deciduous broad-leaved, or a conifer-broad-leaved mixture. Stand-replacing fires and insect infestation (primarily by spruce budworm [*Choristoneura fumiferana*]) are the most widespread forms of natural disturbance throughout the range of M495. In general, the relative frequency of fire decreases eastward as maritime climatic influences create more humid environmental conditions. Forests that are characteristic of a longer fire cycle with periodic insect perturbations become more prevalent on the landscape in the eastern part of the range. Dominant tree species include balsam fir (*Abies balsamea*), black spruce (*Picea mariana*), paper birch (*Betula papyrifera*), trembling aspen (*Populus tremuloides*), white spruce (*Picea glauca*) and jack pine (*Pinus banksiana*). Balsam poplar (*Populus balsamifera*) occurs on moist, nutrient-rich sites. Understories range from dense, species-rich shrub and herb conditions to sparse and open with continuous feathermoss and/or lichen ground cover. Common understory species include common Labrador tea (*Rhododendron groenlandicum*), sheep laurel (*Kalmia angustifolia*), velvet-leaved blueberry (*Vaccinium myrtilloides*), early lowbush blueberry (*V. angustifolium*), mountain ashes (*Sorbus* spp.), mountain maple (*Acer spicatum*), creeping snowberry (*Gaultheria hispidula*), yellow clintonia (*Clintonia borealis*), northern starflower (*Lysimachia borealis*), wild sarsaparilla (*Aralia nudicaulis*) and red-stemmed feathermoss (*Pleurozium schreberi*).

The M495 range is characterized by a humid, mostly continental boreal climate, with long, cold winters and short, mild summers. Maritime influences become pronounced in the eastern part of the range, where seasonal temperature extremes are mitigated and annual precipitation is higher. High elevation areas and colder more exposed coastal environments of otherwise temperate southern Quebec and the Maritime Provinces also support boreal forests described by M495. Mean annual temperature varies from <0°C at the northern limit of the range to >3.5°C in insular Newfoundland. Annual precipitation generally increases eastward from approximately 640 mm in southeastern Manitoba and northwestern Ontario to >1800 mm in parts of insular Newfoundland and Cape Breton Island. Elevations are mostly <500 mASL although parts of the Laurentian Region of the Precambrian Shield and the Chic-Choc Mountains of the Gaspé region reach 1000 mASL or higher. Regional geologic and topographic features of the Precambrian Shield and Appalachian physiographic regions produce an array of local site conditions. All parts of the range experienced Pleistocene glaciation; soils are mostly Podzols, Brunisols and Luvisols developed in glacial surficial materials.

Two subtypes distinguish boreal forests characteristic of maritime climatic influences (CM495a [Atlantic Boreal Forest]) from forests characteristic of shorter fire cycles in a more continental climate (CM495b [Ontario - Quebec Boreal Forest]).

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: LB, MB, MI, MN?, NB?, NF, ON, QC, WI?

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: M495 describes the upland boreal forests of eastern Canada, characterized by general dominance of *Abies balsamea, Picea mariana* and *Betula papyrifera* on circum-mesic sites. Boreal upland forests in west-central Canada (excluding southwestern and southcentral Yukon), described by M496 [West-Central North American Boreal Forest], are distinguished from those of M495 by general dominance of *Populus tremuloides, Picea glauca* and *Pinus contorta* var. *latifolia* or *P. banksiana* on circum-mesic sites. Understories also differ in dominant species, including ericaceous shrubs and feathermosses. North of the range of M495, M179 [North American Northern Boreal Woodland] describes northern boreal upland treed communities dominated mainly by *P. mariana* that exhibit woodland physiognomy, typically with ground cover of lichens rather than feathermosses. M495 does not include conifer and hardwood forests that contain temperate species, like *Acer rubrum, A. saccharum, Betula alleghaniensis, Picea rubens, Pinus strobus* and *Pinus resinosa*; these forests are described by CM014 [Eastern North American Temperate Hardwood - Conifer Forest] and CM744 [Acadian Hardwood - Conifer Forest].

Within subtypes CM495a [Atlantic Boreal Forest] and CM495b [Ontario - Quebec Boreal Forest], CNVC Groups break out forests using diagnostic species indicators of site-scale moisture and nutrient conditions. In CM495a, four Groups are recognized: CG0001 [Atlantic Boreal Dry Black Spruce - Sheep Laurel Woodland]; CG0002 [Atlantic Boreal Mesic-Moist Black Spruce - Balsam Fir - Paper Birch Forest]; CG0003 [Atlantic Boreal Mesic Balsam Fir - Paper Birch - White Spruce Forest]; CG0004 [Atlantic Boreal Moist Balsam Fir - White Spruce - Paper Birch Forest]. In CM495b, four Groups are recognized: CG0005 [Ontario-Quebec Boreal Dry-Mesic Black Spruce - Jack Pine Forest]; CG0006 [Ontario-Quebec Boreal Mesic-Moist Black Spruce (Jack Pine) Forest]; CG0007 [Ontario-Quebec Boreal Mesic Paper Birch - Balsam Fir - Trembling Aspen Forest]; CG0008 [Ontario-Quebec Boreal Moist Black Spruce - Trembling Aspen - Balsam Fir - Paper Birch Forest].

Alnus incana here refers to ssp. *rugosa* (speckled alder).

Groups in Canada:

- **G674 Atlantic Boreal Moist Balsam Fir - White Spruce - Paper Birch Forest [Forêts boréales humides de sapin baumier, d'épinette blanche et de bouleau à papier de l'Atlantique]**
- **G826 Atlantic Boreal Mesic Balsam Fir - Paper Birch - White Spruce Forest [Forêts boréales mésiques de sapin baumier, de bouleau à papier et d'épinette blanche de l'Atlantique]**
- **G825 Atlantic Boreal Mesic-Moist Black Spruce - Balsam Fir - Paper Birch Forest [Forêts boréales mésiques-humides d'épinette noire, de sapin baumier et de bouleau à papier de l'Atlantique]**
- **G824 Atlantic Boreal Dry Black Spruce - Sheep Laurel Woodland [Terrains boisés boréales secs d'épinette noire et de kalmia à feuilles étroites de l'Atlantique]**
- **G831 Ontario-Quebec Boreal Moist Black Spruce - Trembling Aspen - Balsam Fir - Paper Birch Forest [Forêts boréales humides d'épinette noire, de peuplier faux-tremble, de sapin baumier et de bouleau à papier de l'Ontario et du Québec]**
- **G638 Ontario-Quebec Boreal Mesic Paper Birch - Balsam Fir - Trembling Aspen Forest [Forêts boréales mésiques de bouleau à papier, de sapin baumier et de peuplier faux-tremble de l'Ontario et du Québec]**
- **G637 Ontario-Quebec Boreal Mesic-Moist Black Spruce (Jack Pine) Forest [Forêts boréales mésiques-humides d'épinette noire (pin gris) de l'Ontario et du Québec]**
- **G636 Ontario-Quebec Boreal Dry-Mesic Black Spruce - Jack Pine Forest [Forêts boréales sèches-mésiques d'épinette noire et de pin gris de l'Ontario et du Québec]**

CNVC Concept Author: L. Allen, K. Baldwin, S. Basquill, K. Chapman, W. MacKenzie, M. Major, B. Meades, D. Meidinger, C. Morneau, P. Uhlig
CNVC Concept Date: 2013-02-01
CNVC Description Author: K. Baldwin, J.-P. Saucier, B. Meades and K. Chapman
CNVC Description Date: 2017-12-01
IVC Primary Concept Source: K. Baldwin and Canadian NVC Committee (2014)
IVC Description Author: K. Baldwin and Canadian NVC Committee (2014) and D. Faber-Langendoen
IVC Description Date: 2015-01-09
IVC Acknowledgments:

G674 Atlantic Boreal Moist Balsam Fir - White Spruce - Paper Birch Forest

Forêts boréales humides de sapin baumier, d'épinette blanche et de bouleau à papier de l'Atlantique

IVC Colloquial Name: Atlantic Boreal Moist Balsam Fir - White Spruce Forest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM495a Atlantic Boreal Forest
CNVC Concept: The CNVC concept CG0004 appears to be the same as this IVC concept (G674), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept: This group represents the climatically wet boreal forests of Atlantic Canada, found in southern Newfoundland and coastal areas of Labrador. The low-elevation forests are dominated by *Abies balsamea*, with *Picea glauca, Picea mariana*, and *Betula papyrifera var. cordifolia* present. Trees are relatively short-statured, rarely exceeding 15 m. With increasing age, the fir-dominated forests may develop a high diversity and biomass of lichens, along with epiphytic mosses. The ground moss layer ranges from discontinuous to continuous. Because of the wet conditions, these forests have little to no history of fire. Insects, fungal diseases, and wind are the main natural disturbance factors, leading to the formation of patchy, multi-aged stands.
IVC Dynamics: Because of the wet conditions, these forests have little to no history of fire, with fire intervals exceeding 500 to 1000 years (Thompson et al. 2003, Bouchard et al. 2008). Insects, fungal diseases, and wind are the main natural disturbance factors. Average gap size and stand age-class structure vary, depending on the frequency of such disturbances. Small disturbances are the most common, creating patchy, multi-aged stands across the landscape. Large disturbances may be created by hurricane storms in late summer or fall. *Abies balsamea* is capable of persisting as suppressed saplings in the understory of mature stands, and they can quickly dominate recently disturbed sites. Old-growth characteristics include high volume of snags and coarse woody debris, and high lichen loads, among others. These forests are now considerably altered from the natural patch structure, with large gaps and young stands created by clear-cut logging (Thompson et al. 2003).
IVC Environment: *Climate:* The climate is wet, resulting from a combination of humid continental air masses interacting with coastal oceanic conditions and relatively low air temperatures. Clayden et al. (2011) describe the climate as "perhumid" (based on Thornthwaite (1948) categories); that is, a climate in which precipitation much exceeds evaporation and plant transpiration, resulting in year-round wetness. Perhumid areas may undergo short periods during an average year when water losses exceed water gains, but these are offset by abundant moisture in adjacent months. Thornthwaite index values in this region are greater

than 100 (Clayden et al. 2011, cf. Rowe 1972, p. 155). In eastern Canada, annual precipitation is mostly in the range of 1000 to 1600 mm, though locally some areas receive between 1600 and 1800 mm annually. The wetness is a consequence of major airstreams and oceanic currents along the coast. In the coastal areas, over 85% of the precipitation falls as rain; in higher elevation areas, snow may account for half of the precipitation. Fog also contributes to the wet conditions, increasing the precipitation levels and decreasing evapotranspiration. Temperate conditions are cool, with a mean annual temperate of 1-4°C. Because continental airflows dominate the region, seasonal temperature variations are higher than in western North America, but moderated by the ocean.

DISTRIBUTION

IVC Geographic Range: This group is found in eastern Canada, on Newfoundland and Labrador.
IVC Nations: CA
IVC States/Provinces: LB, NF
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0004
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00008 *Abies balsamea - Betula papyrifera / Rubus pubescens* Alliance** [Balsam Fir - Paper Birch / Dwarf Red Blackberry Alliance] [Sapin baumier - Bouleau à papier / Ronce pubescente]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Baldwin and Canadian NVC Committee (2012), in Faber-Langendoen et al. (2012)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2015-06-08
IVC Acknowledgments: Ken Baldwin, Peter Uhlig, Claude Morneau, Sean Basquill, Mélanie Major

CA00008 Balsam Fir - Paper Birch / Dwarf Raspberry

Sapin baumier - Bouleau à papier / Ronce pubescente
Abies balsamea - Betula papyrifera / Rubus pubescens Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00348** ***Abies balsamea / Taxus canadensis / Rubus pubescens / Dicranum majus*** [Balsam Fir / Canada Yew / Dwarf Raspberry / Greater Broom Moss] [Sapin baumier / If du Canada / Ronce pubescente / Grand dicrane]
  GNR.
- **CNVC00349** ***Betula papyrifera (Populus tremuloides) / Dryopteris carthusiana - Rubus pubescens*** [Paper Birch (Trembling Aspen) / Spinulose Wood Fern – Dwarf Raspberry] [Bouleau à papier (Peuplier faux-tremble) / Dryoptère spinuleuse – Ronce pubescente]
  GNR.
- **CNVC00316** ***Betula papyrifera / Alnus viridis / Solidago macrophylla*** [Paper Birch / Green Alder / Large-leaved Goldenrod] [Bouleau à papier / Aulne vert / Verge d'or à grandes feuilles]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G826 Atlantic Boreal Mesic Balsam Fir - Paper Birch - White Spruce Forest

Forêts boréales mésiques de sapin baumier, de bouleau à papier et d'épinette blanche de l'Atlantique

IVC Colloquial Name: Atlantic Boreal Mesic Balsam Fir - Paper Birch Forest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM495a Atlantic Boreal Forest
CNVC Concept: The CNVC concept CG0003 appears to be the same as this IVC concept (G826), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: LB, NF, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0003
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00006** ***Abies balsamea - Picea glauca / Acer spicatum / Oxalis montana*** **Alliance** [Balsam Fir - White Spruce / Mountain Maple / Mountain Woodsorrel Alliance] [Sapin baumier - Épinette blanche / Érable à épis / Oxalide de montagne]
- **CA00007** ***Abies balsamea*** **(*Betula papyrifera - Betula alleghaniensis*) /** ***Dryopteris carthusiana*** **Alliance** [Balsam Fir (Paper Birch - Yellow Birch) / Spinulose Woodfern Alliance] [Sapin baumier (Bouleau à papier - Bouleau jaune) / Dryoptère spinuleuse]
- **CA00005** ***Abies balsamea*** **(*Betula papyrifera*) /** ***Pleurozium schreberi*** **Alliance** [Balsam Fir (Paper Birch) / Schreber's Big Red-stem Moss Alliance] [Sapin baumier (Bouleau à papier) / Pleurozie dorée]
- **CA00004** ***Abies balsamea / Vaccinium vitis-idaea / Pleurozium schreberi - Bazzania trilobata*** **Alliance** [Balsam Fir / Lingonberry / Schreber's Big Red-stem Moss - Three-lobed Whipwort Alliance] [Sapin baumier / Airelle rouge / Pleurozie dorée - Bazzanie trilobée]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00007 Balsam Fir (Paper Birch - Yellow Birch) / Spinulose Wood Fern

Sapin baumier (Bouleau à papier - Bouleau jaune) / Dryoptère spinuleuse
Abies balsamea (*Betula papyrifera - Betula alleghaniensis*) / *Dryopteris carthusiana* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00311** ***Abies balsamea (Betula alleghaniensis) / Dryopteris carthusiana*** [Balsam Fir (Yellow Birch) / Spinulose Wood Fern] [Sapin baumier (Bouleau jaune) / Dryoptère spinuleuse]
  GNR.
- **CNVC00310** ***Abies balsamea / Dryopteris spp. / Hylocomiastrum umbratum*** [Balsam Fir / Wood Ferns / Shaded Wood Moss] [Sapin baumier / Dryoptères / Hylocomie boréale]
  GNR.
- **CNVC00315** ***Betula papyrifera - B. alleghaniensis / Dryopteris carthusiana*** [Paper Birch – Yellow Birch / Spinulose Wood Fern] [Bouleau à papier – Bouleau jaune / Dryoptère spinuleuse]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00005 Balsam Fir (Paper Birch) / Red-stemmed Feathermoss

Sapin baumier (Bouleau à papier) / Pleurozie dorée

Abies balsamea (*Betula papyrifera*) / *Pleurozium schreberi* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00233** ***Abies balsamea - Betula papyrifera / Oxalis montana / Pleurozium schreberi*** [Balsam Fir - Paper Birch / Mountain Woodsorrel / Schreber's Big Red-Stem Moss] [Sapin baumier - Bouleau à papier / Oxalide de montagne / Pleurozie dorée] GNR.
- **CNVC00232** ***Abies balsamea - Betula papyrifera / Pleurozium schreberi*** [Balsam Fir – Paper Birch / Red-stemmed Feathermoss] [Sapin baumier – Bouleau à papier / Pleurozie dorée] GNR.
- **CNVC00220** ***Abies balsamea* (*Picea mariana*) / *Oxalis montana* / *Pleurozium schreberi*** [Balsam Fir (Black Spruce) / Mountain Woodsorrel / Schreber's Big Red-Stem Moss] [Sapin baumier (Épinette noire) / Oxalide de montagne / Pleurozie dorée] GNR.
- **CNVC00222** ***Abies balsamea / Pleurozium schreberi*** [Balsam Fir / Red-stemmed Feathermoss] [Sapin baumier / Pleurozie dorée] GNR.
- **CNVC00278** ***Abies balsamea / Pleurozium schreberi - Sphagnum spp.*** [Balsam Fir / Red-stemmed Feathermoss – Peat Mosses] [Sapin baumier / Pleurozie dorée – Sphaignes] GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00006 Balsam Fir - White Spruce / Mountain Maple / Common Wood-sorrel

Sapin baumier - Épinette blanche / Érable à épis / Oxalide de montagne

Abies balsamea - Picea glauca / *Acer spicatum* / *Oxalis montana* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00225** ***Abies balsamea (Picea glauca) / Acer spicatum / Oxalis montana*** [Balsam Fir (White Spruce) / Mountain Maple / Common Wood-sorrel] [Sapin baumier (Épinette blanche) / Érable à épis / Oxalide de montagne] GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00004 Balsam Fir / Lingonberry / Red-stemmed Feathermoss - Three-lobed Whipwort

Sapin baumier / Airelle rouge / Pleurozie dorée - Bazzanie trilobée
Abies balsamea / *Vaccinium vitis-idaea* / *Pleurozium schreberi* - *Bazzania trilobata* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00309** ***Abies balsamea / Vaccinium vitis-idaea / Pleurozium schreberi - Bazzania trilobata*** [Balsam Fir / Lingonberry / Red-stemmed Feathermoss – Three-lobed Whipwort] [Sapin baumier / Airelle rouge / Pleurozie dorée – Bazzanie trilobée] GNR.
- **CNVC00292** ***Picea mariana - Abies balsamea / Vaccinium vitis-idaea / Pleurozium schreberi - Bazzania trilobata*** [Black Spruce - Balsam Fir / Lingonberry / Schreber's Big Red-Stem Moss - Three-Lobed Whipwort] [Épinette noire - Sapin baumier / Airelle rouge

/ Pleurozie dorée - Bazzanie trilobée]
GNR.

- **CNVC00226 *Picea glauca* (*Abies balsamea*) / *Pleurozium schreberi* (*Bazzania trilobata*)** [White Spruce (Balsam Fir) / Schreber's Big Red-Stem Moss (Three-Lobed Whipwort)] [Épinette blanche (Sapin baumier) / Pleurozie dorée (Bazzanie trilobée)]
GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G825 Atlantic Boreal Mesic-Moist Black Spruce - Balsam Fir - Paper Birch Forest

Forêts boréales mésiques-humides d'épinette noire, de sapin baumier et de bouleau à papier de l'Atlantique

IVC Colloquial Name: Atlantic Boreal Mesic-Moist Black Spruce - Balsam Fir Forest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM495a Atlantic Boreal Forest
CNVC Concept: The CNVC concept CG0002 appears to be the same as this IVC concept (G825), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: LB, NF, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0002
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00003 *Picea mariana - Abies balsamea / Gaultheria hispidula / Pleurozium schreberi* Alliance** [Black Spruce - Balsam Fir / Creeping Snowberry / Schreber's Big Red-stem Moss Alliance] [Épinette noire - Sapin baumier / Petit thé / Pleurozie dorée]
- **CA00002 *Picea mariana / Kalmia angustifolia / Pleurozium schreberi* Alliance** [Black Spruce / Sheep Laurel / Schreber's Big Red-stem Moss Alliance] [Épinette noire / Kalmia à feuilles étroites / Pleurozie dorée]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00003 Black Spruce - Balsam Fir / Creeping Snowberry / Red-stemmed Feathermoss

Épinette noire - Sapin baumier / Petit thé / Pleurozie dorée

Picea mariana - Abies balsamea / *Gaultheria hispidula* / *Pleurozium schreberi* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00277** ***Picea mariana - Abies balsamea / Pleurozium schreberi - Sphagnum*** **spp.** [Black Spruce - Balsam Fir / Schreber's Big Red-Stem Moss - Peat Moss species] [Épinette noire - Sapin baumier / Pleurozie dorée - Sphaignes]
  GNR.
- **CNVC00351** ***Picea mariana - Abies balsamea / Pleurozium schreberi (Hylocomium splendens)*** [Black Spruce – Balsam Fir / Red-stemmed Feathermoss (Stairstep Moss)] [Épinette noire – Sapin baumier / Pleurozie dorée (Hylocomie brillante)]
  GNR.
- **CNVC00344** ***Picea mariana - Betula papyrifera - Abies balsamea / Pleurozium schreberi*** [Black Spruce - Paper Birch - Balsam Fir / Schreber's Big Red-Stem Moss] [Épinette noire - Bouleau à papier - Sapin baumier / Pleurozie dorée]
  GNR.
- **CNVC00350** ***Picea mariana / Pleurozium schreberi - Hylocomium splendens*** [Black Spruce / Red-stemmed Feathermoss – Stairstep Moss] [Épinette noire / Pleurozie dorée – Hylocomie brillante]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00002 Black Spruce / Sheep Laurel / Red-stemmed Feathermoss

Épinette noire / Kalmia à feuilles étroites / Pleurozie dorée

Picea mariana / *Kalmia angustifolia* / *Pleurozium schreberi* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00307** ***Picea mariana (Abies balsamea) / Kalmia angustifolia / Pleurozium schreberi*** [Black Spruce (Balsam Fir) / Sheep Laurel / Red-stemmed Feathermoss] [Épinette noire (Sapin baumier) / Kalmia à feuilles étroites / Pleurozie dorée] GNR.
- **CNVC00338** ***Picea mariana / Rhododendron canadense - Taxus canadensis / Pleurozium schreberi*** [Black Spruce / Rhodora – Canada Yew / Red-stemmed Feathermoss] [Épinette noire / Rhododendron du Canada – If du Canada / Pleurozie dorée] GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G824 Atlantic Boreal Dry Black Spruce - Sheep Laurel Woodland

Terrains boisés boréales secs d'épinette noire et de kalmia à feuilles étroites de l'Atlantique

IVC Colloquial Name: Atlantic Boreal Dry Black Spruce Woodland
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM495a Atlantic Boreal Forest
CNVC Concept: The CNVC concept CG0001 appears to be the same as this IVC concept (G824), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: LB, NF, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0001
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00001 *Picea mariana* / *Kalmia angustifolia* - *Rhododendron canadense* / *Cladina* spp. Alliance** [Black Spruce / Sheep Laurel - Rhodora / Reindeer Lichen species Alliance] [Épinette noire / Kalmia à feuilles étroites - Rhododendron du Canada / Cladonies]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00001 Black Spruce / Sheep Laurel - Rhodora / Reindeer Lichens

Épinette noire / Kalmia à feuilles étroites - Rhododendron du Canada / Cladonies
Picea mariana / *Kalmia angustifolia* - *Rhododendron canadense* / *Cladina* spp. Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00205 *Picea mariana / Kalmia angustifolia - Rhododendron canadense / Cladina spp.*** [Black Spruce / Sheep Laurel – Rhodora / Reindeer Lichens] [Épinette noire / Kalmia à feuilles étroites – Rhododendron du Canada / Cladonies] GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G831 Ontario-Quebec Boreal Moist Black Spruce - Trembling Aspen - Balsam Fir - Paper Birch Forest

Forêts boréales humides d'épinette noire, de peuplier faux-tremble, de sapin baumier et de bouleau à papier de l'Ontario et du Québec

IVC Colloquial Name: Ontario-Québec Boreal Moist Black Spruce - Balsam Fir - Hardwood Forest

View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM495b Ontario-Quebec Boreal Forest

CNVC Concept: The CNVC concept CG0008 appears to be the same as this IVC concept (G831), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA

IVC States/Provinces: ON, QC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0008

CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00018 *Betula papyrifera - Abies balsamea / Alnus incana* Alliance** [Paper Birch - Balsam Fir / Gray Alder Alliance] [Bouleau à papier - Sapin baumier / Aulne rugueux]
- **A2130 *Picea mariana / Alnus incana - Rhododendron groenlandicum / Pleurozium schreberi* Alliance** [Black Spruce / Gray Alder - Common Labrador-tea / Schreber's Big Red-stem Moss Alliance] [Épinette noire / Aulne rugueux - Thé du Labrador / Pleurozie dorée]
- **CA00017 *Populus tremuloides / Alnus incana / Eurybia macrophylla* Alliance** [Quaking Aspen / Gray Alder / Bigleaf Aster Alliance] [Peuplier faux-tremble / Aulne rugueux / Aster à grandes feuilles]

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2019a)

IVC Description Author:

IVC Description Date:

IVC Acknowledgments:

CA00018 Paper Birch - Balsam Fir / Speckled Alder

Bouleau à papier - Sapin baumier / Aulne rugueux

Betula papyrifera - Abies balsamea / Alnus incana Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00297** ***Abies balsamea / Alnus incana*** [Balsam Fir / Gray Alder] [Sapin baumier / Aulne rugueux]
  GNR.
- **CNVC00296** ***Picea mariana - Abies balsamea / Alnus incana*** [Black Spruce – Balsam Fir / Speckled Alder] [Épinette noire – Sapin baumier / Aulne rugueux]
  GNR.
- **CNVC00274** ***Betula papyrifera - Abies balsamea / Alnus incana*** [Paper Birch – Balsam Fir / Speckled Alder] [Bouleau à papier – Sapin baumier / Aulne rugueux]
  GNR.
- **CNVC00242** ***Betula papyrifera / Alnus incana*** [Paper Birch / Speckled Alder] [Bouleau à papier / Aulne rugueux]
  GNR.
- **CNVC00273** ***Populus tremuloides - Betula papyrifera - Abies balsamea / Alnus incana*** [Quaking Aspen - Paper Birch - Balsam Fir / Gray Alder] [Peuplier faux-tremble - Bouleau à papier - Sapin baumier / Aulne rugueux]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2130 Black Spruce / Speckled Alder - Common Labrador Tea / Red-stemmed Feathermoss

Épinette noire / Aulne rugueux - Thé du Labrador / Pleurozie dorée
Picea mariana / *Alnus incana - Rhododendron groenlandicum* / *Pleurozium schreberi* Alliance
[ ]

IVC Scientific Name: *Picea mariana* / *Alnus incana - Rhododendron groenlandicum* / *Pleurozium schreberi* Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept: Developed as "CA00016" but recoded as "A2130", a new provisional IVC type, because IVC associations were assigned.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CA00016
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002517** ***Picea mariana - Populus tremuloides - Betula papyrifera / Pleurozium schreberi*** **Forest** [Black Spruce - Quaking Aspen - Paper Birch / Schreber's Big Red-stem Moss Forest] []
  GNR. MB?, ON, QC
- **CEGL002594** ***Picea mariana - Pinus banksiana*** **/ Tall Shrub /** ***Pleurozium schreberi*** **Forest** [Black Spruce - Jack Pine / Tall Shrub / Schreber's Big Red-stem Moss Forest] []
  GNR. ON, QC
- **CNVC00295** ***Picea mariana / Alnus incana / Pleurozium schreberi*** [Black Spruce / Speckled Alder / Red-stemmed Feathermoss] [Épinette noire / Aulne rugueux / Pleurozie dorée]
  GNR.
- **CEGL002519** ***Pinus banksiana - Populus tremuloides - Picea mariana / Pleurozium schreberi*** **Forest** [Jack Pine - Quaking Aspen - Black Spruce / Schreber's Big Red-stem Moss Forest] []
  GNR. MB?, ON
- **CNVC00294** ***Pinus banksiana - Picea mariana / Alnus incana / Pleurozium schreberi*** [Jack Pine - Black Spruce / Gray Alder / Schreber's Big Red-Stem Moss] [Pin gris - Épinette noire / Aulne rugueux / Pleurozie dorée]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00017 Trembling Aspen / Speckled Alder / Large-leaved Aster

Peuplier faux-tremble / Aulne rugueux / Aster à grandes feuilles
Populus tremuloides / *Alnus incana* / *Eurybia macrophylla* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00272** ***Populus tremuloides - Picea mariana / Alnus incana*** [Trembling Aspen – Black Spruce / Speckled Alder] [Peuplier faux-tremble – Épinette noire / Aulne rugueux]
  GNR.
- **CNVC00241** ***Populus tremuloides (P. balsamifera) / Alnus incana / Eurybia macrophylla*** [Trembling Aspen (Balsam Poplar) / Speckled Alder / Large-leaved Aster] [Peuplier faux-tremble (Peuplier baumier) / Aulne rugueux / Aster à grandes feuilles]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G638 Ontario-Quebec Boreal Mesic Paper Birch - Balsam Fir - Trembling Aspen Forest

Forêts boréales mésiques de bouleau à papier, de sapin baumier et de peuplier faux-tremble de l'Ontario et du Québec

IVC Colloquial Name: Ontario-Québec Boreal Mesic Balsam Fir - Hardwood Forest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM495b Ontario-Quebec Boreal Forest

CNVC Concept: The CNVC concept CG0007 appears to be the same as this IVC concept (G638), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.

IVC Concept: This boreal forest group has a closed canopy which is dominated by *Picea glauca* and *Abies balsamea*. Other associated tree species include *Acer rubrum, Betula papyrifera, Picea mariana, Populus balsamifera, Populus tremuloides*, and *Thuja occidentalis*. A significant tall-shrub/sapling layer is also characteristic, with a less extensive, but still present, short-shrub layer. The former is usually dominated by *Abies balsamea, Acer spicatum, Amelanchier* spp., *Corylus cornuta*, and *Picea mariana*, while the most abundant species in the latter are typically *Diervilla lonicera, Rosa acicularis*, and *Rubus pubescens*. The herbaceous layer is often quite poor and includes species such as *Anemone quinquefolia, Aralia nudicaulis, Eurybia macrophylla, Cornus canadensis, Clintonia borealis, Maianthemum canadense, Mitella nuda*, and *Trientalis borealis*. Feathermosses are common to abundant on the forest floor. This group is located primarily in the boreal regions of eastern Canada, with southern outliers possible in the upper Great Lakes states in the U.S. Stands are found on level to gently sloping dry-mesic to mesic sites. The soils are generally moderately well-drained, deep loams, sands, or silts; organic content is low.

IVC Dynamics:

IVC Environment: Stands are found on level to gently sloping dry-mesic to mesic sites. The soils are generally moderately well-drained, deep loams, sands, or silts. Organic content is low (La Roi 1967, Sims et al. 1989).

DISTRIBUTION

IVC Geographic Range: This group is found primarily in eastern Canada, but southern outliers may occur in northern Minnesota, northern Wisconsin, and northern Michigan.

IVC Nations: CA,US

IVC States/Provinces: MB, MI, MN?, ON, QC, WI?

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Elcode: CG0007
CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00015 *Betula papyrifera - Populus tremuloides - Abies balsamea / Acer spicatum* Alliance** [Paper Birch - Quaking Aspen - Balsam Fir / Mountain Maple Alliance] [Bouleau à papier - Peuplier faux-tremble - Sapin baumier / Érable à épis]
- **CA00014 *Betula papyrifera - Populus tremuloides - Abies balsamea / Clintonia borealis* Alliance** [Paper Birch - Quaking Aspen - Balsam Fir / Bluebead Alliance] [Bouleau à papier - Peuplier faux-tremble - Sapin baumier / Clintonie boréale]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2016-01-12
IVC Acknowledgments:

CA00015 Paper Birch - Trembling Aspen - Balsam Fir / Mountain Maple

Bouleau à papier - Peuplier faux-tremble - Sapin baumier / Érable à épis
Betula papyrifera - Populus tremuloides - Abies balsamea / Acer spicatum Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00235 *Abies balsamea - Betula papyrifera / Acer spicatum*** [Balsam Fir – Paper Birch / Mountain Maple] [Sapin baumier – Bouleau à papier / Érable à épis]
  GNR.
- **CNVC00216 *Picea mariana - Betula papyrifera (Abies balsamea) / Acer spicatum*** [Black Spruce – Paper Birch (Balsam fir) / Mountain Maple] [Épinette noire – Bouleau à papier (Sapin baumier) / Érable à épis]
  GNR.
- **CNVC00215 *Betula papyrifera - Populus tremuloides - Pinus banksiana / Acer spicatum / Clintonia borealis*** [Paper Birch – Trembling Aspen – Jack Pine / Mountain Maple / Yellow Clintonia] [Bouleau à papier – Peuplier faux-tremble – Pin gris / Érable à épis / Clintonie boréale]
  GNR.
- **CNVC00239 *Betula papyrifera (Populus tremuloides) / Acer spicatum / Clintonia borealis*** [Paper Birch (Trembling Aspen) / Mountain Maple / Yellow Clintonia] [Bouleau à papier (Peuplier faux-tremble) / Érable à épis / Clintonie boréale]
  GNR.

- **CNVC00256** ***Picea glauca - Abies balsamea / Streptopus lanceolatus / Pleurozium schreberi*** [White Spruce – Balsam Fir / Rose Twisted-stalk / Red-stemmed Feathermoss] [Épinette blanche – Sapin baumier / Streptope rose / Pleurozie dorée]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00014 Paper Birch - Trembling Aspen - Balsam Fir / Yellow Clintonia

Bouleau à papier - Peuplier faux-tremble - Sapin baumier / Clintonie boréale
Betula papyrifera - Populus tremuloides - Abies balsamea / Clintonia borealis Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00231** ***Abies balsamea - Betula papyrifera - Populus tremuloides / Clintonia borealis*** [Balsam Fir – Paper Birch – Trembling Aspen / Yellow Clintonia] [Sapin baumier – Bouleau à papier – Peuplier faux-tremble / Clintonie boréale]
  GNR.
- **CNVC00234** ***Picea mariana - Betula papyrifera - Abies balsamea / Clintonia borealis*** [Black Spruce – Paper Birch – Balsam Fir / Yellow Clintonia] [Épinette noire – Bouleau à papier – Sapin baumier / Clintonie boréale]
  GNR.
- **CNVC00218** ***Pinus banksiana - Abies balsamea - Betula papyrifera / Diervilla lonicera / Pleurozium schreberi*** [Jack Pine - Balsam Fir - Paper Birch / Northern Bush-Honeysuckle / Schreber's Big Red-Stem Moss] [Pin gris - Sapin baumier - Bouleau à papier / Dièreville chèvrefeuille / Pleurozie dorée]
  GNR.
- **CNVC00213** ***Populus tremuloides - Betula papyrifera - Picea mariana - Pinus banksiana / Diervilla lonicera / Pleurozium schreberi*** [Trembling Aspen – Paper Birch – Black Spruce – Jack Pine / Northern Bush-honeysuckle / Red-stemmed Feathermoss] [Peuplier faux-tremble – Bouleau à papier – Épinette noire – Pin gris / Dièreville chèvrefeuille / Pleurozie dorée]
  GNR.
- **CNVC00238** ***Populus tremuloides (Betula papyrifera) / Diervilla lonicera*** [Trembling Aspen (Paper Birch) / Northern Bush-honeysuckle] [Peuplier faux-tremble (Bouleau à papier) / Dièreville chèvrefeuille]
  GNR.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G637 Ontario-Quebec Boreal Mesic-Moist Black Spruce (Jack Pine) Forest

Forêts boréales mésiques-humides d'épinette noire (pin gris) de l'Ontario et du Québec

IVC Colloquial Name: Ontario-Québec Boreal Mesic-Moist Black Spruce Forest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM495b Ontario-Quebec Boreal Forest
CNVC Concept: The CNVC concept CG0006 appears to be the same as this IVC concept (G637), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept: This conifer forest group is found on nutrient-poor soils in a variety of topographic settings. It ranges from northwestern Ontario to Newfoundland and Labrador. Soils are loamy to sandy, varying from nutrient-poor, thin soil over bedrock to deeper soils, sometimes sandy. Sites are typically dry-mesic. The dominant fire regime varies from 50-100 years. *Picea mariana* and *Pinus banksiana* are characteristic overstory species over much of the range. Canopy structure is mostly closed but can be partially open. Conifers typically dominate the canopy, but boreal hardwoods (*Populus tremuloides, Betula papyrifera*) may codominate. As time since fire increases, *Picea mariana* may dominate. Tree regeneration includes *Abies balsamea, Betula papyrifera, Populus tremuloides*, and *Picea mariana*. The shrub and field layers can be very open to somewhat dense (5-75% cover). Characteristic low-shrub and herb species include *Amelanchier* spp., *Vaccinium angustifolium, Diervilla lonicera, Cornus canadensis, Linnaea borealis, Doellingeria umbellata*, and *Eurybia macrophylla*. Older *Picea mariana* stands may be strongly dominated by feathermosses.
IVC Dynamics: The dominant fire regime varies from 50-100 years.
IVC Environment: *Soil/substrate/hydrology:* Soils are loamy to sandy, varying from nutrient-poor, thin soil over bedrock to deeper soils, sometimes sandy. Sites are typically on dry-mesic to dry sites, but not commonly found on xeric sandplains or bedrock sites.

DISTRIBUTION

IVC Geographic Range: This group ranges from northwestern Ontario (perhaps eastern Manitoba) to Newfoundland and Labrador.
IVC Nations: CA
IVC States/Provinces: LB, MB, NF, ON, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0006
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00013 *Betula papyrifera - Picea mariana - Abies balsamea / Pleurozium schreberi - Sphagnum* spp. Alliance** [Paper Birch - Black Spruce - Balsam Fir / Schreber's Big Red-stem Moss - Peatmoss species Alliance] [Bouleau à papier - Épinette noire - Sapin baumier / Pleurozie dorée - Sphaignes]
- **CA00011 *Betula papyrifera / Vaccinium angustifolium / Pleurozium schreberi* Alliance** [Paper Birch / Lowbush Blueberry / Schreber's Big Red-stem Moss Alliance] [Bouleau à papier / Bleuet à feuilles étroites / Pleurozie dorée]
- **CA00012 *Picea mariana* (*Pinus banksiana*) / *Vaccinium angustifolium / Pleurozium schreberi* Alliance** [Black Spruce (Jack Pine) / Lowbush Blueberry / Schreber's Big Red-stem Moss Alliance] [Épinette noire (Pin gris) / Bleuet à feuilles étroites / Pleurozie dorée]
- **A4252 *Populus tremuloides - Betula papyrifera - Picea mariana / Diervilla lonicera / Pleurozium schreberi* Forest Alliance** [Quaking Aspen - Paper Birch - Black Spruce / Northern Bush-honeysuckle / Schreber's Big Red-stem Moss Forest Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Baldwin and Canadian NVC Committee (2012), in Faber-Langendoen et al. (2012)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2015-06-08
IVC Acknowledgments: Ken Baldwin, Peter Uhlig, Claude Morneau, Sean Basquill, Mélanie Major

CA00013 Paper Birch - Black Spruce - Balsam Fir / Red-stemmed Feathermoss - Peat Mosses

Bouleau à papier - Épinette noire - Sapin baumier / Pleurozie dorée - Sphaignes
Betula papyrifera - Picea mariana - Abies balsamea / *Pleurozium schreberi - Sphagnum* spp. Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00270 *Betula papyrifera - Picea mariana - Abies balsamea / Pleurozium schreberi - Sphagnum spp.*** [Paper Birch – Black Spruce – Balsam Fir / Red-stemmed Feathermoss – Peat Mosses] [Bouleau à papier – Épinette noire – Sapin baumier / Pleurozie dorée – Sphaignes]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00011 Paper Birch / Early Lowbush Blueberry / Red-stemmed Feathermoss

Bouleau à papier / Bleuet à feuilles étroites / Pleurozie dorée
Betula papyrifera / *Vaccinium angustifolium* / *Pleurozium schreberi* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00237** ***Betula papyrifera / Vaccinium angustifolium - Kalmia angustifolia / Pleurozium schreberi*** [Paper Birch / Early Lowbush Blueberry – Sheep Laurel / Red-stemmed Feathermoss] [Bouleau à papier / Bleuet à feuilles étroites – Kalmia à feuilles étroites / Pleurozie dorée]
  GNR.
- **CNVC00269** ***Betula papyrifera / Vaccinium angustifolium / Pleurozium schreberi*** [Paper Birch / Lowbush Blueberry / Schreber's Big Red-Stem Moss] [Bouleau à papier / Bleuet à feuilles étroites / Pleurozie dorée]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00012 Black Spruce (Jack Pine) / Early Lowbush Blueberry / Red-stemmed Feathermoss

Épinette noire (Pin gris) / Bleuet à feuilles étroites / Pleurozie dorée
Picea mariana (*Pinus banksiana*) / *Vaccinium angustifolium* / *Pleurozium schreberi* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00217** ***Picea mariana - Abies balsamea / Rhododendron groenlandicum / Pleurozium schreberi*** [Black Spruce – Balsam Fir / Common Labrador Tea / Red-stemmed Feathermoss] [Épinette noire – Sapin baumier / Thé du Labrador / Pleurozie dorée] GNR.
- **CNVC00208** ***Picea mariana - Pinus banksiana / Vaccinium angustifolium / Pleurozium schreberi*** [Black Spruce – Jack Pine / Early Lowbush Blueberry / Red-stemmed Feathermoss] [Épinette noire – Pin gris / Bleuet à feuilles étroites / Pleurozie dorée] GNR.
- **CNVC00214** ***Picea mariana - Betula papyrifera / Kalmia angustifolia / Pleurozium schreberi*** [Black Spruce – Paper Birch / Sheep Laurel / Red-stemmed Feathermoss] [Épinette noire – Bouleau à papier / Kalmia à feuilles étroites / Pleurozie dorée] GNR.
- **CNVC00276** ***Picea mariana / Rhododendron groenlandicum - Vaccinium angustifolium / Pleurozium schreberi (Sphagnum spp.)*** [Black Spruce / Common Labrador Tea – Early Lowbush Blueberry / Red-stemmed Feathermoss (Peat Mosses)] [Épinette noire / Thé du Labrador – Bleuet à feuilles étroites / Pleurozie dorée (Sphaignes)] GNR.
- **CNVC00211** ***Picea mariana / Rhododendron groenlandicum - Kalmia angustifolia / Pleurozium schreberi*** [Black Spruce / Common Labrador Tea – Sheep Laurel / Red-stemmed Feathermoss] [Épinette noire / Thé du Labrador – Kalmia à feuilles étroites / Pleurozie dorée] GNR.
- **CNVC00209** ***Pinus banksiana - Picea mariana / Kalmia angustifolia / Pleurozium schreberi*** [Jack Pine – Black Spruce / Sheep Laurel / Red-stemmed Feathermoss] [Pin gris – Épinette noire / Kalmia à feuilles étroites / Pleurozie dorée] GNR.
- **CNVC00207** ***Pinus banksiana (Picea mariana) / Vaccinium angustifolium / Pleurozium schreberi*** [Jack Pine (Black Spruce) / Early Lowbush Blueberry / Red-stemmed Feathermoss] [Pin gris (Épinette noire) / Bleuet à feuilles étroites / Pleurozie dorée] GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4252 Quaking Aspen - Paper Birch - Black Spruce / Northern Bush-honeysuckle / Schreber's Big Red-stem Moss Forest Alliance

[ ]

Populus tremuloides - Betula papyrifera - Picea mariana / Diervilla lonicera / Pleurozium schreberi Forest Alliance

Trembling Aspen - Paper Birch - Black Spruce Forest

IVC Scientific Name: *Populus tremuloides - Betula papyrifera - Picea mariana / Diervilla lonicera / Pleurozium schreberi* Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: MB, ON, QC?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002514** ***Populus (tremuloides, balsamifera) - (Betula papyrifera) - Picea mariana / Alnus viridis*** **Forest** [(Quaking Aspen, Balsam Poplar) - (Paper Birch) - Black Spruce / Green Alder Forest] []
  GNR. MB, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Chapman et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G636 Ontario-Quebec Boreal Dry-Mesic Black Spruce - Jack Pine Forest

Forêts boréales sèches-mésiques d'épinette noire et de pin gris de l'Ontario et du Québec

IVC Colloquial Name: Ontario-Québec Boreal Dry-Mesic Black Spruce - Jack Pine Forest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM495b Ontario-Quebec Boreal Forest
CNVC Concept: The CNVC concept CG0005 appears to be the same as this IVC concept (G636), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept: This conifer woodland is found throughout the eastern boreal region of Canada. It occurs on dry nutrient-poor sandplains and along rocky ridges, often adjacent to rivers and lakes, and along talus slopes. The canopy ranges from patchy to continuous and is dominated by a mix of primarily conifer and hardwood species. In some examples, canopy trees may be stunted. *Picea mariana* and *Pinus banksiana* are the most frequent conifer species. Hardwood species vary in cover from 25-90% of the canopy. Most common are *Betula papyrifera* and *Populus* spp. In areas of open bedrock, species typical of bedrock outcrops and shallow soils can be found. The nonvascular layer can be absent or present with up to 30% cover. In the open bedrock areas, this layer consists mainly of the lichens and mosses. Infrequent fire is the primary dynamic, with catastrophic fires occurring approximately every 150-200 years with surface fires every 50-200 years.
IVC Dynamics:
IVC Environment: Examples of this alliance occur on rocky ridgetops, high slopes, and terraces sometimes along rivers or lakeshores. These areas are dry, well-drained sites, often with exposed bedrock. Soils range from bare bedrock and talus slopes to rocky, shallow loams and deep sands. Those stands on bedrock may have occasional cracks in the underlying bedrock resulting in pockets of relatively deep (15-20 cm) soil. Bare rock (with crustose lichens) can cover up to 50% of the area.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from northwestern Ontario (possibly eastern Manitoba) to Quebec, Newfoundland and Labrador.
IVC Nations: CA
IVC States/Provinces: LB, MB?, NF, ON, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0005
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00010 *Picea mariana* / *Vaccinium angustifolium* / *Cladina* spp. Alliance** [Black Spruce / Lowbush Blueberry / Reindeer Lichen species Alliance] [Épinette noire / Bleuet à feuilles étroites / Cladonies]
- **CA00009 *Pinus banksiana* (*Picea mariana*) / *Vaccinium angustifolium* / *Cladina* spp. Alliance** [Jack Pine (Black Spruce) / Lowbush Blueberry / Reindeer Lichen species Alliance] [Pin gris (Épinette noire) / Bleuet à feuilles étroites / Cladonies]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Baldwin and Canadian NVC Committee (2012), in Faber-Langendoen et al. (2012)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2015-06-08
IVC Acknowledgments: Ken Baldwin, Peter Uhlig, Claude Morneau, Sean Basquill, Mélanie Major

CA00010 Black Spruce / Early Lowbush Blueberry / Reindeer Lichens

Épinette noire / Bleuet à feuilles étroites / Cladonies
Picea mariana / *Vaccinium angustifolium* / *Cladina* spp. Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00246 *Picea mariana / Rhododendron groenlandicum - Vaccinium angustifolium / Cladina spp.*** [Black Spruce / Common Labrador Tea – Early Lowbush Blueberry / Reindeer Lichens] [Épinette noire / Thé du Labrador – Bleuet à feuilles étroites / Cladonies]
  GNR.
- **CNVC00204 *Picea mariana / Rhododendron groenlandicum - Kalmia angustifolium / Cladina spp.*** [Black Spruce / Common Labrador Tea – Sheep Laurel / Reindeer Lichens] [Épinette noire / Thé du Labrador – Kalmia à feuilles étroites / Cladonies]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00009 Jack Pine (Black Spruce) / Early Lowbush Blueberry / Reindeer Lichens

Pin gris (Épinette noire) / Bleuet à feuilles étroites / Cladonies

Pinus banksiana (*Picea mariana*) / *Vaccinium angustifolium* / *Cladina* spp. Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00201** ***Pinus banksiana (Picea mariana) / Kalmia angustifolium (Rhododendron groenlandicum) / Cladina spp.*** [Jack Pine (Black Spruce) / Sheep Laurel (Common Labrador Tea) / Reindeer Lichens] [Pin gris (Épinette noire) / Kalmia à feuilles étroites (Thé du Labrador) / Cladonies]
  GNR.
- **CNVC00245** ***Pinus banksiana / Vaccinium angustifolium / Cladina spp.*** [Jack Pine / Early Lowbush Blueberry / Reindeer Lichens] [Pin gris / Bleuet à feuilles étroites / Cladonies]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

M496 West-Central North American Boreal Forest

Forêts boréales du Centre-ouest de l'Amérique du Nord

IVC Colloquial Name: West-Central North American Boreal Forest & Woodland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M496 describes the low elevation upland boreal and Rocky Mountain foothill forests in west-central Canada, ranging from southeastern Yukon and southern Northwest Territories to northwestern Ontario. Forest canopies can be evergreen coniferous, cold-deciduous broad-leaved or a conifer-broad-leaved mixture. These forests are maintained on the landscape by stand-replacing fire, with most parts of the range experiencing short (<100 years) to intermediate (100-270 years) regional fire cycles. Dominant tree species include trembling aspen (*Populus tremuloides*), white spruce (*Picea glauca*), black spruce (*Picea mariana*), lodgepole pine (*Pinus contorta* var. *latifolia*) and jack pine (*Pinus banksiana*). Balsam poplar (*Populus balsamifera*) occurs on nutrient-rich, usually moist, sites. Paper birch (*Betula papyrifera*) is an early seral species that becomes more common eastward in the range. At higher elevations or in fire-sheltered locations, fir species (*Abies lasiocarpa* or *A. balsamea*) co-occur with white spruce in late seral stands. Understories vary from dense, species-rich shrub and herb conditions to poorly developed shrub and herb layers with continuous feathermoss and/or lichen ground cover. Common understory species include prickly rose (*Rosa acicularis*), squashberry (*Viburnum edule*), common Labrador tea (*Rhododendron groenlandicum*), fireweed (*Chamerion angustifolium*), tall bluebells (*Mertensia paniculata*), downy lymegrass (*Leymus innovatus*), bluejoint reedgrass (*Calamagrostis canadensis*), lingonberry (*Vaccinium vitis-idaea*), red-stemmed feathermoss (*Pleurozium schreberi*) and stairstep moss (*Hylocomium splendens*).

M496 occurs within a subhumid continental boreal climate, with long, cold winters and short, mild summers. Continental climatic effects are modified in the Cordilleran portion of the range (CM496b), where mountain influences mitigate temperature extremes and generate greater precipitation than in the northern and eastern parts of the range. Mean annual temperature varies from about -5°C at the northern range limit in the Northwest Territories to about +2°C in the southern Alberta foothills. Annual precipitation varies between approximately 300 and 750 mm across the geographic range of M496, depending on latitude, longitude and elevation. Elevations are generally <500 mASL in the eastern portion of the range (i.e., northwestern Ontario to central Saskatchewan), rising gradually westward to approximately 800 mASL in northern Alberta, and extending to the lower boundary of the high montane/subalpine zone in the Cordilleran portions of western Alberta, British Columbia, Yukon and Northwest Territories (approx. 1100-1400 mASL). Regional geologic and topographic features of the Cordilleran, Interior Plains and western Precambrian Shield physiographic regions produce an array of local site conditions. Essentially, all parts of the range experienced Pleistocene glaciation; soils are mostly Brunisols and Luvisols developed in glacial surficial materials.

Two subtypes distinguish Central boreal forests (CM496a [Central Boreal Forest]) in Alberta, Saskatchewan, Manitoba and northwestern Ontario from low elevation boreal and foothills forests in the Cordilleran region of Alberta, British Columbia, southeastern Yukon and southwestern Northwest Territories (CM496b [Cordilleran Boreal Forest]).

IVC Geographic Range: This macrogroup includes the upland boreal forests and woodlands of British Columbia, Alberta, Saskatchewan, Manitoba, south-central and eastern Yukon, southern Northwest Territories, and northwestern Ontario north of approximately 51°N and west of approximately 86°W. In Alberta, forests of the Rocky Mountain foothills are also included in this macrogroup.

IVC Nations: CA

IVC States/Provinces: AB, BC, MB, ON?, SK, YT

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: M496 describes the low elevation upland boreal forests of west-central Canada (excluding southwestern and southcentral Yukon), characterized by general dominance of *Populus tremuloides, Picea glauca* and *Pinus contorta* or *P. banksiana* on circum-mesic sites. Boreal upland forests in eastern Canada, described by M495 [Eastern North American Boreal Forest], are distinguished from those of M496 by general dominance of *Abies balsamea, Picea mariana* and *Betula papyrifera* on circum-mesic sites. Understories also differ in dominant species, including ericaceous shrubs and feathermosses. To the northwest of the range of M496, M156 [Alaskan-Yukon North American Boreal Forest & Woodland] is distinguished by lower importance of *P. tremuloides* and *Betula papyrifera* in the tree layer, and by increased prominence of a suite of arctic-northern boreal understory species (in conjunction with reduced presence of southern Cordilleran species). North of the range of M496, M179 [North American Northern Boreal Woodland] describes northern boreal upland treed communities dominated by *P. glauca* and *P. mariana* and exhibiting woodland physiognomy, typically with ground cover of lichens rather than feathermosses. M496 does not include *Picea engelmannii - Abies lasiocarpa* forests in the Cordilleran region of western Canada; these forests are described by M020 [Rocky Mountain Subalpine - High Montane Forest]. In central British Columbia, low elevation subboreal forests (M890 [Rocky Mountain Intermontane Subboreal Forest]) occur in areas influenced by a more moderate climate than that of M496. Stands are more productive, reflecting the warmer and moister climate. Hybrid *Picea*

engelmannii x glauca replaces *P. glauca* on circum-mesic sites in M890 forests. Understory shrubs like *Vaccinium membranaceum, Spiraea lucida* and *Lonicera involucrata*, together with various herb species (especially ferns) with more southern distributions, are more prominent than in the adjacent boreal forests of M496.

Within subtypes CM496a [Central Boreal Forest] and CM496b [Cordilleran Boreal Forest], CNVC Groups break out forests using diagnostic species indicators of site-scale moisture and nutrient conditions. In CM496a, three Groups are recognized: CG0009 [Central Boreal Dry Jack Pine Forest]; CG0010 [Central Boreal Mesic-Moist Black Spruce - Jack Pine Forest]; CG0011 [Central Boreal Mesic-Moist Trembling Aspen - White Spruce Forest]. In CM496b, four Groups are recognized: CG0012 [Cordilleran Boreal Dry Lodgepole Pine Forest]; CG0013 [Cordilleran Boreal Mesic-Moist Black Spruce - Lodgepole Pine Forest]; CG0014 [Cordilleran Boreal Mesic Trembling Aspen - White Spruce Forest]; CG0015 [Cordilleran Boreal Moist White Spruce - Trembling Aspen (Balsam Poplar) Forest].

Abies lasiocarpa here refers to both *A. lasiocarpa* (subalpine fir) and *A. bifolia* (Rocky Mountain alpine fir), as well as their hybrids, as recognized by VASCAN.

Pinus contorta here refers to variety *latifolia* (lodgepole pine).

Groups in Canada:

- **G641 Central Boreal Mesic-Moist Trembling Aspen - White Spruce Forest [Forêts boréales mésiques-humides de peuplier faux-tremble et d'épinette blanche du Centre]**
- **G640 Central Boreal Mesic-Moist Black Spruce - Jack Pine Forest [Forêts boréales mésiques-humides d'épinette noire et de pin gris du Centre]**
- **G639 Central Boreal Dry Jack Pine Forest [Forêts boréales sèches de pin gris du Centre]**
- **G838 Cordilleran Boreal Moist White Spruce - Trembling Aspen (Balsam Poplar) Forest [Forêts boréales humides d'épinette blanche et de peuplier faux-tremble (peuplier baumier) de la Cordillère]**
- **G836 Cordilleran Boreal Mesic-Moist Black Spruce - Lodgepole Pine Forest [Forêts boréales mésiques-humides d'épinette noire et de pin tordu latifolié de la Cordillère]**
- **G837 Cordilleran Boreal Mesic Trembling Aspen - White Spruce Forest [Forêts boréales mésiques de peuplier faux-tremble et d'épinette blanche de la Cordillère]**
- **G580 Cordilleran Boreal Dry Lodgepole Pine Forest [Forêts boréales sèches de pin tordu latifolié de la Cordillère]**

CNVC Concept Author: L. Allen, K. Baldwin, S. Basquill, K. Chapman, W. MacKenzie, M. Major, B. Meades, D. Meidinger, C. Morneau, P. Uhlig
CNVC Concept Date: 2013-02-01
CNVC Description Author: K. Baldwin, D. Downing, D. Meidinger and K. Chapman
CNVC Description Date: 2017-12-01
IVC Primary Concept Source: L. Allen, K. Baldwin, S. Basquill, K. Chapman, W. MacKenzie, M. Major, B. Meades, D. Meidinger, C. Morneau, P. Uhlig
IVC Description Author: K. Baldwin, D. Downing, D. Meidinger and K. Chapman
IVC Description Date: 2016-07-05
IVC Acknowledgments:

G641 Central Boreal Mesic-Moist Trembling Aspen - White Spruce Forest

Forêts boréales mésiques-humides de peuplier faux-tremble et d'épinette blanche du Centre

IVC Colloquial Name: Central Boreal Mesic-Moist Aspen - White Spruce Forest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM496a Central Boreal Forest
CNVC Concept: The CNVC concept CG0011 appears to be the same as this IVC concept (G641), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: AB, MB, ON?, SK
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0011
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00053** ***Acer negundo - Populus balsamifera*** **(*Ulmus americana*)** [Box-Elder - Balsam Poplar (American Elm)] [Érable à Giguère - Peuplier baumier (Orme d'Amérique)]
- **CA00025** ***Picea glauca - Abies balsamea - Populus tremuloides / Rosa acicularis / Aralia nudicaulis*** **Alliance** [White Spruce - Balsam Fir - Quaking Aspen / Prickly Rose / Wild Sarsaparilla Alliance] [Épinette blanche - Sapin baumier - Peuplier faux-tremble / Rosier aciculaire / Aralie à tige nue]
- **A2132** ***Picea glauca - Populus tremuloides / Vaccinium myrtilloides / V. vitis-idaea*** [White Spruce - Quaking Aspen / Velvetleaf Huckleberry / *V. vitis-idaea*] [Épinette blanche - Peuplier faux-tremble / Bleuet fausse-myrtille / Airelle rouge]
- **A2133** ***Populus tremuloides - P. balsamifera / Alnus incana - Cornus stolonifera*** **Alliance** [Quaking Aspen - Balsam Poplar / Gray Alder - Red-osier Dogwood Alliance] [Peuplier faux-tremble - Peuplier baumier / Aulne rugueux - Cornouiller stolonifère]
- **CA00024** ***Populus tremuloides / Rosa acicularis / Aralia nudicaulis*** **Alliance** [Quaking Aspen / Prickly Rose / Wild Sarsaparilla Alliance] [Peuplier faux-tremble / Rosier aciculaire / Aralie à tige nue]
- **CA00022** ***Populus tremuloides / Vaccinium myrtilloides / V. vitis-idaea*** **Alliance** [Quaking Aspen / Velvetleaf Huckleberry / Lingonberry Alliance] [Peuplier faux-tremble / Bleuet fausse-myrtille / Airelle rouge]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2012)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00053 Box-Elder - Balsam Poplar (American Elm)

Érable à Giguère - Peuplier baumier (Orme d'Amérique)
Acer negundo - Populus balsamifera (*Ulmus americana*)

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00086** ***Acer negundo - Populus balamifera / Matteucia struthiopteris*** [Box-Elder - *Populus balamifera* / *Matteucia struthiopteris*] []
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00025 White Spruce - Balsam Fir - Trembling Aspen / Prickly Rose / Wild Sarsaparilla

Épinette blanche - Sapin baumier - Peuplier faux-tremble / Rosier aciculaire / Aralie à tige nue
Picea glauca - Abies balsamea - Populus tremuloides / Rosa acicularis / Aralia nudicaulis Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00261** ***Populus tremuloides - Picea glauca - Picea mariana / Shepherdia canadensis*** [Quaking Aspen - White Spruce - Black Spruce / Russet Buffaloberry] [Peuplier faux-tremble - Épinette blanche - Épinette noire / Shépherdie du Canada]
  GNR.
- **CNVC00093** ***Picea glauca - Abies balsamea - Betula papyrifera - Populus tremuloides / Rosa acicularis / Aralia nudicaulis*** [White Spruce – Balsam Fir – Paper Birch – Trembling Aspen / Prickly Rose / Wild Sarsaparilla] [Épinette blanche – Sapin baumier – Bouleau à papier – Peuplier faux-tremble / Rosier aciculaire / Aralie à tige nue]
  GNR.
- **CNVC00103** ***Picea glauca - Abies balsamea / Rosa acicularis / Aralia nudicaulis*** [White Spruce – Balsam Fir / Prickly Rose / Wild Sarsaparilla] [Épinette blanche – Sapin baumier / Rosier aciculaire / Aralie à tige nue]
  GNR.
- **CNVC00263** ***Picea glauca - Populus tremuloides / Rosa acicularis / Aralia nudicaulis*** [White Spruce – Trembling Aspen / Prickly Rose / Wild Sarsaparilla] [Épinette blanche – Peuplier faux-tremble / Rosier aciculaire / Aralie à tige nue]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2132 White Spruce - Quaking Aspen / Velvetleaf Huckleberry / *V. vitis-idaea*

Épinette blanche - Peuplier faux-tremble / Bleuet fausse-myrtille / Airelle rouge
Picea glauca - Populus tremuloides / *Vaccinium myrtilloides* / *V. vitis-idaea*
White Spruce - Trembling Aspen / Velvet-leaved Blueberry / Lingonberry

IVC Scientific Name: *Picea glauca - Populus tremuloides* / *Vaccinium myrtilloides* / *V. vitis-idaea*
View on NatureServe Explorer

OVERVIEW

CNVC Concept: Developed as "CA00023" but recoded as "A2132", a new provisional IVC type, because IVC associations were assigned.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CA00023
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002109** ***Picea glauca - Populus tremuloides*** **Sandhill Forest** [White Spruce - Quaking Aspen Sandhill Forest] []
  GNR. MB?
- **CNVC00090** ***Populus tremuloides - Picea glauca / Vaccinium myrtilloides / V. vitis-idaea*** [Quaking Aspen - White Spruce / Velvetleaf Huckleberry / *V. vitis-idaea*] [Peuplier faux-tremble - Épinette blanche / Bleuet fausse-myrtille / Airelle rouge]
  GNR.
- **CNVC00126** ***Picea glauca - Pinus banksiana / Vaccinium myrtilloides / Arctostaphylos uva-ursi*** [White Spruce - Jack Pine / Velvetleaf Huckleberry / Bearberry] [Épinette blanche - Pin gris / Bleuet fausse-myrtille / Raisin d'ours]
  GNR.
- **CEGL002127** ***Picea glauca / Juniperus horizontalis / Arctostaphylos uva-ursi*** **Woodland** [White Spruce / Creeping Juniper / Bearberry Woodland] []
  GNR. MB, QC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2133 Trembling Aspen - Balsam Poplar / Speckled Alder - Red-osier Dogwood

Peuplier faux-tremble - Peuplier baumier / Aulne rugueux - Cornouiller stolonifère
Populus tremuloides - P. balsamifera / Alnus incana - Cornus stolonifera Alliance
[ ]

IVC Scientific Name: *Populus tremuloides - P. balsamifera / Alnus incana - Cornus stolonifera* Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept: Developed as "CA00026" but recoded as "A2133", a new provisional IVC type, because IVC associations were assigned.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CA00026
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002511** ***Populus tremuloides - Populus balsamifera / Rubus pubescens*** **Forest** [Quaking Aspen - Balsam Poplar / Dwarf Red Blackberry Forest] []
  GNR. MB, ON
- **CNVC00333** ***Populus tremuloides - P. balsamifera / Alnus incana - Cornus stolonifera*** [Trembling Aspen – Balsam Poplar / Speckled Alder – Red-osier Dogwood] [Peuplier faux-tremble – Peuplier baumier / Aulne rugueux – Cornouiller stolonifère]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00024 Trembling Aspen / Prickly Rose / Wild Sarsaparilla

Peuplier faux-tremble / Rosier aciculaire / Aralie à tige nue
Populus tremuloides / Rosa acicularis / Aralia nudicaulis Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00347** ***Populus tremuloides* - *Picea mariana* - *Pinus banksiana* / *Acer spicatum* (*Rosa acicularis*)** [Quaking Aspen - Black Spruce - Jack Pine / Mountain Maple (Prickly Rose)] [Peuplier faux-tremble - Épinette noire - Pin gris / Érable à épis (Rosier aciculaire)]
  GNR.
- **CNVC00306** ***Populus tremuloides* - *Betula papyrifera* / *Acer spicatum* (*Rosa acicularis*)** [Quaking Aspen - Paper Birch / Mountain Maple (Prickly Rose)] [Peuplier faux-tremble - Bouleau à papier / Érable à épis (Rosier aciculaire)]
  GNR.
- **CNVC00305** ***Populus tremuloides / Alnus viridis (Rosa acicularis)*** [Trembling Aspen / Green Alder (Prickly Rose)] [Peuplier faux-tremble / Aulne vert (Rosier aciculaire)]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00022 Trembling Aspen / Velvet-leaved Blueberry / Lingonberry

Peuplier faux-tremble / Bleuet fausse-myrtille / Airelle rouge
Populus tremuloides / *Vaccinium myrtilloides* / *V. vitis-idaea* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00265** ***Populus tremuloides* / *Amelanchier alnifolia* / Poaceae** [Quaking Aspen / Saskatoon Serviceberry / Poaceae] [Peuplier faux-tremble / Amélanchier à feuilles d'aulne / Poacées]
  GNR.
- **CNVC00088** ***Populus tremuloides / Vaccinium myrtilloides / V. vitis-idaea*** [Trembling Aspen / Velvet-leaved Blueberry / Lingonberry] [Peuplier faux-tremble / Bleuet fausse-myrtille / Airelle rouge]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G640 Central Boreal Mesic-Moist Black Spruce - Jack Pine Forest

Forêts boréales mésiques-humides d'épinette noire et de pin gris du Centre

IVC Colloquial Name: Central Boreal Mesic-Moist Black Spruce - Jack Pine Forest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM496a Central Boreal Forest
CNVC Concept: The CNVC concept CG0010 appears to be the same as this IVC concept (G640), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: AB, MB, ON?, SK
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0010
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00021** ***Picea mariana - Pinus banksiana / Vaccinium myrtilloides / V. vitis-idaea / Pleurozium schreberi*** **Alliance** [Black Spruce - Jack Pine / Velvetleaf Huckleberry / Lingonberry / Schreber's Big Red-stem Moss Alliance] [Épinette noire - Pin gris / Bleuet fausse-myrtille / Airelle rouge / Pleurozie dorée]
- **CA00020** ***Populus tremuloides - Betula papyrifera - Pinus banksiana* (*Picea mariana*) / *Vaccinium myrtilloides* / *Vaccinium vitis-idaea*** **Alliance** [Quaking Aspen - Paper Birch - Jack Pine (Black Spruce) / Velvetleaf Huckleberry / Lingonberry Alliance] [Peuplier faux-tremble - Bouleau à papier - Pin gris (Épinette noire) / Bleuet fausse-myrtille / Airelle rouge]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2012)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00021 Black Spruce - Jack Pine / Velvet-leaved Blueberry / Lingonberry / Red-stemmed Feathermoss

Épinette noire - Pin gris / Bleuet fausse-myrtille / Airelle rouge / Pleurozie dorée
Picea mariana - Pinus banksiana / *Vaccinium myrtilloides* / *V. vitis-idaea* / *Pleurozium schreberi* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00252** ***Picea mariana - Betula papyrifera - Pinus banksiana / Vaccinium myrtilloides / Pleurozium schreberi*** [Black Spruce - Paper Birch - Jack Pine / Velvetleaf Huckleberry / Schreber's Big Red-Stem Moss] [Épinette noire - Bouleau à papier - Pin gris / Bleuet fausse-myrtille / Hypne de Schreber]
  GNR.
- **CNVC00249** ***Picea mariana (Pinus banksiana) / Vaccinium myrtilloides / Pleurozium schreberi*** [Black Spruce (Jack Pine) / Velvet-leaved Blueberry / Red-stemmed Feathermoss] [Épinette noire (Pin gris) / Bleuet fausse-myrtille / Pleurozie dorée]
  GNR.
- **CNVC00128** ***Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi (Hylocomium splendens)*** [Black Spruce / Lingonberry / Red-stemmed Feathermoss (Stairstep Moss)] [Épinette noire / Airelle rouge / Pleurozie dorée (Hylocomie brillante)]
  GNR.
- **CNVC00323** ***Pinus banksiana - Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi (Hylocomium splendens)*** [Jack Pine – Black Spruce / Lingonberry / Red-stemmed Feathermoss (Stairstep Moss)] [Pin gris – Épinette noire / Airelle rouge / Pleurozie dorée (Hylocomie brillante)]
  GNR.
- **CNVC00248** ***Pinus banksiana (Picea mariana) / Vaccinium myrtilloides / Pleurozium schreberi*** [Jack Pine (Black Spruce) / Velvet-leaved Blueberry / Red-stemmed Feathermoss] [Pin gris (Épinette noire) / Bleuet fausse-myrtille / Pleurozie dorée]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00020 Trembling Aspen - Paper Birch - Jack Pine (Black Spruce) / Velvet-leaved Blueberry / Lingonberry

Peuplier faux-tremble - Bouleau à papier - Pin gris (Épinette noire) / Bleuet fausse-myrtille / Airelle rouge

Populus tremuloides - Betula papyrifera - Pinus banksiana (*Picea mariana*) / *Vaccinium myrtilloides* / *Vaccinium vitis-idaea* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00253** ***Betula papyrifera - Picea mariana - Populus tremuloides / Alnus viridis / Vaccinium vitis-idaea*** [Paper Birch - Black Spruce - Quaking Aspen / Green Alder / Lingonberry] [Bouleau à papier - Épinette noire - Peuplier faux-tremble / Aulne vert / Airelle rouge]
  GNR.
- **CNVC00346** ***Betula papyrifera / Picea mariana - Abies balsamea / Vaccinium myrtilloides*** [Paper Birch / Black Spruce - Balsam Fir / Velvetleaf Huckleberry] [Bouleau à papier / Épinette noire - Sapin baumier / Bleuet fausse-myrtille]
  GNR.
- **CNVC00243** ***Betula papyrifera / Rhododendron groenlandicum / Vaccinium vitis-idaea*** [Paper Birch / *Rhododendron groenlandicum* / Lingonberry] [Bouleau à papier / Thé du Labrador / Airelle rouge]
  GNR.
- **CNVC00125** ***Populus tremuloides - Pinus banksiana / Vaccinium myrtilloides / V. vitis-idaea*** [Trembling Aspen – Jack Pine / Velvet-leaved Blueberry / Lingonberry] [Peuplier faux-tremble – Pin gris / Bleuet fausse-myrtille / Airelle rouge]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G639 Central Boreal Dry Jack Pine Forest

Forêts boréales sèches de pin gris du Centre

IVC Colloquial Name: Central Boreal Dry Jack Pine Forest

View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM496a Central Boreal Forest
CNVC Concept: The CNVC concept CG0009 appears to be the same as this IVC concept (G639), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.

IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: AB, MB, ON?, SK
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0009
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2131 *Pinus banksiana* / *Vaccinium myrtilloides* / *V. vitis-idaea* / *Cladina* spp. Alliance** [Jack Pine / Velvetleaf Huckleberry / Lingonberry / Reindeer Lichen species Alliance] [Pin gris / Bleuet fausse-myrtille / Airelle rouge / Cladonies]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2012)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2131 Jack Pine / Velvet-leaved Blueberry / Lingonberry / Reindeer Lichens

Pin gris / Bleuet fausse-myrtille / Airelle rouge / Cladonies
Pinus banksiana / *Vaccinium myrtilloides* / *V. vitis-idaea* / *Cladina* spp. Alliance
[ ]

IVC Scientific Name: *Pinus banksiana* / *Vaccinium myrtilloides* / *V. vitis-idaea* / *Cladina* spp. Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept: Developed as "CA00019" but recoded as "A2131", a new provisional IVC type, because IVC associations were assigned.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CA00019
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00244** ***Picea mariana - Pinus banksiana / Vaccinium myrtilloides / V. vitis-idaea / Cladina spp.*** [Black Spruce – Jack Pine / Velvet-leaved Blueberry / Lingonberry / Reindeer Lichens] [Épinette noire – Pin gris / Bleuet fausse-myrtille / Airelle rouge / Cladonies]
  GNR.
- **CEGL002523** ***Picea mariana*** **/ Lichens Woodland** [Black Spruce / Lichens Woodland] []
  GNR. MB, QC
- **CEGL002522** ***Pinus banksiana*** **/ Lichens Woodland** [Jack Pine / Lichens Woodland] []
  GNR. MB
- **CEGL002439** ***Pinus banksiana*** **/ Lichens Forest** [Jack Pine / Lichens Forest] []
  GNR. MB
- **CNVC00127** ***Pinus banksiana / Vaccinium myrtilloides / Arctostaphylos uva-ursi / Cladina spp.*** [Jack Pine / Velvet-leaved Blueberry / Common Bearberry / Reindeer Lichens] [Pin gris / Bleuet fausse-myrtille / Raisin d'ours / Cladonies]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G838 Cordilleran Boreal Moist White Spruce - Trembling Aspen (Balsam Poplar) Forest

Forêts boréales humides d'épinette blanche et de peuplier faux-tremble (peuplier baumier) de la Cordillère

IVC Colloquial Name: Cordilleran Boreal Moist White Spruce - Aspen Forest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM496b Cordilleran Boreal Forest
CNVC Concept: The CNVC concept CG0015 appears to be the same as this IVC concept (G838), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: AB, BC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0015
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00039** ***Picea glauca - Pinus contorta / Lonicera involucrata / Gymnocarpium dryopteris*** **Alliance** [White Spruce - Lodgepole Pine / Twinberry Honeysuckle / Western Oakfern Alliance] [Épinette blanche - Pin tordu / Chèvrefeuille involucré / Gymnocarpe du chêne]
- **CA00037** ***Picea glauca / Equisetum arvense - E. pratense*** **Alliance** [White Spruce / Field Horsetail - Meadow Horsetail Alliance] [Épinette blanche / Prêle des champs - Prêle des prés]

- **CA00036 *Populus balsamifera - P. tremuloides / Equisetum arvense - E. pratense* Alliance** [Balsam Poplar - Quaking Aspen / Field Horsetail - Meadow Horsetail Alliance] [Peuplier baumier - Peuplier faux-tremble / Prêle des champs - Prêle des prés]
- **CA00038 *Populus tremuloides - P. balsamifera / Lonicera involucrata / Mertensia paniculata* Alliance** [Quaking Aspen - Balsam Poplar / Twinberry Honeysuckle / Tall Bluebells Alliance] [Peuplier faux-tremble - Peuplier baumier / Chèvrefeuille involucré / Mertensie paniculée]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00039 White Spruce - Lodgepole Pine / Bracted Honeysuckle / Common Oak Fern

Épinette blanche - Pin tordu / Chèvrefeuille involucré / Gymnocarpe du chêne
Picea glauca - Pinus contorta / Lonicera involucrata / Gymnocarpium dryopteris Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00085 *Pinus contorta - Betula papyrifera / Oplopanax horridus*** [Lodgepole Pine - Paper Birch / Devil's-Club] [Pin tordu - Bouleau à papier / Bois piquant]
  GNR.
- **CNVC00084 *Pinus contorta - Populus tremuloides - Populus balsamifera / Gymnocarpium dryopteris*** [Lodgepole Pine - Quaking Aspen - Balsam Poplar / Western Oakfern] [Pin tordu - Peuplier faux-tremble - Peuplier baumier / Gymnocarpe du chêne]
  GNR.
- **CNVC00123 *Pinus contorta / Gymnocarpium dryopteris*** [Lodgepole Pine / Common Oak Fern] [Pin tordu / Gymnocarpe du chêne]
  GNR.
- **CNVC00124 *Pinus contorta / Oplopanax horridus*** [Lodgepole Pine / Devil's Club] [Pin tordu / Bois piquant]
  GNR.
- **CNVC00100 *Abies lasiocarpa - Picea glauca / Gymnocarpium dryopteris*** [Subalpine Fir - White Spruce / Western Oakfern] [Sapin subalpin - Épinette blanche / Gymnocarpe du chêne]
  GNR.
- **CNVC00097 *Picea glauca / Lonicera involucrata / Rubus pubescens*** [White Spruce / Bracted Honeysuckle / Dwarf Raspberry] [Épinette blanche / Chèvrefeuille involucré / Ronce pubescente]
  GNR.

- **CNVC00098** ***Picea glauca* / *Gymnocarpium dryopteris*** [White Spruce / Western Oakfern] [Épinette blanche / Gymnocarpe du chêne]
  GNR.
- **CNVC00099** ***Picea glauca* / *Oplopanax horridus*** [White Spruce / Devil's-Club] [Épinette blanche / Bois piquant]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00037 White Spruce / Field Horsetail - Meadow Horsetail

Épinette blanche / Prêle des champs - Prêle des prés
Picea glauca / *Equisetum arvense - E. pratense* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00079** ***Picea glauca - Betula papyrifera (Populus tremuloides) / Equisetum arvense - E. pratense*** [White Spruce – Paper Birch (Trembling Aspen) / Field Horsetail – Meadow Horsetail] [Épinette blanche – Bouleau à papier (Peuplier faux-tremble) / Prêle des champs – Prêle des prés]
  GNR.
- **CNVC00096** ***Picea glauca / Equisetum arvense - E. pratense*** [White Spruce / Field Horsetail – Meadow Horsetail] [Épinette blanche / Prêle des champs – Prêle des prés]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00036 Balsam Poplar - Trembling Aspen / Field Horsetail - Meadow Horsetail

Peuplier baumier - Peuplier faux-tremble / Prêle des champs - Prêle des prés
Populus balsamifera - P. tremuloides / *Equisetum arvense - E. pratense* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00078** ***Populus balsamifera - P. tremuloides / Equisetum arvense - E. pratense*** [Balsam Poplar – Trembling Aspen / Field Horsetail – Meadow Horsetail] [Peuplier baumier – Peuplier faux-tremble / Prêle des champs – Prêle des prés] GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00038 Trembling Aspen - Balsam Poplar / Bracted Honeysuckle / Tall Bluebells

Peuplier faux-tremble - Peuplier baumier / Chèvrefeuille involucré / Mertensie paniculée
Populus tremuloides - P. balsamifera / *Lonicera involucrata* / *Mertensia paniculata* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00080** ***Populus tremuloides - P. balsamifera / Lonicera involucrata - Cornus stolonifera / Rubus pubescens*** [Trembling Aspen – Balsam Poplar / Bracted Honeysuckle – Red-osier Dogwood / Dwarf Raspberry] [Peuplier faux-tremble – Peuplier baumier / Chèvrefeuille involucré – Cornouiller stolonifère / Ronce pubescente]
  GNR.
- **CNVC00081** ***Populus tremuloides / Lonicera involucrata / Gymnocarpium dryopteris*** [Quaking Aspen / Twinberry Honeysuckle / Western Oakfern] [Peuplier faux-tremble / Chèvrefeuille involucré / Gymnocarpe du chêne]
  GNR.
- **CNVC00082** ***Populus tremuloides / Oplopanax horridus*** [Quaking Aspen / Devil's-Club] [Peuplier faux-tremble / Bois piquant]
  GNR.
- **CNVC00083** ***Picea glauca - Populus tremuloides - P. balsamifera / Lonicera involucrata / Rubus pubescens*** [White Spruce – Trembling Aspen – Balsam Poplar / Bracted Honeysuckle / Dwarf Raspberry] [Épinette blanche – Peuplier faux-tremble – Peuplier baumier / Chèvrefeuille involucré / Ronce pubescente]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G836 Cordilleran Boreal Mesic-Moist Black Spruce - Lodgepole Pine Forest

Forêts boréales mésiques-humides d'épinette noire et de pin tordu latifolié de la Cordillère

IVC Colloquial Name: Cordilleran Boreal Mesic-Moist Black Spruce - Lodgepole Pine Forest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM496b Cordilleran Boreal Forest
CNVC Concept: The CNVC concept CG0013 appears to be the same as this IVC concept (G836), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: AB, BC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0013
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00031 *Picea glauca - P. mariana / Mertensia paniculata / Hylocomium splendens* Alliance** [White Spruce - Black Spruce / Tall Bluebells / Splendid Feathermoss Alliance] [Épinette blanche - Épinette noire / Mertensie paniculée / Hypne éclatante]
- **CA00030 *Pinus contorta - Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi* Alliance** [Lodgepole Pine - Black Spruce / Lingonberry / Schreber's Big Red-stem Moss Alliance] [Pin tordu - Épinette noire / Airelle rouge / Pleurozie dorée]
- **CA00029 *Populus tremuloides / Vaccinium vitis-idaea / Hylocomium splendens*** [Quaking Aspen / Lingonberry / Splendid Feathermoss] [Peuplier faux-tremble / Airelle rouge / Hypne éclatante]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00031 White Spruce - Black Spruce / Tall Bluebells / Stairstep Moss

Épinette blanche - Épinette noire / Mertensie paniculée / Hypne éclatante
Picea glauca - P. mariana / *Mertensia paniculata* / *Hylocomium splendens* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00110 *Picea mariana - P. glauca / Mertensia paniculata / Hylocomium splendens*** [Black Spruce – White Spruce / Tall Bluebells / Stairstep Moss] [Épinette noire – Épinette blanche / Mertensie paniculée / Hylocomie brillante] GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00030 Lodgepole Pine - Black Spruce / Lingonberry / Red-stemmed Feathermoss

Pin tordu - Épinette noire / Airelle rouge / Pleurozie dorée

Pinus contorta - Picea mariana / *Vaccinium vitis-idaea* / *Pleurozium schreberi* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00111** ***Picea mariana - Populus tremuloides - Pinus contorta / Vaccinium vitis-idaea / Hylocomium splendens*** [Black Spruce - Quaking Aspen - Lodgepole Pine / Lingonberry / Splendid Feathermoss] [Épinette noire - Peuplier faux-tremble - Pin tordu / Airelle rouge / Hylocomie brillante]
  GNR.
- **CNVC00120** ***Pinus contorta - Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi*** [Lodgepole Pine – Black Spruce / Lingonberry / Red-stemmed Feathermoss] [Pin tordu – Épinette noire / Airelle rouge / Pleurozie dorée]
  GNR.
- **CNVC00322** ***Pinus contorta - Picea mariana / Vaccinium membranaceum / Pleurozium schreberi*** [Lodgepole Pine - Black Spruce / Thinleaf Huckleberry / Schreber's Big Red-Stem Moss] [Pin tordu - Épinette noire / Airelle à feuilles membraneuses / Hypne de Schreber]
  GNR.
- **CNVC00092** ***Populus tremuloides - Pinus contorta / Rhododendron groenlandicum / Leymus innovatus - Vaccinium vitis-idaea / Hylocomium splendens*** [Trembling Aspen – Lodgepole Pine / Common Labrador Tea / Downy Lymegrass – Lingonberry / Stairstep Moss] [Peuplier faux-tremble – Pin tordu / Thé du Labrador / Élyme innovant – Airelle rouge / Hylocomie brillante]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00029 Quaking Aspen / Lingonberry / Splendid Feathermoss

Peuplier faux-tremble / Airelle rouge / Hypne éclatante

Populus tremuloides / *Vaccinium vitis-idaea* / *Hylocomium splendens*

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00268** ***Populus tremuloides* / *Rhododendron groenlandicum* / *Vaccinium vitis-idaea* / *Hylocomium splendens*** [Quaking Aspen / *Rhododendron groenlandicum* / Lingonberry / Splendid Feathermoss] [Peuplier faux-tremble / Thé du Labrador / Airelle rouge / Hylocomie brillante]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G837 Cordilleran Boreal Mesic Trembling Aspen - White Spruce Forest

Forêts boréales mésiques de peuplier faux-tremble et d'épinette blanche de la Cordillère

IVC Colloquial Name: Cordilleran Boreal Mesic Aspen - White Spruce Forest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM496b Cordilleran Boreal Forest
CNVC Concept: The CNVC concept CG0014 appears to be the same as this IVC concept (G837), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: AB, BC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0014
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00035 *Picea glauca - Pinus contorta / Hylocomium splendens* Alliance** [White Spruce - Lodgepole Pine / Splendid Feathermoss Alliance] [Épinette blanche - Pin tordu / Hypne éclatante]
- **CA00033 *Pinus contorta - Picea glauca / Shepherdia canadensis / Leymus innovatus* Alliance** [Lodgepole Pine - White Spruce / Russet Buffaloberry / Downy Ryegrass Alliance] [Pin tordu - Épinette blanche / Shépherdie du Canada / Élyme innovant]
- **CA00034 *Populus tremuloides* (*Picea glauca*) / *Rosa acicularis - Viburnum edule* Alliance** [Quaking Aspen (White Spruce) / Prickly Rose - Squashberry Alliance] [Peuplier faux-tremble (Épinette blanche) / Rosier aciculaire - Viorne comestible]
- **CA00032 *Populus tremuloides* (*Picea glauca*) / *Shepherdia canadensis / Leymus innovatus* Alliance** [Quaking Aspen (White Spruce) / Russet Buffaloberry / Downy Ryegrass Alliance] [Peuplier faux-tremble (Épinette blanche) / Shépherdie du Canada / Élyme innovant]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00035 White Spruce - Lodgepole Pine / Stairstep Moss

Épinette blanche - Pin tordu / Hypne éclatante
Picea glauca - Pinus contorta / *Hylocomium splendens* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00107 *Pinus contorta / Alnus viridis / Arnica cordifolia / Pleurozium schreberi*** [Lodgepole Pine / Green Alder / Heart-leaved Arnica / Red-stemmed Feathermoss] [Pin tordu / Aulne vert / Arnica à feuilles cordées / Pleurozie dorée]
  GNR.
- **CNVC00122 *Pinus contorta / Viburnum edule - Rosa acicularis / Hylocomium splendens*** [Lodgepole Pine / Squashberry – Prickly Rose / Stairstep Moss] [Pin tordu / Viorne comestible – Rosier aciculaire / Hylocomie brillante]
  GNR.
- **CNVC00105 *Abies lasiocarpa - Picea glauca - Pinus contorta / Hylocomium splendens*** [Subalpine Fir - White Spruce - Lodgepole Pine / Splendid Feathermoss] [Sapin subalpin - Épinette blanche - Pin tordu / Hypne éclatante]
  GNR.
- **CNVC00106 *Picea glauca - Abies lasiocarpa / Vaccinium membranaceum / Hylocomium splendens*** [White Spruce - Subalpine Fir / Thinleaf Huckleberry / Splendid Feathermoss] [Épinette blanche - Sapin subalpin / Airelle à feuilles membraneuses / Hypne

éclatante]
GNR.

- **CNVC00102** ***Picea glauca / Rosa acicularis / Hylocomium splendens*** [White Spruce / Prickly Rose / Stairstep Moss] [Épinette blanche / Rosier aciculaire / Hylocomie brillante]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00033 Lodgepole Pine - White Spruce / Soapberry / Downy Lymegrass

Pin tordu - Épinette blanche / Shépherdie du Canada / Élyme innovant
Pinus contorta - Picea glauca / Shepherdia canadensis / Leymus innovatus Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00121** ***Pinus contorta / Shepherdia canadensis / Leymus innovatus*** [Lodgepole Pine / Soapberry / Downy Lymegrass] [Pin tordu / Shépherdie du Canada / Élyme innovant]
  GNR.
- **CNVC00119** ***Pinus contorta / Shepherdia canadensis / Geocaulon lividum*** [Lodgepole Pine / Russet Buffaloberry / False Toadflax] [Pin tordu / Shépherdie du Canada / Comandre livide]
  GNR.
- **CNVC00337** ***Picea glauca* (*Pinus contorta*) / *Arctostaphylos uva-ursi - Leymus innovatus*** [White Spruce (Lodgepole Pine) / Bearberry - Downy Ryegrass] [Épinette blanche (Pin tordu) / Raisin d'ours - Élyme innovant]
  GNR.
- **CNVC00104** ***Picea glauca (Pinus contorta) / Shepherdia canadensis / Leymus innovatus / Hylocomium splendens*** [White Spruce (Lodgepole Pine) / Soapberry / Downy Lymegrass / Stairstep Moss] [Épinette blanche (Pin tordu) / Shépherdie du Canada / Élyme innovant / Hylocomie brillante]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00034 Trembling Aspen (White Spruce) / Prickly Rose - Squashberry

Peuplier faux-tremble (Épinette blanche) / Rosier aciculaire - Viorne comestible
Populus tremuloides (*Picea glauca*) / *Rosa acicularis - Viburnum edule* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00095** ***Populus tremuloides - Picea glauca / Rosa acicularis - Viburnum edule*** [Trembling Aspen – White Spruce / Prickly Rose – Squashberry] [Peuplier faux-tremble – Épinette blanche / Rosier aciculaire – Viorne comestible]
  GNR.
- **CNVC00094** ***Populus tremuloides / Rosa acicularis - Viburnum edule*** [Trembling Aspen / Prickly Rose – Squashberry] [Peuplier faux-tremble / Rosier aciculaire – Viorne comestible]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00032 Trembling Aspen (White Spruce) / Soapberry / Downy Lymegrass

Peuplier faux-tremble (Épinette blanche) / Shépherdie du Canada / Élyme innovant
Populus tremuloides (*Picea glauca*) / *Shepherdia canadensis* / *Leymus innovatus* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00091** ***Populus tremuloides - Picea glauca - Pinus contorta / Leymus innovatus*** [Trembling Aspen – White Spruce – Lodgepole Pine / Downy Lymegrass] [Peuplier faux-tremble – Épinette blanche – Pin tordu / Élyme innovant]
  GNR.
- **CNVC00087** ***Populus tremuloides / Leymus innovatus*** [Trembling Aspen / Downy Lymegrass] [Peuplier faux-tremble / Élyme innovant]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G580 Cordilleran Boreal Dry Lodgepole Pine Forest

Forêts boréales sèches de pin tordu latifolié de la Cordillère

IVC Colloquial Name: Cordilleran Boreal Dry Lodgepole Pine Forest
View on NatureServe Explorer

OVERVIEW

Sub-Macrogroup: CM496b Cordilleran Boreal Forest
CNVC Concept: The CNVC concept CG0012 appears to be the same as this IVC concept (G580), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: AB, BC, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0012
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2134 *Pinus contorta / Arctostaphylos uva-ursi / Cladina* spp. Alliance** [Lodgepole Pine / Bearberry / Reindeer Lichen species Alliance] [Pin tordu / Raisin d'ours / Cladonies]
- **CA00028 *Populus tremuloides / Shepherdia canadensis / Arctostaphylos uva-ursi* Alliance** [Quaking Aspen / Russet Buffaloberry / Bearberry Alliance] [Peuplier faux-tremble / Shépherdie du Canada / Raisin d'ours]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al.
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2134 Lodgepole Pine / Common Bearberry / Reindeer Lichens

Pin tordu / Raisin d'ours / Cladonies
Pinus contorta / *Arctostaphylos uva-ursi* / *Cladina* spp. Alliance
[ ]

IVC Scientific Name: *Pinus contorta* / *Arctostaphylos uva-ursi* / *Cladina* spp. Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept: Developed as "CA00027" but recoded as "A2134", a new provisional IVC type, because IVC associations were assigned.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CA00027
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002317 *Pinus contorta / Festuca altaica / Stereocaulon* spp. Woodland** [Lodgepole Pine / Altai Fescue / Snow Lichen species Woodland] []
  G3 (2004-06-03) BC
- **CEGL002325 *Pinus contorta / Vaccinium membranaceum / Cladonia* spp. Woodland** [Lodgepole Pine / Thinleaf Huckleberry / Cup Lichen species Woodland] []
  G3 (2004-06-03) BC
- **CEGL002320 *Pinus contorta - Picea mariana / Pleurozium schreberi* Forest** [Lodgepole Pine - Black Spruce / Schreber's Big Red-stem Moss Forest] []
  G3 (2004-06-03) BC
- **CNVC00118 *Pinus contorta / Vaccinium vitis-idaea - Arctostaphylos uva-ursi / Cladina spp.*** [Lodgepole Pine / Lingonberry – Common Bearberry / Reindeer Lichens] [Pin tordu / Airelle rouge – Raisin d'ours / Cladonies]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00028 Quaking Aspen / Russet Buffaloberry / Bearberry Alliance

Peuplier faux-tremble / Shépherdie du Canada / Raisin d'ours
Populus tremuloides / *Shepherdia canadensis* / *Arctostaphylos uva-ursi* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00089** ***Populus tremuloides* (*Picea glauca*) / *Shepherdia canadensis* / *Arctostaphylos uva-ursi*** [Quaking Aspen (White Spruce) / Russet Buffaloberry / Bearberry] [Peuplier faux-tremble (Épinette blanche) / Shépherdie du Canada / Raisin d'ours] GNR.
- **CNVC00330** ***Populus tremuloides* / *Shepherdia canadensis* / *Arctostaphylos uva-ursi*** [Quaking Aspen / Russet Buffaloberry / Bearberry] [Peuplier faux-tremble / Shépherdie du Canada / Raisin d'ours] GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

M156 Alaskan-Yukon North American Boreal Forest & Woodland

Forêts et terres boisées boréales nord américaines d'Alaska et du Yukon

IVC Colloquial Name: Alaskan-Yukon North American Boreal Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M156 describes upland boreal forests and woodlands of northwestern North America, ranging from northern British Columbia into Yukon, Northwest Territories and Alaska. Forest canopies can be evergreen coniferous, broad-leaved cold-deciduous or a conifer - broad-leaved mixture. Stands of M156 become patchy and more open with increased elevation, where they often occur as tree islands or widely spaced trees in a shrubland matrix. On wind-exposed sites, trees develop characteristic krummholtz forms in response to physical damage by extreme cold and blowing snow and ice crystals. These forests and woodlands are maintained on the landscape by stand-replacing fire, with most parts of the range experiencing short (<100 years) to intermediate (100-270 years) regional fire cycles. Dominant tree species in most of the Canadian range include white spruce (*Picea glauca*), black spruce (*P. mariana*), trembling aspen (*Populus tremuloides*), lodgepole pine (*Pinus contorta* var. *latifolia*) and, at higher elevations, subalpine fir (*Abies lasiocarpa*). Understories range from dense, species-rich shrub and herb conditions to sparse shrub and herb layers with continuous feathermoss and/or lichen ground cover. Common understory species include willows (*Salix* spp.), shrub birches (*Betula nana* and/or *B. glandulosa*), black crowberry (*Empetrum nigrum*), common Labrador tea (*Rhododendron groenlandicum*), fireweed (*Chamerion angustifolium*), lingonberry (*Vaccinium vitis-idaea*), twinflower (*Linnaea borealis*), Arctic lupine (*Lupinus arcticus*), Altai fescue (*Festuca altaica*), common bearberry (*Arctostaphylos uva-ursi*), northern comandra (*Geocaulon lividum*), reindeer (*Cladina* spp.) and clad (*Cladonia* spp.) lichens, and stairstep moss (*Hylocomium splendens*).

M156 occurs within a mostly subhumid continental boreal climate, with long cold winters and short cool summers. Mean annual temperatures range from about -1°C to -6°C. Annual precipitation varies between approximately 300 mm and 800 mm, depending on latitude, longitude and elevation. M156 forests and woodlands occur from valley bottom to treeline in most of Yukon (up to 1450 mASL) but, in northern British Columbia, southeastern Yukon and southwestern Northwest Territories, they are found at elevations above approximately 800-1100 mASL. Regional geologic and topographic features of the Cordilleran physiographic region produce an array of local site conditions. Except for some areas in western Yukon and southwestern Northwest Territories, all parts of the range experienced late Pleistocene glaciation. Soils are mostly Brunisols and Luvisols developed in glacial surficial materials, although Cryosols occur on cold moist sites in the northern part of the range.

Two subtypes distinguish low elevation boreal forests (CM156a [Low Montane Alaskan-Yukon Boreal Forest]) and higher elevation boreal woodlands (CM156b [High Montane Alaskan-Yukon Boreal Woodland]).

IVC Geographic Range: This macrogroup is found in the boreal and boreal transition (low-elevation through alpine) regions of Alaska, east into the southern Yukon Territories of Canada.

IVC Nations: CA,US

IVC States/Provinces: AB?, AK, BC, NT?, SK?, YT

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: M156 describes all upland boreal forests and woodlands of western and central Yukon, and the high-elevation boreal forests and woodlands of British Columbia, southeastern Yukon and a small part of southwestern Northwest Territories. They are characterized by general dominance of *Picea glauca* and/or *Picea mariana*, with *Abies lasiocarpa* common in higher elevation woodlands and *Populus tremuloides* on warm aspects at low elevations. In most of the Canadian range, *Pinus contorta* var. *latifolia* is an important early seral species. Boreal upland forests of west-central Canada, described by M496 [West-Central North American Boreal Forest], are distinguished from those of M156 by higher overall importance of *P. tremuloides,* a generally greater diversity of understory species and, further east, the presence of *Abies balsamea* and *Pinus banksiana*. The dominant species of tree birch in M156 is *Betula neoalaskana*, whereas it is *B. papyrifera* in M496. North of the range of M156, M179 [North American Northern Boreal Woodland] describes northern boreal upland treed communities dominated by *P. glauca* and *Picea mariana* that exhibit woodland physiognomy, typically with ground cover dominated by lichens rather than feathermosses. High montane and subalpine forests south of M156, characterized by *Picea engelmannii* (and *A. lasiocarpa*) are described by M020 [Rocky Mountain Subalpine-High Montane Forest].

Abies lasiocarpa here refers to both *A. lasiocarpa* (subalpine fir) and *A. bifolia* (Rocky Mountain alpine fir), as well as their hybrids, as recognized by VASCAN.

Pinus contorta here refers to variety *latifolia* (lodgepole pine); *P. contorta* var. *yukonensis* occurs occasionally in higher elevation woodlands.

Betula neoalaskana is the dominant species of tree birch in M156 although *B. papyrifera* occurs occasionally, especially in southeastern portions of the range.

Groups in Canada:
- **G627 Southern Alaskan Boreal Mesic Forest []**
- **G579 Central Alaskan-Yukon Boreal Mesic Forest []**
- **G855 Yukon Boreal Low Montane Forest []**
- **G858 Yukon Boreal High Montane Woodland []**

CNVC Concept Author: K. Baldwin, K. Chapman, N. Flynn, W. MacKenzie, D. Meidinger
CNVC Concept Date: 2017-10-01
CNVC Description Author: K. Baldwin, D. Meidinger and K. Chapman
CNVC Description Date: 2019-04-01
IVC Primary Concept Source: T. Boucher, K. Boggs, CNVC Technical Committee
IVC Description Author: T. Boucher, D. Faber-Langendoen, K. Baldwin, D. Meidinger, G. Kittel
IVC Description Date: 2017-03-29
IVC Acknowledgments:

G627 Southern Alaskan Boreal Mesic Forest

[ ]

IVC Colloquial Name: Southern Alaskan Boreal Mesic Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is common throughout the subboreal region of Alaska and extends eastward to southwest Yukon and northwest British Columbia. It occurs on moist well-drained soils derived from glacial deposits, hillside colluvium, residual soils, or loess. Dominant canopy species include *Picea glauca* or *Picea x lutzii* and *Betula papyrifera var. kenaica* or *Betula neoalaskana*. *Tsuga mertensiana* may codominate with *Picea x lutzii* where their ranges overlap. Common shrubs include *Rosa acicularis, Viburnum edule, Menziesia ferruginea, Alnus viridis ssp. sinuata, Salix pulchra, Vaccinium ovalifolium*, and *Oplopanax horridus*. Common herbaceous species include *Calamagrostis canadensis, Equisetum arvense, Dryopteris expansa*, and *Gymnocarpium dryopteris*.

IVC Dynamics: The major disturbance processes are fire, insect infestations, wind, and logging. Lightning strikes and natural fires have historically been infrequent and the fire interval is relatively long. When fires do occur they are often large crown fires. Spruce beetle (*Dendroctonus rufipennis*) infestations are a major natural disturbance of spruce forests in the sub-boreal region. Spruce beetles typically attack larger, slow-growing spruce, but when forest and climatic conditions are favorable for population expansion, beetles become less selective and infest a wider range of tree sizes. Beetle outbreaks that thin stands and produce a growth release in surviving trees occur on average every 50 years in *Picea glauca* and *Picea x lutzii* forests on the Kenai Peninsula. Spruce beetle outbreaks that produce a more substantial thinning occur at longer intervals, with the last two severe infestations occurring in the 1870s-1880s and 1987-present. Over 1.3 million acres of spruce have been killed in an outbreak beginning in 1987. No association between spruce beetle mortality and fire has been found in the past (Berg 2004). *Calamagrostis canadensis* may proliferate rapidly from its pre-disturbance-level network of rhizomatous roots and develop into a thick sod that limits spruce regeneration within a few years following beetle-caused canopy thinning (Berg 2004). Rapid spread of *Calamagrostis canadensis* occurs primarily on sites with deep, loamy soils (Boucher 2003).

IVC Environment: This group occurs on hillslopes, sideslopes, toeslopes, and inactive terraces on moist well-drained soils derived from glacial deposits, loess, colluvium, or residual soils. Permafrost is absent or occurs in isolated patches. The climate is sub-continental-cold boreal.

DISTRIBUTION

IVC Geographic Range: This group is common throughout the sub-boreal region of Alaska and extends eastward to southwest Yukon and northwest British Columbia.
IVC Nations: CA?,US
IVC States/Provinces: AK, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4262 *Betula papyrifera var. kenaica - Populus tremuloides* Southern Forest Alliance** [Kenai Birch - Quaking Aspen Southern Forest Alliance] []
- **A4261 *Picea glauca - Picea x lutzii - Betula papyrifera* Southern Forest Alliance** [White Spruce - Lutz Spruce - Paper Birch Southern Forest Alliance] []
- **A4260 *Picea mariana / Ledum groenlandicum* Southern Forest Alliance** [Black Spruce / Bog Labrador-tea Southern Forest Alliance] []
  This alliance is common throughout upland slopes and inactive alluvial deposits in the boreal region of Alaska. Forest canopies are typically open to closed, ranging from 40 to 80% cover, and are dominated by *Picea mariana* or a mix of *Picea glauca* and *Picea mariana*. *Betula neoalaskana* or *Populus tremuloides* may be codominant in post-fire seral stages.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: CNVC Technical Committee
IVC Description Author: T. Boucher
IVC Description Date: 2016-01-19
IVC Acknowledgments: Beth Schulz

A4262 Kenai Birch - Quaking Aspen Southern Forest Alliance

[ ]
Betula papyrifera var. kenaica - Populus tremuloides Southern Forest Alliance
Southern Alaskan-Yukon Aspen - Birch Mesic Forest

IVC Scientific Name: *Betula papyrifera var. kenaica - Populus tremuloides* Southern Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)

IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4261 White Spruce - Lutz Spruce - Paper Birch Southern Forest Alliance

[ ]
Picea glauca - Picea x lutzii - Betula papyrifera Southern Forest Alliance
Southern Alaskan-Yukon White Spruce Mesic Forest

IVC Scientific Name: *Picea glauca - Picea x lutzii - Betula papyrifera* Southern Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4260 Black Spruce / Bog Labrador-tea Southern Forest Alliance

[ ]
Picea mariana / Ledum groenlandicum Southern Forest Alliance
Southern Alaskan-Yukon Black Spruce Mesic Forest

IVC Scientific Name: *Picea mariana / Ledum groenlandicum* Southern Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is widespread on upland slopes, inactive alluvial deposits, and north-facing slopes in the boreal region of Alaska. Sites are cold, acidic, and may be well-drained to somewhat poorly-drained. *Picea mariana* is the dominant species in mature stands, although *Picea glauca* may be codominant. In post-fire seral stages *Betula neoalaskana* or *Populus tremuloides* may codominate. Common understory species include *Alnus viridis ssp. fruticosa, Ledum groenlandicum, Ledum palustre ssp. decumbens, Vaccinium vitis-idaea, Empetrum nigrum, Rosa acicularis, Spiraea stevenii, Calamagrostis canadensis, Equisetum sylvaticum*, and *Cornus canadensis*. Common mosses include *Hylocomium splendens* and *Pleurozium schreberi*.

IVC Dynamics: The disturbance regime in the boreal region is characterized by large crown fires or surface fires with intensity capable of killing the overstory. Mean fire-return interval estimates in boreal Alaska range from 25 to 130 years. The post-fire successional trajectory may be self-replacement, with black spruce following the early-seral herb-shrub stage. Alternatively, hardwood or black spruce-hardwood may follow the early-seral stage before returning to black spruce. Seasonality affects burn severity. An early-season burn can kill the overstory without affecting the ground layer; however, a late-season burn can reduce the duff layer and kill understory plants. In the sub-boreal region, the disturbance regime is also characterized by crown fires or intense surface fires. Infrequent lightning strikes yield a longer fire-return interval than that of the interior boreal. Mean fire-return interval for black spruce-white spruce forests in the sub-boreal Kenai Peninsula was estimated at 130 years +/-66 years (Anderson et al. 2006), but this estimate did not exclude human-caused burns. A "best guess" without human disturbance has been estimated at 170 years.

IVC Environment: This alliance occurs on upland slopes, inactive alluvial deposits, and north-facing slopes in boreal and sub-boreal Alaska. Soils are well-drained to moderately well-drained. In the continental boreal region, permafrost is usually present but may be at least 60 cm deep (Viereck et al. 1992); permafrost is generally absent in the sub-boreal region. Early-seral sites have a thin organic layer, no peat development, and the active layer is deep; however, once a well-developed feathermoss layer is established, permafrost can build and drainage can become restricted.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the continental and sub-continental boreal regions of Alaska and Yukon. In Alaska, it extends south to the Kenai Peninsula and north and west following the range of black spruce. Its eastern extent in Canada has not been defined.

IVC Nations: CA?,US

IVC States/Provinces: AK, YT?

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: T. Boucher, K. Boggs, M. Reid, in Faber-Langendoen et al. (2011)

IVC Description Author: T. Boucher

IVC Description Date: 2016-01-19

IVC Acknowledgments: Elizabeth Bella, Ken Baldwin, Del Meidinger, Beth Schulz, Mark Hall

G579 Central Alaskan-Yukon Boreal Mesic Forest

[ ]

IVC Colloquial Name: Central Alaskan-Yukon Boreal Mesic Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is common throughout interior Alaska and extends eastward into Yukon. It occurs on well-drained soils derived from glacial deposits, hillside colluvium, residual soils, or loess. Forests contain all post-fire seral stages including needle-leaved evergreen, broad-leaved deciduous or mixed. Dominant canopy species include *Picea glauca, Betula neoalaskana*, and *Populus tremuloides*. Common shrubs include *Alnus viridis ssp. fruticosa, Betula nana, Betula glandulosa, Rosa acicularis, Ledum palustre ssp. decumbens, Ledum groenlandicum, Salix glauca, Vaccinium vitis-idaea, Vaccinium uliginosum, Empetrum nigrum*, and *Linnaea borealis*. The herbaceous layer is sparse and often species-poor and may include *Calamagrostis canadensis, Equisetum arvense, Equisetum sylvaticum, Gymnocarpium dryopteris*, or *Geocaulon lividum*. The most common moss is *Hylocomium splendens*.

IVC Dynamics: The major disturbance processes are fire, logging, blowdown, and insect infestations. Wildfire plays an important role in the disturbance regime of this group as some deciduous associations are dependent on fires for their origin. Leaf-mining insects represent the most important disturbance factor for this group; spruce beetle (*Dendroctonus rufipennis*) infestations are less common.

IVC Environment: This group occurs on hillslopes, sideslopes, toeslopes, and inactive terraces on well-drained soils derived from glacial deposits, loess, colluvium, or residual soils. Permafrost is discontinuous and the climate is continental-cold boreal.

DISTRIBUTION

IVC Geographic Range: This group is found throughout interior Alaska and extends eastward into Yukon. Within Alaska the distribution extends into the sub-boreal only on specific substrates.

IVC Nations: CA,US

IVC States/Provinces: AK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4259 *Betula papyrifera - Populus tremuloides* Central Alliance** [Paper Birch - Quaking Aspen Central Alliance] []
- **A4258 *Picea glauca - Betula papyrifera* Central Forest Alliance** [White Spruce - Paper Birch Central Forest Alliance] []
- **A4257 *Picea mariana / Ledum groenlandicum* Central Forest Alliance** [Black Spruce / Bog Labrador-tea Central Forest Alliance] [] This alliance is common throughout upland slopes and inactive alluvial deposits in the boreal region of Alaska. Forest canopies are typically open to closed, ranging from 40 to 80% cover, and are dominated by *Picea mariana* or a mix of *Picea glauca* and *Picea mariana*. *Betula neoalaskana* or *Populus tremuloides* may be codominant in post-fire seral stages.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Baldwin et al. (2009)

IVC Description Author: T. Boucher

IVC Description Date: 2016-01-19

IVC Acknowledgments: M. Hall and B. Schulz

A4259 Paper Birch - Quaking Aspen Central Alliance

[ ]

Betula papyrifera - Populus tremuloides Central Alliance

Central Alaskan-Yukon Aspen - Birch Mesic Forest

IVC Scientific Name: *Betula papyrifera - Populus tremuloides* Central Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA?,US
IVC States/Provinces: AK, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4258 White Spruce - Paper Birch Central Forest Alliance

[ ]
Picea glauca - Betula papyrifera Central Forest Alliance
Central Alaskan-Yukon White Spruce Mesic Forest

IVC Scientific Name: *Picea glauca - Betula papyrifera* Central Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002724** ***Abies lasiocarpa - Picea glauca - (Pinus contorta) / Hylocomium splendens*** **Forest** [Subalpine Fir - White Spruce - (Lodgepole Pine) / Splendid Feathermoss Forest] []
  G3 (2004-10-13) AB, BC, YT
- **CEGL002728** ***Picea glauca / Lonicera involucrata / Mitella nuda*** **Forest** [White Spruce / Twinberry Honeysuckle / Naked Miterwort Forest] []
  G3 (2004-10-13) AB, BC, SK

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4257 Black Spruce / Bog Labrador-tea Central Forest Alliance

[ ]
Picea mariana / Ledum groenlandicum Central Forest Alliance
Central Alaskan-Yukon Black Spruce Mesic Forest

IVC Scientific Name: *Picea mariana / Ledum groenlandicum* Central Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is widespread on upland slopes, inactive alluvial deposits, and north-facing slopes in the boreal region of Alaska. Sites are cold, acidic, and may be well-drained to somewhat poorly-drained. *Picea mariana* is the dominant species in mature stands, although *Picea glauca* may be codominant. In post-fire seral stages *Betula neoalaskana* or *Populus tremuloides* may codominate. Common understory species include *Alnus viridis ssp. fruticosa, Ledum groenlandicum, Ledum palustre ssp. decumbens, Vaccinium vitis-idaea, Empetrum nigrum, Rosa acicularis, Spiraea stevenii, Calamagrostis canadensis, Equisetum sylvaticum*, and *Cornus canadensis*. Common mosses include *Hylocomium splendens* and *Pleurozium schreberi*.
IVC Dynamics: The disturbance regime in the boreal region is characterized by large crown fires or surface fires with intensity capable of killing the overstory. Mean fire-return interval estimates in boreal Alaska range from 25 to 130 years. The post-fire successional trajectory may be self-replacement, with black spruce following the early-seral herb-shrub stage. Alternatively, hardwood or black spruce-hardwood may follow the early-seral stage before returning to black spruce. Seasonality affects burn severity. An early-season burn can kill the overstory without affecting the ground layer; however, a late-season burn can reduce the duff layer and kill understory plants. In the sub-boreal region, the disturbance regime is also characterized by crown fires or intense surface fires. Infrequent lightning strikes yield a longer fire-return interval than that of the interior boreal. Mean fire-return interval for black spruce-white spruce forests in the sub-boreal Kenai Peninsula was estimated at 130 years +/-66 years (Anderson et al. 2006), but this estimate did not exclude human-caused burns. A "best guess" without human disturbance has been estimated at 170 years.
IVC Environment: This alliance occurs on upland slopes, inactive alluvial deposits, and north-facing slopes in boreal and sub-boreal Alaska. Soils are well-drained to moderately well-drained. In the continental boreal region, permafrost is usually present but may be at least 60 cm deep (Viereck et al. 1992); permafrost is generally absent in the sub-boreal region. Early-seral sites have a thin organic layer, no peat development, and the active layer is deep; however, once a well-developed feathermoss layer is established, permafrost can build and drainage can become restricted.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the continental and sub-continental boreal regions of Alaska and Yukon. In Alaska, it extends south to the Kenai Peninsula and north and west following the range of black spruce. Its eastern extent in Canada has not been defined.
IVC Nations: CA?,US
IVC States/Provinces: AK, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: T. Boucher, K. Boggs, M. Reid, in Faber-Langendoen et al. (2011)
IVC Description Author: T. Boucher
IVC Description Date: 2016-01-19
IVC Acknowledgments: Elizabeth Bella, Ken Baldwin, Del Meidinger, Beth Schulz, Mark Hall

G855 Yukon Boreal Low Montane Forest

[ ]

IVC Colloquial Name: Yukon Boreal Low Montane Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4458 Liard-Stikine *Picea glauca* - *Populus tremuloides* Mesic Forest Alliance** [Liard-Stikine White Spruce - Quaking Aspen Mesic Forest Alliance] []
- **A4457 Liard-Stikine *Picea mariana* Mesic Forest Alliance** [Liard-Stikine Black Spruce Mesic Forest Alliance] []
- **A4459 Liard-Stikine *Populus tremuloides* - *Betula papyrifera* Mesic Forest Alliance** [Liard-Stikine Quaking Aspen - Paper Birch Mesic Forest Alliance] []
- **A2126 *Picea glauca* - *Pinus contorta* Dry Yukon Boreal Low Forest** [White Spruce - Lodgepole Pine Dry Yukon Boreal Low Forest] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4458 Liard-Stikine White Spruce - Quaking Aspen Mesic Forest Alliance

[ ]

Liard-Stikine *Picea glauca* - *Populus tremuloides* Mesic Forest Alliance

Liard-Stikine Mesic White Spruce - Hardwood Forest

IVC Scientific Name: Liard-Stikine *Picea glauca* - *Populus tremuloides* Mesic Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00421** ***Betula neoalaskana* / *Ribes* spp. / *Equisetum* spp. / *Hylocomium splendens*** [Resin Birch / Currant species / Horsetail species / Splendid Feathermoss] [Bouleau d'Alaska / Gadelliers / Prêles / Hylocomie brillante]
  GNR.
- **CNVC00416** ***Betula neoalaskana* / *Rosa acicularis* - *Alnus viridis*** [Resin Birch / Prickly Rose - Green Alder] [Bouleau d'Alaska / Rosier aciculaire - Aulne vert]
  GNR.
- **CNVC00411** ***Picea glauca* - *Betula neoalaskana* / *Rhododendron groenlandicum* / *Hylocomium splendens*** [White Spruce - Resin Birch / *Rhododendron groenlandicum* / Splendid Feathermoss] [Épinette blanche - Bouleau d'Alaska / Thé du Labrador / Hylocomie brillante]
  GNR.
- **CNVC00410** ***Picea glauca* - *Betula neoalaskana* / *Alnus viridis* / *Hylocomium splendens*** [White Spruce - Resin Birch / Green Alder / Splendid Feathermoss] [Épinette blanche - Bouleau d'Alaska / Aulne vert / Hylocomie brillante]
  GNR.
- **CNVC00372** ***Picea glauca* / *Rhododendron groenlandicum* - *Arctous rubra* / *Hylocomium splendens*** [White Spruce / *Rhododendron groenlandicum* - *Arctous rubra* / Splendid Feathermoss] [Épinette blanche / Thé du Labrador - Busserole rouge / Hylocomie brillante]
  GNR.
- **CNVC00371** ***Picea glauca* / *Rhododendron groenlandicum* / *Vaccinium vitis-idaea* - *Empetrum nigrum* / *Hylocomium splendens*** [White Spruce / *Rhododendron groenlandicum* / Lingonberry - Black Crowberry / Splendid Feathermoss] [Épinette blanche / Thé du Labrador / Airelle rouge - Camarine noire / Hylocomie brillante]
  GNR.
- **CNVC00373** ***Picea glauca* / *Equisetum arvense* - *E. pratense* - *Arctous rubra* / *Hylocomium splendens*** [White Spruce / Field Horsetail - *E. pratense* - *Arctous rubra* / Splendid Feathermoss] [Épinette blanche / Prêle des champs - Prêle des prés - Busserole rouge / Hylocomie brillante]
  GNR.
- **CNVC00370** ***Picea glauca* / *Hylocomium splendens*** [White Spruce / Splendid Feathermoss] [Épinette blanche / Hylocomie brillante]
  GNR.
- **CNVC00383** ***Picea glauca* / *Salix* spp. - *Betula glandulosa* / *Arctous rubra* / *Hylocomium splendens*** [White Spruce / Willow species - Resin Birch / *Arctous rubra* / Splendid Feathermoss] [Épinette blanche / Saules - Bouleau glanduleux / Busserole rouge / Hylocomie brillante]
  GNR.
- **CNVC00382** ***Picea glauca* / *Salix* spp. / *Empetrum nigrum* - *Arctous rubra* / *Hylocomium splendens*** [White Spruce / Willow species / Black Crowberry - *Arctous rubra* / Splendid Feathermoss] [Épinette blanche / Saules / Camarine noire - Busserole rouge / Hylocomie brillante]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Jorgenson and Meidinger (2015)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4457 Liard-Stikine Black Spruce Mesic Forest Alliance

[ ]
Liard-Stikine *Picea mariana* Mesic Forest Alliance
Liard-Stikine Mesic Black Spruce Forest

IVC Scientific Name: Liard-Stikine *Picea mariana* Mesic Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00409** ***Picea mariana* - *P. glauca* - *Betula neoalaskana* / *Alnus* spp. / *Equisetum* spp. / *Hylocomium splendens*** [Black Spruce - *P. glauca* - Resin Birch / Alder species / Horsetail species / Splendid Feathermoss] [Épinette noire - Épinette blanche - Bouleau d'Alaska / Aulnes / Prêles / Hylocomie brillante]
  GNR.
- **CNVC00408** ***Picea mariana* - *P. glauca* - *Betula neoalaskana* / *Rosa acicularis* / *Mertensia paniculata* / *Hylocomium splendens*** [Black Spruce - *P. glauca* - Resin Birch / Prickly Rose / Tall Bluebells / Splendid Feathermoss] [Épinette noire - Épinette blanche - Bouleau d'Alaska / Rosier aciculaire / Mertensie paniculée / Hylocomie brillante]
  GNR.
- **CNVC00438** ***Picea mariana* - *P. glauca* / *Rhododendron groenlandicum* / *Vaccinium vitis-idaea* / *Hylocomium splendens*** [Black Spruce - *P. glauca* / *Rhododendron groenlandicum* / Lingonberry / Splendid Feathermoss] [Épinette noire - Épinette blanche / Thé du Labrador / Airelle rouge / Hylocomie brillante]
  GNR.
- **CNVC00436** ***Picea mariana* - *P. glauca* / *Vaccinium vitis-idaea* / *Hylocomium splendens*** [Black Spruce - *P. glauca* / Lingonberry / Splendid Feathermoss] [Épinette noire - Épinette blanche / Airelle rouge / Hylocomie brillante]
  GNR.
- **CNVC00439** ***Picea mariana* - *P. glauca* / *Arctous rubra* - *Vaccinium vitis-idaea* / *Hylocomium splendens*** [Black Spruce - *P. glauca* / *Arctous rubra* - Lingonberry / Splendid Feathermoss] [Épinette noire - Épinette blanche / Busserole rouge - Airelle rouge / Hylocomie brillante]
  GNR.
- **CNVC00403** ***Populus tremuloides* - *Picea glauca* (*P. mariana*) / *Rhododendron groenlandicum* / *Geocaulon lividum*** [Quaking Aspen - White Spruce (*P. mariana*) / *Rhododendron groenlandicum* / False Toadflax] [Peuplier faux-tremble - Épinette blanche

(Épinette noire) / Thé du Labrador / Comandre livide]
GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Jorgenson and Meidinger (2015)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4459 Liard-Stikine Quaking Aspen - Paper Birch Mesic Forest Alliance

[ ]
Liard-Stikine *Populus tremuloides - Betula papyrifera* Mesic Forest Alliance
Liard-Stikine Mesic Aspen - Birch Forest

IVC Scientific Name: Liard-Stikine *Populus tremuloides - Betula papyrifera* Mesic Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CNVC00387 *Populus tremuloides* / *Rosa acicularis* / *Chamerion angustifolium*** [Quaking Aspen / Prickly Rose / Fireweed] [Peuplier faux-tremble / Rosier aciculaire / Épilobe à feuilles étroites]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Jorgenson and Meidinger (2015)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2126 White Spruce - Lodgepole Pine Dry Yukon Boreal Low Forest

[ ]
Picea glauca - Pinus contorta Dry Yukon Boreal Low Forest

Liard-Stikine Low Montane Dry White Spruce - Lodgepole PineForest

IVC Scientific Name: *Picea glauca - Pinus contorta* Dry Yukon Boreal Low Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is tentatively proposed to represent Liard-Stikine dry forests in the Yukon high boreal montane region of the Yukon Territories, Canada dominated by lodgepole pine, white spruce, and sublalpine fir.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00437** ***Picea mariana / Rhododendron groenlandicum / Vaccinium vitis-idaea / Cladina*** **spp.** [Black Spruce / *Rhododendron groenlandicum* / Lingonberry / Reindeer Lichen species] [Épinette noire / Thé du Labrador / Airelle rouge / Cladines]
  GNR.
- **CNVC00356** ***Pinus contorta - Picea mariana*** **(*P. glauca*) /** ***Vaccinium vitis-idaea / Cladina*** **spp.** [Lodgepole Pine - Black Spruce (*P. glauca*) / Lingonberry / Reindeer Lichen species] [Pin tordu - Épinette noire (Épinette blanche) / Airelle rouge / Cladines]
  GNR.
- **CNVC00365** ***Pinus contorta - Picea glauca / Arctostaphylos uva-ursi / Cladina*** **spp.** [Lodgepole Pine - White Spruce / Bearberry / Reindeer Lichen species] [Pin tordu - Épinette blanche / Raisin d'ours / Cladines]
  GNR.
- **CNVC00362** ***Pinus contorta - Picea glauca / Vaccinium vitis-idaea / Hylocomium splendens*** [Lodgepole Pine - White Spruce / Lingonberry / Splendid Feathermoss] [Pin tordu - Épinette blanche / Airelle rouge / Hylocomie brillante]
  GNR.
- **CNVC00363** ***Pinus contorta - Picea glauca / Festuca altaica - Arctostaphylos uva-ursi*** [Lodgepole Pine - White Spruce / Altai Fescue - Bearberry] [Pin tordu - Épinette blanche / Fétuque de l'Altaï - Raisin d'ours]
  GNR.
- **CNVC00364** ***Pinus contorta - Picea glauca / Calamagrostis purpurascens*** [Lodgepole Pine - White Spruce / Purple Reedgrass] [Pin tordu - Épinette blanche / Calamagrostis purpurascens]
  GNR.
- **CNVC00361** ***Pinus contorta*** **/ Poaceae -** ***Arctostaphylos uva-ursi*** [Lodgepole Pine / Poaceae - Bearberry] [Pin tordu / Poacées - Raisin d'ours]
  GNR.
- **CNVC00360** ***Pinus contorta / Calamagrostis purpurascens*** [Lodgepole Pine / Purple Reedgrass] [Pin tordu / Calamagrostide pourpre]
  GNR.
- **CNVC00384** ***Pinus contorta / Shepherdia canadensis*** [Lodgepole Pine / Russet Buffaloberry] [Pin tordu / Shépherdie du Canada]
  GNR.
- **CNVC00388** ***Populus tremuloides - P. balsamifera / Festuca saximontana - Lupinus kuschei*** [Quaking Aspen - *P. balsamifera* / Rocky Mountain Fescue - Yukon Lupine] [Peuplier faux-tremble - Peuplier baumier / Fétuque des Rocheuses - Lupin de Kusche]
  GNR.
- **CNVC00402** ***Populus tremuloides - Pinus contorta - Picea glauca / Alnus viridis / Vaccinium vitis-idaea*** **/ Feathermoss** [Quaking Aspen - Lodgepole Pine - White Spruce / Green Alder / Lingonberry / Feathermoss] [Peuplier faux-tremble - Pin tordu - Épinette blanche / Aulne vert / Airelle rouge / Feathermoss]
  GNR.
- **CNVC00401** ***Populus tremuloides - Pinus contorta*** **(*Picea glauca*) /** ***Arctostaphylos uva-ursi / Cladina*** **spp.** [Quaking Aspen - Lodgepole Pine (White Spruce) / Bearberry / Reindeer Lichen species] [Peuplier faux-tremble - Pin tordu (Épinette blanche) /

Raisin d'ours / Cladines]
GNR.

- **CNVC00399** ***Populus tremuloides* - *Pinus contorta* (*Picea glauca*) / Poaceae - *Arctostaphylos uva-ursi*** [Quaking Aspen - Lodgepole Pine (White Spruce) / Poaceae - Bearberry] [Peuplier faux-tremble - Pin tordu (Épinette blanche) / Poacées - Raisin d'ours]
  GNR.
- **CNVC00400** ***Populus tremuloides* - *Pinus contorta* (*Picea glauca*) / *Vaccinium vitis-idaea* - *Geocaulon lividum* / *Hylocomium splendens*** [Quaking Aspen - Lodgepole Pine (White Spruce) / Lingonberry - False Toadflax / Splendid Feathermoss] [Peuplier faux-tremble - Pin tordu (Épinette blanche) / Airelle rouge - Comandre livide / Hylocomie brillante]
  GNR.
- **CNVC00404** ***Populus tremuloides* - *Picea glauca* / *Arctostaphylos uva-ursi*** [Quaking Aspen - White Spruce / Bearberry] [Peuplier faux-tremble - Épinette blanche / Raisin d'ours]
  GNR.
- **CNVC00407** ***Populus tremuloides* - *Picea glauca* / *Chamerion angustifolium* - *Linnaea borealis* - *Arctostaphylos uva-ursi*** [Quaking Aspen - White Spruce / Fireweed - Twinflower - Bearberry] [Peuplier faux-tremble - Épinette blanche / Épilobe à feuilles étroites - Linnée boréale - Raisin d'ours]
  GNR.
- **CNVC00405** ***Populus tremuloides* - *Picea glauca* / *Calamagrostis purpurascens* - *Arctostaphylos uva-ursi*** [Quaking Aspen - White Spruce / Purple Reedgrass - Bearberry] [Peuplier faux-tremble - Épinette blanche / Calamagrostide pourpre - Raisin d'ours]
  GNR.
- **CNVC00406** ***Populus tremuloides* - *Picea glauca* / *Shepherdia canadensis* / *Mertensia paniculata*** [Quaking Aspen - White Spruce / Russet Buffaloberry / Tall Bluebells] [Peuplier faux-tremble - Épinette blanche / Shépherdie du Canada / Mertensie paniculée]
  GNR.
- **CNVC00385** ***Populus tremuloides* / *Arctostaphylos uva-ursi*** [Quaking Aspen / Bearberry] [Peuplier faux-tremble / Raisin d'ours]
  GNR.
- **CNVC00386** ***Populus tremuloides* / Poaceae - *Arctostaphylos uva-ursi*** [Quaking Aspen / Poaceae - Bearberry] [Peuplier faux-tremble / Poacées - Raisin d'ours]
  GNR.
- **CNVC00390** ***Populus tremuloides* / *Salix* spp. / *Calamagrostis purpurascens* / *Gemmabryum caespiticium*** [Quaking Aspen / Willow species / Purple Reedgrass / *Gemmabryum caespiticium*] [Peuplier faux-tremble / Saules / Calamagrostide pourpre / Bryum cespiteux]
  GNR.
- **CNVC00354** ***Picea glauca* / *Arctostaphylos uva-ursi* / *Cladina* spp.** [White Spruce / Bearberry / Reindeer Lichen species] [Épinette blanche / Raisin d'ours / Cladines]
  GNR.
- **CNVC00369** ***Picea glauca* / Poaceae - *Arctostaphylos uva-ursi*** [White Spruce / Poaceae - Bearberry] [Épinette blanche / Poacées - Raisin d'ours]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G858 Yukon Boreal High Montane Woodland

[ ]

IVC Colloquial Name: Yukon Boreal High Montane Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: BC, NT?, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2128 *Abies lasiocarpa* Yukon High Boreal Forest Alliance** [Subalpine Fir Yukon High Boreal Forest Alliance] []
- **A4456 Liard-Stikine Birch spp. Subalpine Woodland Alliance** [Liard-Stikine Birch species Subalpine Woodland Alliance] []
- **A4455 Liard-Stikine *Picea glauca* - *Picea mariana* Subalpine Woodland Alliance** [Liard-Stikine White Spruce - Black Spruce Subalpine Woodland Alliance] []
- **A2127 *Picea glauca* - *Pinus contorta* - *Abies lasiocarpa* Dry Yukon High Boreal Forest** [White Spruce - Lodgepole Pine - Subalpine Fir Dry Yukon High Boreal Forest] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2128 Subalpine Fir Yukon High Boreal Forest Alliance

[ ]
Abies lasiocarpa Yukon High Boreal Forest Alliance
Liard Stikine High Montane Subalpine Fir Forest

IVC Scientific Name: *Abies lasiocarpa* Yukon High Boreal Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is tentatively proposed to represent Liard-Stikine mesic subalpine forests in the Yukon low boreal montane region of the Yukon Territories, Canada dominated by subalpine fir in mesic and moist conditions.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00443** ***Picea mariana* - *Abies lasiocarpa* / *Rhododendron groenlandicum* / *Hylocomium splendens* - *Cladina* spp.** [Black Spruce - Subalpine Fir / *Rhododendron groenlandicum* / Splendid Feathermoss - Reindeer Lichen species] [Épinette noire - Sapin subalpin / Thé du Labrador / Hylocomie brillante - Cladines]
  GNR.
- **CNVC00444** ***Abies lasiocarpa* - *Picea glauca* / *Alnus* spp. / *Hylocomium splendens*** [Subalpine Fir - White Spruce / Alder species / Splendid Feathermoss] [Sapin subalpin - Épinette blanche / Aulnes / Hylocomie brillante]
  GNR.
- **CNVC00442** ***Abies lasiocarpa* - *Picea glauca* / *Empetrum nigrum* / *Hylocomium splendens*** [Subalpine Fir - White Spruce / Black Crowberry / Splendid Feathermoss] [Sapin subalpin - Épinette blanche / Camarine noire / Hylocomie brillante]
  GNR.
- **CNVC00448** ***Abies lasiocarpa* - *Picea glauca* / *Equisetum* spp. - *Mertensia paniculata* / *Hylocomium splendens*** [Subalpine Fir - White Spruce / Horsetail species - Tall Bluebells / Splendid Feathermoss] [Sapin subalpin - Épinette blanche / Prêles - Mertensie paniculée / Hylocomie brillante]
  GNR.
- **CNVC00449** ***Abies lasiocarpa* - *Picea glauca* / *Salix* spp. / *Petasites frigidus* / *Hylocomium splendens*** [Subalpine Fir - White Spruce / Willow species / Arctic Sweet-Colt's-Foot / Splendid Feathermoss] [Sapin subalpin - Épinette blanche / Saules / Petasites frigidus / Hylocomie brillante]
  GNR.
- **CNVC00432** ***Abies lasiocarpa* (*Picea glauca* - *Pinus contorta*) / *Betula glandulosa* / *Empetrum nigrum* / *Hylocomium splendens*** [Subalpine Fir (White Spruce - Lodgepole Pine) / Resin Birch / Black Crowberry / Splendid Feathermoss] [Sapin subalpin (Épinette blanche - Pin tordu) / Bouleau glanduleux / Camarine noire / Hylocomie brillante]
  GNR.
- **CNVC00433** ***Abies lasiocarpa* (*Picea glauca*) / *Betula glandulosa* / *Empetrum nigrum* / *Hylocomium splendens*** [Subalpine Fir (White Spruce) / Resin Birch / Black Crowberry / Splendid Feathermoss] [Sapin subalpin (Épinette blanche) / Bouleau glanduleux / Camarine noire / Hylocomie brillante]
  GNR.
- **CNVC00441** ***Abies lasiocarpa* / *Empetrum nigrum* / *Cassiope tetragona* / *Hylocomium splendens* - *Nephroma arcticum*** [Subalpine Fir / Black Crowberry / White Arctic Mountain-Heather / Splendid Feathermoss - Arctic Kidney Lichen] [Sapin subalpin / Camarine noire / Cassiope tétragone / Hylocomie brillante - Néphrome arctique]
  GNR.
- **CNVC00435** ***Abies lasiocarpa* / *Empetrum nigrum* / *Hylocomium splendens*** [Subalpine Fir / Black Crowberry / Splendid Feathermoss] [Sapin subalpin / Camarine noire / Hylocomie brillante]
  GNR.
- **CNVC00434** ***Abies lasiocarpa* / *Juniperus communis* / *Empetrum nigrum* / *Pleurozium schreberi*** [Subalpine Fir / Common Juniper / Black Crowberry / Schreber's Big Red-Stem Moss] [Sapin subalpin / Genévrier commun / Camarine noire / Pleurozie dorée]
  GNR.
- **CNVC00447** ***Abies lasiocarpa* / *Ribes triste* / *Hylocomium splendens*** [Subalpine Fir / Red Currant / Splendid Feathermoss] [Sapin subalpin / Gadellier amer / Hylocomie brillante]
  GNR.
- **CNVC00446** ***Abies lasiocarpa* / *Salix* spp. / *Aconitum delphiniifolium* - *Artemisia norvegica*** [Subalpine Fir / Willow species / Larkspurleaf Monkshood - *Artemisia norvegica*] [Sapin subalpin / Saules / Aconit à feuilles de pied-d'alouette - Armoise de Norvège]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4456 Liard-Stikine Birch species Subalpine Woodland Alliance

[ ]

Liard-Stikine Birch spp. Subalpine Woodland Alliance

Liard-Stikine Subalpine Birch Woodland

IVC Scientific Name: Liard-Stikine Birch spp. Subalpine Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: BC, NT?, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00358** ***Pinus contorta* / *Betula glandulosa* / *Pleurozium schreberi*** [Lodgepole Pine / Resin Birch / Schreber's Big Red-Stem Moss] [Pin tordu / Bouleau glanduleux / Pleurozie dorée]
  GNR.
- **CNVC00453** ***Abies lasiocarpa* - *Salix* spp. / *Rubus arcticus* - *Polemonium acutiflorum* / *Hylocomium splendens*** [Subalpine Fir - Willow species / Arctic Raspberry - Tall Jacob's-Ladder / Splendid Feathermoss] [Sapin subalpin - Saules / Ronce arctique - Polémoine à pétales aigus / Hylocomie brillante]
  GNR.
- **CNVC00450** ***Abies lasiocarpa* / *Empetrum nigrum* - *Cassiope tetragona* / *Hylocomium splendens*** [Subalpine Fir / Black Crowberry - White Arctic Mountain-Heather / Splendid Feathermoss] [Sapin subalpin / Camarine noire - Cassiope tétragone / Hylocomie brillante]
  GNR.
- **CNVC00452** ***Abies lasiocarpa* / *Betula glandulosa* / *Empetrum nigrum* / *Feathermoss krummholtz*** [Subalpine Fir / Resin Birch / Black Crowberry / *Feathermoss krummholtz*] [Sapin subalpin / Bouleau glanduleux / Camarine noire / Feathermoss krummholtz]
  GNR.
- **CNVC00451** ***Abies lasiocarpa* / *Pleurozium schreberi*** [Subalpine Fir / Schreber's Big Red-Stem Moss] [Sapin subalpin / Pleurozie dorée]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Jorgenson and Meidinger (2015)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4455 Liard-Stikine White Spruce - Black Spruce Subalpine Woodland Alliance

[ ]

Liard-Stikine *Picea glauca* - *Picea mariana* Subalpine Woodland Alliance

Liard-Stikine Subalpine Spruce Woodland

IVC Scientific Name: Liard-Stikine *Picea glauca - Picea mariana* Subalpine Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: BC, NT?, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00419** ***Picea mariana - Betula neoalaskana / Alnus viridis - Rhododendron groenlandicum / Hylocomium splendens - Sphagnum*** **spp.** [Black Spruce - Resin Birch / Green Alder - *Rhododendron groenlandicum* / Splendid Feathermoss - Peat Moss species] [Épinette noire - Bouleau d'Alaska / Aulne vert - Thé du Labrador / Hylocomie brillante - Sphaignes]
  GNR.
- **CNVC00393** ***Picea mariana - Betula neoalaskana / Vaccinium vitis-idaea / Hylocomium splendens*** [Black Spruce - Resin Birch / Lingonberry / Splendid Feathermoss] [Épinette noire - Bouleau d'Alaska / Airelle rouge / Hylocomie brillante]
  GNR.
- **CNVC00394** ***Picea mariana - Picea glauca - Betula neoalaskana / Salix*** **spp.** **-** ***Rhododendron groenlandicum / Vaccinium vitis-idaea /*** **Feathermoss -** ***Cladina*** **spp.** [Black Spruce - White Spruce - Resin Birch / Willow species - *Rhododendron groenlandicum* / Lingonberry / Feathermoss - Reindeer Lichen species] [Épinette noire - Épinette blanche - Bouleau d'Alaska / Saules - Thé du Labrador / Airelle rouge / Feathermoss - Cladines]
  GNR.
- **CNVC00459** ***Picea mariana / Rhododendron groenlandicum / Empetrum nigrum / Hylocomium splendens - Sphagnum*** **spp.** [Black Spruce / *Rhododendron groenlandicum* / Black Crowberry / Splendid Feathermoss - Peat Moss species] [Épinette noire / Thé du Labrador / Camarine noire / Hylocomie brillante - Sphaignes]
  GNR.
- **CNVC00457** ***Picea mariana / Betula glandulosa*** **(*Vaccinium uliginosum*) /** ***V. vitis-idaea / Hylocomium splendens*** [Black Spruce / Resin Birch (Bog Blueberry) / *V. vitis-idaea* / Splendid Feathermoss] [Épinette noire / Bouleau glanduleux (Airelle des marécages) / Airelle rouge / Hylocomie brillante]
  GNR.
- **CNVC00456** ***Abies lasiocarpa - Picea glauca / Betula glandulosa / Rubus chamaemorus / Sphagnum*** **spp.** **-** ***Nephroma arcticum*** [Subalpine Fir - White Spruce / Resin Birch / Cloudberry / Peat Moss species - Arctic Kidney Lichen] [Sapin subalpin - Épinette blanche / Bouleau glanduleux / Chicouté / Sphaignes - Néphrome arctique]
  GNR.
- **CNVC00455** ***Abies lasiocarpa / Spiraea stevenii / Rubus chamaemorus / Hylocomium splendens - Nephroma arcticum - Sphagnum*** **spp.** [Subalpine Fir / Beauverd Spirea / Cloudberry / Splendid Feathermoss - Arctic Kidney Lichen - Peat Moss species] [Sapin subalpin / Spirée de Steven / Chicouté / Hylocomie brillante - Néphrome arctique - Sphaignes]
  GNR.
- **CNVC00454** ***Abies lasiocarpa / Salix*** **spp.** **-** ***Betula glandulosa / Empetrum nigrum - Petasites frigidus / Aulacomnium palustre*** [Subalpine Fir / Willow species - Resin Birch / Black Crowberry - Arctic Sweet-Colt's-Foot / Ribbed Bog Moss] [Sapin subalpin / Saules - Bouleau glanduleux / Camarine noire - Petasites frigidus / Aulacomnie des marais]
  GNR.
- **CNVC00397** ***Picea glauca - Betula occidentalis / Vaccinium uliginosum / Empetrum nigrum / Hylocomium splendens*** [White Spruce - Water Birch / Bog Blueberry / Black Crowberry / Splendid Feathermoss] [Épinette blanche - Bouleau fontinal / Airelle des marécages / Camarine noire / Hylocomie brillante]
  GNR.

- **CNVC00368** ***Picea glauca / Betula glandulosa - Salix glauca / Festuca altaica*** [White Spruce / Resin Birch - Grayleaf Willow / Altai Fescue] [Épinette blanche / Bouleau glanduleux - Saule glauque / Fétuque de l'Altaï]
  GNR.
- **CNVC00108** ***Picea glauca / Betula glandulosa / Hylocomium splendens*** [White Spruce / Resin Birch / Splendid Feathermoss] [Épinette blanche / Bouleau glanduleux / Hylocomie brillante]
  GNR.
- **CNVC00367** ***Picea glauca / Salix* spp. / *Arctagrostis latifolia / Pleurozium schreberi*** [White Spruce / Willow species / Wideleaf Polargrass / Schreber's Big Red-Stem Moss] [Épinette blanche / Saules / Arctagrostide à larges feuilles / Pleurozie dorée]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Jorgenson and Meidinger (2015)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2127 White Spruce - Lodgepole Pine - Subalpine Fir Dry Yukon High Boreal Forest

[ ]
Picea glauca - Pinus contorta - Abies lasiocarpa Dry Yukon High Boreal Forest
Liard-Stikine High Montane Dry White Spruce - Lodgepole Pine Forest

IVC Scientific Name: *Picea glauca - Pinus contorta - Abies lasiocarpa* Dry Yukon High Boreal Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is tentatively proposed to represent Liard-Stikine dry forests in the Yukon low boreal montane region of the Yukon Territories, Canada dominated by lodgepole pine and white spruce, and occasional subalpine fir.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00412** ***Populus balsamifera / Juniperus communis / Mertensia paniculata - Festuca altaica*** [Balsam Poplar / Common Juniper / Tall Bluebells - Altai Fescue] [Peuplier baumier / Genévrier commun / Mertensie paniculée - Fétuque de l'Altaï]
  GNR.
- **CNVC00357** ***Pinus contorta / Betula glandulosa / Empetrum nigrum / Cladina* spp.** [Lodgepole Pine / Resin Birch / Black Crowberry / Reindeer Lichen species] [Pin tordu / Bouleau glanduleux / Camarine noire / Cladines]
  GNR.
- **CNVC00359** ***Pinus contorta / Betula glandulosa / Festuca altaica*** [Lodgepole Pine / Resin Birch / Altai Fescue] [Pin tordu / Bouleau glanduleux / Fétuque de l'Altaï]
  GNR.

- **CNVC00431** ***Abies lasiocarpa - Picea mariana / Betula glandulosa / Cladina*** **spp.** [Subalpine Fir - Black Spruce / Resin Birch / Reindeer Lichen species] [Sapin subalpin - Épinette noire / Bouleau glanduleux / Cladines]
  GNR.
- **CNVC00428** ***Abies lasiocarpa - Pinus contorta - Picea glauca / Betula glandulosa / Empetrum nigrum / Cladina*** **spp.** [Subalpine Fir - Lodgepole Pine - White Spruce / Resin Birch / Black Crowberry / Reindeer Lichen species] [Sapin subalpin - Pin tordu - Épinette blanche / Bouleau glanduleux / Camarine noire / Cladines]
  GNR.
- **CNVC00430** ***Abies lasiocarpa - Picea glauca / Betula glandulosa / Empetrum nigrum / Cladina*** **spp.** [Subalpine Fir - White Spruce / Resin Birch / Black Crowberry / Reindeer Lichen species] [Sapin subalpin - Épinette blanche / Bouleau glanduleux / Camarine noire / Cladines]
  GNR.
- **CNVC00426** ***Abies lasiocarpa / Betula glandulosa / Empetrum nigrum / Cladina*** **spp.** [Subalpine Fir / Resin Birch / Black Crowberry / Reindeer Lichen species] [Sapin subalpin / Bouleau glanduleux / Camarine noire / Cladines]
  GNR.
- **CNVC00427** ***Abies lasiocarpa / Betula glandulosa / Cassiope tetragona / Cladina*** **spp.** [Subalpine Fir / Resin Birch / White Arctic Mountain-Heather / Reindeer Lichen species] [Sapin subalpin / Bouleau glanduleux / Cassiope tétragone / Cladines]
  GNR.
- **CNVC00429** ***Abies lasiocarpa- Picea glauca - Pinus contorta / Juniperus communis - Salix*** **spp. /** ***Arctostaphylos uva-ursi*** [*Abies lasiocarpa*- White Spruce - Lodgepole Pine / Common Juniper - Willow species / Bearberry] [Sapin subalpin- Épinette blanche - Pin tordu / Genévrier commun - Saules / Raisin d'ours]
  GNR.
- **CNVC00391** ***Populus tremuloides - Abies lasiocarpa - Pinus contorta / Betula glandulosa - Juniperus communis / Arctostaphylos uva-ursi*** [Quaking Aspen - Subalpine Fir - Lodgepole Pine / Resin Birch - Common Juniper / Bearberry] [Peuplier faux-tremble - Sapin subalpin - Pin tordu / Bouleau glanduleux - Genévrier commun / Raisin d'ours]
  GNR.
- **CNVC00392** ***Populus tremuloides - Picea glauca / Betula glandulosa / Empetrum nigrum / Cladina*** **spp.** [Quaking Aspen - White Spruce / Resin Birch / Black Crowberry / Reindeer Lichen species] [Peuplier faux-tremble - Épinette blanche / Bouleau glanduleux / Camarine noire / Cladines]
  GNR.
- **CNVC00389** ***Populus tremuloides / Betula glandulosa / Festuca altaica*** [Quaking Aspen / Resin Birch / Altai Fescue] [Peuplier faux-tremble / Bouleau glanduleux / Fétuque de l'Altaï]
  GNR.
- **CNVC00396** ***Picea glauca - Betula occidentalis / B. glandulosa / Juniperus communis / Artemisia norvegica*** [White Spruce - Water Birch / *B. glandulosa* / Common Juniper / *Artemisia norvegica*] [Épinette blanche - Bouleau fontinal / Bouleau glanduleux / Genévrier commun / Armoise de Norvège]
  GNR.
- **CNVC00366** ***Picea glauca / Betula glandulosa / Empetrum nigrum / Cladina*** **spp.** [White Spruce / Resin Birch / Black Crowberry / Reindeer Lichen species] [Épinette blanche / Bouleau glanduleux / Camarine noire / Cladines]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

M179 North American Northern Boreal Woodland

Terres boisées boréales nordiques de l'Amérique du Nord

IVC Colloquial Name: North American Northern Boreal Woodland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M179 describes northern boreal upland treed vegetation, typically exhibiting woodland physiognomy (<25% cover in the tree layer) with ground cover of lichens. The Canadian range extends from the Alaska - Yukon border to the coast of Labrador and, in northern Alberta, including the highest elevations of the Cameron Hills and Caribou Mountains. Tree species are overwhelmingly evergreen coniferous, but small components of deciduous coniferous and cold-deciduous broad-leaved species occur. Stands of M179 are predominantly open continuous woodlands but vary from closed forests, on the most favourable sites in southern parts of the range, to very open patchy stands of short-statured trees near the continental treeline. On wind-exposed sites, especially near treeline, woodlands often occur as tree islands or ribbons in a matrix of shrub tundra; trees develop a krummholtz growth form in response to physical damage by extreme cold and blowing snow and ice crystals. Frequent stand-replacing fires create a diverse landscape mosaic, especially in the southern portion of the range; regional fire cycles are shorter to the west of Hudson Bay. Black spruce (*Picea mariana*) and white spruce (*P. glauca*) are the main tree species, sometimes with small amounts of tamarack (*Larix laricina*), jack pine (*Pinus banksiana*), balsam poplar (*Populus balsamifera*) and/or balsam fir (*Abies balsamea*). Understories are dominated by patches of conifer regeneration, cold-deciduous broad-leaved low shrubs and prostrate dwarf shrubs. A continuous lichen layer, sometimes with patches of feathermosses, characterizes most woodland stands. Common understory species throughout the range include bog bilberry (*Vaccinium uliginosum*), shrub birches (mainly arctic dwarf birch [*Betula nana*] and glandular birch [*B. glandulosa*]), willows (*Salix* spp.), green alder (*Alnus viridis*), common Labrador tea (*Rhododendron groenlandicum*), lingonberry (*V. vitis-idaea*) and black crowberry (*Empetrum nigrum*). The most common mat-forming lichen species are reindeer lichens (*Cladina* spp.); stairstep moss (*Hylocomium splendens*) and red-stemmed feathermoss (*Pleurozium schreberi*) are the most prominent feathermosses.

M179 occurs in northern boreal and subarctic climates, characterized by very long, cold winters and short, cool to moderately warm summers. Although maritime influences are pronounced on the Labrador coast, a continental climate is the norm for most of the range. A strong west to east precipitation gradient divides the range into a subhumid portion, in Northwest Territories and Yukon, and a humid portion near and east of Hudson Bay. Mean annual temperatures vary from approximately -4°C to -10°C. With the exception of a few areas in the Cordillera, elevations are <800 mASL. M179 occupies portions of the Arctic Coastal Plain, Cordilleran, Interior Plains and Precambrian Shield physiographic regions. Except for northern Yukon, all parts of the range experienced late Pleistocene glaciation; soils are mostly Brunisols and Luvisols developed in glacial surficial materials, with Cryosols occurring sporadically. Discontinuous permafrost occurs in peatlands and some wet mineral soils throughout the range; continuous permafrost occurs in fine- and medium-textured soils in some northern portions of the range.

Two subtypes distinguish northern boreal woodlands from western Canada, CM179a [Alaskan-Yukon Northern Boreal Woodland], and from east-central Canada, CM179b [East-Central Northern Boreal Woodland].

IVC Geographic Range: West of Hudson Bay, this macrogroup occupies a narrow band trending west to northwest through the plains and uplands of northern Manitoba, extreme northeastern Saskatchewan and southern Nunavut, and the northeastern Northwest Territories (NWT), with small isolated islands on high-elevation hill systems in northern Alberta, the southern NWT and extreme northeastern British Columbia. From there it continues west of Great Slave Lake and widens to include about 40% of the mainland Northwest Territories and a significant part of northern Yukon Territory, and it continues into the mid- and upper-elevation boreal and sub-boreal regions of Alaska. It does not extend to the west coast of Alaska.

IVC Nations: CA,US

IVC States/Provinces: AB, AK, LB, MB, NT, NU, ON, QC, SK, YT

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: *M*179 describes low elevation northern boreal upland treed communities dominated by *Picea glauca* and *P. mariana* that typically exhibit woodland physiognomy with ground cover of lichens rather than feathermosses. South of the range of M179, closed boreal forests that, in addition to *P. glauca* and *P. mariana,* include dominance by *Populus tremuloides, Betula papyrifera* and/or *B. neoalaskana, Pinus contorta* and/or *P. banksiana, Abies balsamea* and/or *A. lasiocarpa* (see below) are described by M156 [Alaskan-Yukon North American Boreal Forest & Woodland], M496 [West-Central North American Boreal Forest] and M495 [Eastern North American Boreal Forest].

Pinus contorta here refers to variety *latifolia* (lodgepole pine).

Abies lasiocarpa here refers to both *A. lasiocarpa* (subalpine fir) and *A. bifolia* (Rocky Mountain alpine fir), as well as their hybrids, as recognized by VASCAN.

Groups in Canada:
- **G635 Eastern Canadian Subarctic Woodland []**
- **G633 Western Canadian Subarctic Woodland []**
- **G859 Alaska-Yukon Northern Boreal Mesic Woodland []**

CNVC Concept Author: K. Baldwin, K. Chapman, W. MacKenzie, B. Meades, D. Meidinger, C. Morneau, P. Uhlig
CNVC Concept Date: 2018-03-01
CNVC Description Author: K. Baldwin, W. Meades, D. Downing
CNVC Description Date: 2019-04-01
IVC Primary Concept Source: E.A. Johnston and K. Miyanishi (1999)
IVC Description Author: K. Baldwin, D. Faber-Langendoen and G. Kittel
IVC Description Date: 2017-03-29
IVC Acknowledgments:

G635 Eastern Canadian Subarctic Woodland

[ ]

IVC Colloquial Name: Eastern Canadian Subarctic Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: LB, ON, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:
- **A2116 *Picea glauca* Eastern Subarctic Woodland Alliance** [White Spruce Eastern Subarctic Woodland Alliance] []
- **A2117 *Picea mariana* Eastern Subarctic Woodland Alliance** [Black Spruce Eastern Subarctic Woodland Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2012)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2116 White Spruce Eastern Subarctic Woodland Alliance

[ ]
Picea glauca Eastern Subarctic Woodland Alliance
White Spruce Eastern Subarctic Woodlands

IVC Scientific Name: *Picea glauca* Eastern Subarctic Woodland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is tentatively proposed to represent eastern subarctic woodlands dominated by white spruce.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: LB, MB, ON, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002524 *Picea glauca / Empetrum nigrum - Ledum palustre* Dwarf-shrubland** [White Spruce / Black Crowberry - Marsh Labrador-tea Dwarf-shrubland] []
  GNR. MB, ON
- **CEGL002526 *Picea glauca* / Lichens Nonvascular Vegetation** [White Spruce / Lichens Nonvascular Vegetation] []
  GNR. MB, ON
- **CEGL002532 *Picea glauca / Empetrum nigrum - Vaccinium* spp. Dwarf-shrubland** [White Spruce / Black Crowberry - Blueberry species Dwarf-shrubland] []
  GNR. MB

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2117 Black Spruce Eastern Subarctic Woodland Alliance

[ ]
Picea mariana Eastern Subarctic Woodland Alliance
Black Spruce Eastern Subarctic Woodlands

IVC Scientific Name: *Picea mariana* Eastern Subarctic Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is tentatively proposed to represent eastern subarctic woodlands dominated by black spruce. Western limits in Nunavut and Manitoba need to be defined.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: LB, MB, NU, ON, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00321 *Picea mariana* / *Empetrum nigrum* / *Pleurozium schreberi* (*Nephroma arcticum*)** [Black Spruce / Black Crowberry / Schreber's Big Red-Stem Moss (Arctic Kidney Lichen)] [Épinette noire / Camarine noire / Pleurozie dorée (Néphrome arctique)]
  GNR.
- **CNVC00318 *Picea mariana* / *Rhododendron groenlandicum* / *Empetrum nigrum* / *Pleurozium schreberi* (*Cladina* spp.)** [Black Spruce / *Rhododendron groenlandicum* / Black Crowberry / Schreber's Big Red-Stem Moss (Reindeer Lichen species)] [Épinette noire / Thé du Labrador / Camarine noire / Pleurozie dorée (Cladonies)]
  GNR.
- **CNVC00206 *Picea mariana* / *Betula glandulosa* / *Cladina* spp.** [Black Spruce / Resin Birch / Reindeer Lichen species] [Épinette noire / Bouleau glanduleux / Cladonies]
  GNR.
- **CEGL002527 *Picea mariana* / Lichens Nonvascular Vegetation** [Black Spruce / Lichens Nonvascular Vegetation] []
  GNR. MB, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G633 Western Canadian Subarctic Woodland

[ ]

IVC Colloquial Name: Western Canadian Subarctic Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group occurs primarily in the northern and western portion of the boreal region of Canada, but is also found at higher elevations throughout the continental boreal zone. It typically occurs on gentle sideslopes, rolling hills, and inactive alluvial surfaces on soils underlain by continuous permafrost. Canopies are sparse to open and dominated by *Picea glauca* or *Picea mariana*. The shrub layer is composed of low and dwarf-shrubs, including *Ledum palustre ssp. decumbens, Betula nana, Betula glandulosa, Vaccinium uliginosum*, and *Vaccinium vitis-idaea*. Tussock-forming sedges, including *Carex bigelowii* and *Eriophorum vaginatum*, may be abundant on some sites. Common mosses include *Hylocomium splendens* and *Sphagnum* species, with lichens, primarily those in the genus *Cladonia*, becoming an important component of the understory in mature stands.
IVC Dynamics: The disturbance dynamics of these high-elevation and high-latitude forests are not well understood. Disturbance agents include fire, thermokarst, insects, and wind. Subarctic woodlands often lack a deciduous seral stage after fire.
IVC Environment: Associated landforms include gentle sideslopes, rolling hills, and inactive alluvial surfaces. The subarctic climate is continental-cold. Summers are short and cool with a mean July temperature of 10°C. Annual precipitation is 20 to 50 cm (Arno 1984). Soils are well-drained to somewhat poorly-drained and develop on gravels, loess, or bedrock. Sites are underlain by continuous permafrost.

DISTRIBUTION

IVC Geographic Range: This type is found across the western Canadian subarctic region in the Northwest Territories extending eastward into northwest Saskatchewan and Manitoba's Hudson Bay Lowlands.
IVC Nations: CA
IVC States/Provinces: NT, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2129 *Pinus banksiana* West-Central Boreal Woodland Group** [Jack Pine West-Central Boreal Woodland Group] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2012)
IVC Description Author: T. Boucher
IVC Description Date: 2018-11-26
IVC Acknowledgments: M.E. Hall

A2129 Jack Pine West-Central Boreal Woodland Group

[ ]
Pinus banksiana West-Central Boreal Woodland Group
West-Central Subarctic Woodland

IVC Scientific Name: *Pinus banksiana* West-Central Boreal Woodland Group
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This is a provisional alliance developed to provide a linkage to the CNVC associations defined for the subarctic woodlands east of the Alaskan-Yukon group (G859). This alliance tracks the west-central versus eastern (A2117) distinction. Eastern limits in Nunavut need to be defined.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: MB, NT, NU, SK
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00259 *Picea mariana - Betula papyrifera / Vaccinium vitis-idaea*** [Black Spruce - Paper Birch / Lingonberry] [Épinette noire - Bouleau à papier / Airelle rouge]
  GNR.
- **CNVC00257 *Picea mariana / Vaccinium vitis-idaea / Pleurozium schreberi* (*Cladina* spp.)** [Black Spruce / Lingonberry / Schreber's Big Red-Stem Moss (Reindeer Lichen species)] [Épinette noire / Airelle rouge / Pleurozie dorée (Cladonies)]
  GNR.

- **CNVC00258 *Pinus banksiana - Picea mariana / Vaccinium vitis-idaea*** [Jack Pine - Black Spruce / Lingonberry] [Pin gris - Épinette noire / Airelle rouge]
  GNR.
- **CNVC00200 *Pinus banksiana / Saxifraga tricuspidata*** [Jack Pine / Three-Tooth Saxifrage] [Pin gris / Saxifrage à trois dents]
  GNR.
- **CNVC00329 *Betula papyrifera / Rhododendron groenlandicum / Vaccinium vitis-idaea / Cladina* spp.** [Paper Birch / *Rhododendron groenlandicum* / Lingonberry / Reindeer Lichen species] [Bouleau à papier / Thé du Labrador / Airelle rouge / Cladonies]
  GNR.
- **CNVC00266 *Betula papyrifera / Alnus incana* (*Viburnum edule*)** [Paper Birch / Gray Alder (Squashberry)] [Bouleau à papier / Aulne blanc (Viorne comestible)]
  GNR.
- **CNVC00267 *Populus tremuloides / Rosa acicularis* (*Shepherdia canadensis*)** [Quaking Aspen / Prickly Rose (Russet Buffaloberry)] [Peuplier faux-tremble / Rosier aciculaire (Shépherdie du Canada)]
  GNR.
- **CNVC00254 *Picea glauca / Empetrum nigrum*** [White Spruce / Black Crowberry] [Épinette blanche / Camarine noire]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G859 Alaska-Yukon Northern Boreal Mesic Woodland

[ ]

IVC Colloquial Name: Alaska-Yukon Northern Boreal Mesic Woodland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4291 *Picea glauca / Dryas* spp. Northern Boreal Woodland Alliance** [White Spruce / Mountain-avens species Northern Boreal Woodland Alliance] []

- **A4292 *Picea glauca / Ledum palustre ssp. decumbens* Northern Boreal Woodland Alliance** [White Spruce / Marsh Labrador-tea Northern Boreal Woodland Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4291 White Spruce / Mountain-avens species Northern Boreal Woodland Alliance

[ ]
Picea glauca / Dryas spp. Northern Boreal Woodland Alliance
Alaskan Northern Boreal Spruce/ Dryas Woodland

IVC Scientific Name: *Picea glauca / Dryas* spp. Northern Boreal Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00376 *Picea glauca / Vaccinium uliginosum / Dryas integrifolia - Rhododendron lapponicum*** [White Spruce / Bog Blueberry / Entireleaf Mountain-Avens - Lapland Rosebay] [Épinette blanche / Airelle des marécages / Dryade à feuilles entières - Rhododendron de Laponie]
  GNR.
- **CNVC00380 *Picea glauca / Vaccinium uliginosum / Dryas integrifolia - Rhododendron lapponicum - Carex* spp.** [White Spruce / Bog Blueberry / Entireleaf Mountain-Avens - Lapland Rosebay - Sedge species] [Épinette blanche / Airelle des marécages / Dryade à feuilles entières - Rhododendron de Laponie - Carex]
  GNR.
- **CNVC00375 *Picea glauca / Dryas integrifolia - D. octopetala - Arctous alpina*** [White Spruce / Entireleaf Mountain-Avens - *D. octopetala* - *Arctous alpina*] [Épinette blanche / Dryade à feuilles entières - Dryade à huit pétales - Busserole alpine]
  GNR.
- **CNVC00377 *Picea glauca / Alnus viridis - Vaccinium uliginosum / Dryas integrifolia - Rhododendron lapponicum*** [White Spruce / Green Alder - Bog Blueberry / Entireleaf Mountain-Avens - Lapland Rosebay] [Épinette blanche / Aulne vert - Airelle des marécages / Dryade à feuilles entières - Rhododendron de Laponie]
  GNR.
- **CNVC00374 *Picea glauca / Dasiphora fruticosa / Arctostaphylos uva-ursi - Rhododendron lapponicum - Dryas integrifolia*** [White Spruce / Shrubby-Cinquefoil / Bearberry - Lapland Rosebay - Entireleaf Mountain-Avens] [Épinette blanche / Potentille frutescente / Raisin d'ours - Rhododendron de Laponie - Dryade à feuilles entières]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4292 White Spruce / Marsh Labrador-tea Northern Boreal Woodland Alliance

[ ]
Picea glauca / Ledum palustre ssp. decumbens Northern Boreal Woodland Alliance
Alaskan Northern Boreal Spruce / Ericaceous Woodland

IVC Scientific Name: *Picea glauca / Ledum palustre ssp. decumbens* Northern Boreal Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00417 *Betula neoalaskana / Alnus viridis - Rhododendron tomentosum*** [Resin Birch / Green Alder - *Rhododendron tomentosum*] [Bouleau d'Alaska / Aulne vert - Petit thé du Labrador]
  GNR.
- **CNVC00425 *Populus balsamifera / Alnus incana / Equisetum* spp.** [Balsam Poplar / Gray Alder / Horsetail species] [Peuplier baumier / Aulne à feuilles minces / Prêles]
  GNR.
- **CNVC00415 *Populus balsamifera / Salix* spp. - *Shepherdia canadensis / Hedysarum alpinum*** [Balsam Poplar / Willow species - Russet Buffaloberry / Alpine Sweet-Vetch] [Peuplier baumier / Saules - Shépherdie du Canada / Hedysarum alpinum]
  GNR.
- **CNVC00458 *Picea mariana / Rhododendron groenlandicum - Vaccinium uliginosum / Cladina* spp.** [Black Spruce / *Rhododendron groenlandicum* - Bog Blueberry / Reindeer Lichen species] [Épinette noire / Thé du Labrador - Airelle des marécages / Cladines]
  GNR.
- **CNVC00460 *Picea mariana / Alnus viridis - Rhododendron tomentosum / Sphagnum* spp. - *Cladina* spp.** [Black Spruce / Green Alder - *Rhododendron tomentosum* / Peat Moss species - Reindeer Lichen species] [Épinette noire / Aulne vert - Petit thé du Labrador / Sphaignes - Cladines]
  GNR.
- **CNVC00424 *Picea glauca - Populus balsamifera / Shepherdia canadensis / Arctous rubra - Hedysarum alpinum*** [White Spruce - Balsam Poplar / Russet Buffaloberry / *Arctous rubra* - Alpine Sweet-Vetch] [Épinette blanche - Peuplier baumier / Shépherdie du Canada / Busserole rouge - Hedysarum alpinum]
  GNR.

- **CNVC00418** ***Picea glauca* - *Populus balsamifera* / *Salix* spp. / *Equisetum* spp.** [White Spruce - Balsam Poplar / Willow species / Horsetail species] [Épinette blanche - Peuplier baumier / Saules / Prêles]
  GNR.
- **CNVC00395** ***Picea glauca* - *Betula occidentalis* / *B. glandulosa* / *Empetrum nigrum* / *Cladina* spp.** [White Spruce - Water Birch / *B. glandulosa* / Black Crowberry / Reindeer Lichen species] [Épinette blanche - Bouleau fontinal / Bouleau glanduleux / Camarine noire / Cladines]
  GNR.
- **CNVC00379** ***Picea glauca* / *Equisetum arvense* - *Arctous rubra*** [White Spruce / Field Horsetail - *Arctous rubra*] [Épinette blanche / Prêle des champs - Busserole rouge]
  GNR.
- **CNVC00378** ***Picea glauca* / *Equisetum palustre* - *Salix reticulata* - *Arctous alpina* - *Carex bigelowii*** [White Spruce / Marsh Horsetail - Netleaf Willow - *Arctous alpina* - Bigelow's Sedge] [Épinette blanche / Prêle des marais - Saule réticulé - Busserole alpine - Carex de Bigelow]
  GNR.
- **CNVC00381** ***Picea glauca* / *Rhododendron tomentosum* / *Empetrum nigrum* - *Arctous rubra* / *Sphagnum* spp.** [White Spruce / *Rhododendron tomentosum* / Black Crowberry - *Arctous rubra* / Peat Moss species] [Épinette blanche / Petit thé du Labrador / Camarine noire - Busserole rouge / Sphaignes]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

1.B.5. Boreal Flooded & Swamp Forest

Boreal Flooded & Swamp Forest is a tree-dominated wetland influenced by minerotrophic groundwater (rarely ombrotrophic), either on mineral or organic (peat) soil, found in northern, high latitudes of North America and Eurasia, with extended cold winters and short mild summers.

Macrogroups in Canada:

- **M299 North American Boreal Conifer Poor Swamp [Marécages pauvres à conifères boréaux de l'Amérique du Nord]**
  This boreal swamp type is found across the North American boreal region, from Alaska to Newfoundland, including poor to intermediate swamp forests, primarily on peatland soils, dominated by *Picea mariana, Larix laricina, Abies balsamea*, and/or *Betula papyrifera*.
- **M300 North American Boreal Flooded & Rich Swamp Forest [Marécages riches et inondés de l'Amérique du Nord]**
  This type is found across the North American boreal region, from Alaska to Newfoundland, including rich floodplain and rich swamp forests.

M299 North American Boreal Conifer Poor Swamp

Marécages pauvres à conifères boréaux de l'Amérique du Nord

IVC Colloquial Name: North American Boreal Conifer Poor Swamp

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M299 describes nutrient-poor to medium wetland forests and woodlands throughout the boreal region of North America. These include bog and fen woodlands as well as poor to intermediate swamps, usually developed on peat deposits. This vegetation is characterized by black spruce (*Picea mariana*) and/or tamarack (*Larix laricina*) in the tree layer, overwhelming dominance of ericaceous species in the understory and ground cover of *Sphagnum* mosses. Typical understory species include common Labrador tea (*Rhododendron groenlandicum*), leatherleaf (*Chamaedaphne calyculata*), blueberries (*Vaccinium* spp.), shrub willows (*Salix* spp.), shrub birches (*Betula* spp.), bog laurel (*Kalmia polifolia*), three-leaved false Solomon's seal (*Maianthemum trifolium*), cloudberry (*Rubus chamaemorus*), small cranberry (*V. oxycoccus*) and bog rosemary (*Andromeda polifolia*). Sheep laurel (*K. angustifolia*) and rhodora (*Rhododendron canadense*) often replace *R. groenlandicum* in Atlantic Canada. Peat mosses (*Sphagnum* spp.) dominate the ground cover, but feathermosses (esp. red-stemmed feathermoss [*Pleurozium schreberi*] and stairstep moss [*Hylocomium splendens*]) are common on dry microsites (e.g., peat hummocks).

These are generally stable ecosystems that are maintained by persistently high water tables within a cold climate. M299 occurs in boreal and subarctic climates, characterized by long, cold winters and short, cool to moderately warm summers. Mean annual temperatures in the Canadian range vary from approximately -10°C in Inuvik, Northwest Territories to >3.5°C in parts of insular Newfoundland. Mean annual precipitation generally follows a west to east gradient, increasing from <300 mm in the western subarctic to as high as 1800 mm in parts of Nova Scotia and insular Newfoundland. Substrates are usually *Sphagnum*-derived peats with nutrient regimes ranging from poor to medium, depending on local site-scale hydrology. Within a stand, hummocky microtopography associated with the growth of certain *Sphagnum* spp. provides a range of micro-scale moisture and nutrient gradients. Permafrost is a feature of subarctic and some northern boreal peatlands.

IVC Geographic Range: This macrogroup is found from eastern Canada, including the maritime region, extending south into the most northern parts of northern New England (Maine, New Hampshire, Vermont, and parts of New York) and westward into Quebec, Ontario and northern regions of the Great Lakes region (including northern Minnesota, Wisconsin and Michigan), extending through Manitoba, Saskatchewan, northwestern Alberta, northern British Columbia and boreal Alaska.

IVC Nations: CA,US

IVC States/Provinces: AB, AK, BC, LB, MB, ME, MI, MN, NB, NF, NH, NS, NY, ON, PE?, QC, SK, VT, WI, YT

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: M299 describes nutrient-poor to medium wetland forests and woodlands, mostly occurring on shallow to deep peat deposits, in boreal North America. These communities are characterized by *Picea mariana* and/or *Larix laricina* in the tree layer, overwhelming dominance of ericaceous species in the understory and ground cover of *Sphagnum* mosses. Nutrient-rich boreal swamp and floodplain forests, described by M300 [North American Boreal Flooded & Rich Swamp Forest], include *Populus balsamifera* and, in eastern Canada, *Fraxinus nigra* and *Thuja occidentalis* among the dominant tree species. M300 vegetation also includes a diverse suite of understory species that are characteristic of moist to wet, nutrient-rich sites (e.g., *Alnus incana, Ribes* spp., *Cornus stolonifera* and *Rubus pubescens*). M300 soils can be either organic or mineral, but peat is usually well-decomposed and typically not as deep as in M299 stands. Although overall floristics are very similar to those of M299, open boreal bogs and poor fens (i.e., <10% cover by trees >5 m height) are described separately by M876 [North American Boreal & Sub-boreal Acidic Bog & Fen].

Within M299, CNVC Groups break out four geographic subsets: CG0016 [Atlantic Boreal Black Spruce - Balsam Fir Poor - Intermediate Treed Wetland] describes these conditions in Atlantic Canada, CG0019 [Ontario-Quebec Boreal Black Spruce Poor - Intermediate Treed Wetland] in Ontario and west-central Quebec, CG0022 [West-Central Boreal Black Spruce - Tamarack Poor - Intermediate Treed Wetland] in western Canada and CG0025 [Subarctic Black Spruce Poor - Intermediate Treed Wetland] in the northern part of the range. No Group has been defined for the Alaskan-Yukon boreal region yet. Within each of these Groups, CNVC Alliances aggregate Associations that share floristic and dominance characteristics within similar nutrient regimes.

Alnus incana (grey alder) here refers to ssp. *rugosa* (speckled alder) in eastern Canada and ssp. *tenuifolia* (mountain alder) in western Canada.

Viburnum nudum here refers to *V. nudum* var. *cassinoides* (wild raisin).

Groups in Canada:

- **G807 Atlantic Boreal Black Spruce - Balsam Fir Poor - Intermediate Treed Wetland [Tourbières oligotrophes et tourbières minérotrophes pauvres d'épinettes noires de la zone boréale de l'Atlantique]**
- **G806 Ontario-Quebec Boreal Black Spruce Poor - Intermediate Treed Wetland [Tourbières oligotrophes et tourbières minérotrophes pauvres d'épinettes noires de la zone boréale de l'Ontario et du Québec]**

- **G843 West-Central Boreal Black Spruce - Tamarack Poor - Intermediate Treed Wetland [Tourbières oligotrophes et tourbières minérotrophes pauvres d'épinettes noires de la zone boréale du Centre-Ouest]**
- **G546 Alaskan-Yukon Boreal Black Spruce Wet Forest []**
- **G953 Subarctic Black Spruce Poor - Intermediate Treed Wetland [Terres humides boisées subarctiques de l'Amérique du Nord]**

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Baldwin and CNVC Technical Committee
IVC Description Author: D. Meidinger, D. Faber-Langendoen, K. Baldwin, G. Kittel
IVC Description Date: 2017-03-29
IVC Acknowledgments:

G807 Atlantic Boreal Black Spruce - Balsam Fir Poor - Intermediate Treed Wetland

Tourbières oligotrophes et tourbières minérotrophes pauvres d'épinettes noires de la zone boréale de l'Atlantique

IVC Colloquial Name: Atlantic Boreal Black Spruce - Balsam Fir Poor Swamp
View on NatureServe Explorer

OVERVIEW

CNVC Concept: The CNVC concept CG0016 appears to be the same as this IVC concept (G807), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.

IVC Concept: This group includes nutrient-poor wetland forests and woodlands in the Atlantic Boreal region of North America. These poor to intermediate swamps usually develop on peat deposits. The vegetation is characterized by *Picea mariana* and/or *Larix laricina* in the tree layer, overwhelming dominance of ericaceous species in the understory, and ground cover of *Sphagnum* mosses. *Abies balsamea* can be an associate. Typical understory species include *Rhododendron groenlandicum, Chamaedaphne calyculata, Vaccinium* spp., *Salix* spp., *Betula* spp., *Kalmia polifolia, Maianthemum trifolium, Rubus chamaemorus*, and *Andromeda polifolia. Kalmia angustifolia* and *Rhododendron canadense* are particularly diagnostic. *Ilex mucronata, Viburnum nudum*, and *Osmundastrum cinnamomeum* are important species on sites with slightly enhanced nutrient status. *Sphagnum* spp. dominate the ground cover, *Pleurozium schreberi* and *Hylocomium splendens* are common on dry microsites (e.g., peat hummocks). These are generally stable ecosystems that are maintained by persistently high water tables within a cold climate. This type occurs in boreal and subarctic climates, characterized by long, cold winters and short, cool to moderately warm summers. Substrates are usually *Sphagnum*-derived peats with nutrient regimes ranging from poor to medium, depending on local site-scale hydrology. Within a stand, hummocky microtopography associated with the growth of certain *Sphagnum* spp. provides a range of micro-scale moisture and nutrient gradients. Permafrost is a feature of subarctic and some northern boreal peatlands

IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This group includes nutrient-poor to medium wetland forests and woodlands in the Atlantic Boreal region of North America.
IVC Nations: CA,US
IVC States/Provinces: LB, ME, NB?, NF, NS?, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0016
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00041 *Abies balsamea - Picea mariana / Osmundastrum cinnamomeum - Carex trisperma / Sphagnum* spp. Alliance** [Balsam Fir - Black Spruce / Cinnamon Fern - Three-seeded Sedge / Peatmoss species Alliance] [Sapin baumier - Épinette noire / Osmonde cannelle - Carex trisperme / Sphaignes]

- **CA00040 *Picea mariana* (*Abies balsamea*) / *Kalmia angustifolia* / *Sphagnum capillifolium* Alliance** [Black Spruce (Balsam Fir) / Sheep Laurel / Northern Peatmoss Alliance] [Épinette noire (Sapin baumier) / Kalmia à feuilles étroites / Sphaigne grêle]
- **A4102 *Picea mariana / Kalmia angustifolia / Sphagnum* spp. Atlantic Swamp Forest Alliance** [Black Spruce / Sheep Laurel / Peatmoss species Atlantic Swamp Forest Alliance] []
  This poor (acidic) conifer swamp alliance is found in the Atlantic boreal region of eastern Canada, on poorly drained mineral soils or deep peats and minerotrophic peatland margins, and is dominated by *Picea mariana* with Atlantic boreal indicators, such as *Kalmia angustifolia*.
- **A4103 *Picea mariana / Osmunda cinnamomea / Sphagnum* spp. Atlantic Swamp Forest Alliance** [Black Spruce / Cinnamon Fern / Peatmoss species Atlantic Swamp Forest Alliance] []
  This intermediate conifer swamp alliance is dominated by *Picea mariana* with Atlantic boreal indicators such as *Kalmia angustifolia*. It is found in the Atlantic boreal region of eastern Canada, on poorly drained mineral soils or deep peats and minerotrophic peatland margins.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00041 Balsam Fir - Black Spruce / Cinnamon Fern - Three-seeded Sedge / Peat Mosses

Sapin baumier - Épinette noire / Osmonde cannelle - Carex trisperme / Sphaignes
Abies balsamea - *Picea mariana* / *Osmundastrum cinnamomeum* - *Carex trisperma* / *Sphagnum* spp. Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00334 *Abies balsamea / Osmundastrum cinnamomeum - Carex trisperma / Sphagnum spp.*** [Balsam Fir / Cinnamon Fern – Three-seeded Sedge / Peat Mosses] [Sapin baumier / Osmonde cannelle – Carex trisperme / Sphaignes]
  GNR.
- **CNVC00312 *Picea mariana - Abies balsamea / Osmundastrum cinnamomeum - Carex trisperma / Sphagnum spp.*** [Black Spruce – Balsam Fir / Cinnamon Fern – Three-seeded Sedge / Peat Mosses] [Épinette noire – Sapin baumier / Osmonde cannelle – Carex trisperme / Sphaignes]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00040 Black Spruce (Balsam Fir) / Sheep Laurel / Small Red Peat Moss

Épinette noire (Sapin baumier) / Kalmia à feuilles étroites / Sphaigne grêle
Picea mariana (*Abies balsamea*) / *Kalmia angustifolia* / *Sphagnum capillifolium* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00339** ***Picea mariana - Kalmia angustifolia - Ilex mucronata / Sphagnum spp. - Cladina spp. - Pleurozium schreberi*** [Black Spruce – Sheep Laurel – Mountain Holly / Peat Mosses – Reindeer Lichens – Red-stemmed Feathermoss] [Épinette noire – Kalmia à feuilles étroites – Némopanthe mucroné / Sphaignes – Cladonies – Pleurozie dorée] GNR.
- **CNVC00335** ***Picea mariana / Kalmia angustifolia / Pleurozium schreberi - Sphagnum capillifolium*** [Black Spruce / Sheep Laurel / Red-stemmed Feathermoss – Small Red Peat Moss] [Épinette noire / Kalmia à feuilles étroites / Pleurozie dorée – Sphaigne grêle] GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4102 Black Spruce / Sheep Laurel / Peatmoss species Atlantic Swamp Forest Alliance

[ ]
Picea mariana / Kalmia angustifolia / Sphagnum spp. Atlantic Swamp Forest Alliance
Atlantic Boreal Poor Conifer Swamp Forest

IVC Scientific Name: *Picea mariana / Kalmia angustifolia / Sphagnum* spp. Atlantic Swamp Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This poor (acidic) conifer swamp alliance is found in the Atlantic boreal region of eastern Canada, on poorly drained mineral soils or deep peats and minerotrophic peatland margins. The vegetation is dominated by *Picea mariana* with other canopy associates, including *Abies balsamea, Larix laricina*, and *Betula papyrifera*. Most stands have a well-developed shrub layer. Shrubs are typically ericaceous species such as *Chamaedaphne calyculata* and *Kalmia angustifolia* (in Quebec). There is a continuous and often deep sphagnum layer. The habitat is characterized by poorly drained mineral soils or deep peats and minerotrophic peatland margins. The peats and groundwater are acidic and are most typically nutrient-poor.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range: This poor (acidic) conifer swamp alliance is found in the Atlantic boreal region of eastern Canada.

IVC Nations: CA,US

IVC States/Provinces: LB, ME, NF, QC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K. Baldwin and Canadian NVC Committee, in Faber-Langendoen et al. (2014)

IVC Description Author:

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A4103 Black Spruce / Cinnamon Fern / Peatmoss species Atlantic Swamp Forest Alliance

[ ]

Picea mariana / Osmunda cinnamomea / Sphagnum spp. Atlantic Swamp Forest Alliance

Atlantic Boreal Intermediate Conifer Swamp Forest

IVC Scientific Name: *Picea mariana / Osmunda cinnamomea / Sphagnum* spp. Atlantic Swamp Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This intermediate conifer swamp alliance is dominated by *Picea mariana* with other canopy associates, including *Abies balsamea, Larix laricina*, and *Betula papyrifera*. Most stands have a well-developed shrub layer. Shrubs are typically ericaceous species such as *Chamaedaphne calyculata* and *Kalmia angustifolia* (in Quebec). The herb layer contains a range of poor to intermediate indicators, including *Osmunda cinnamomea*. There is a continuous and often deep sphagnum layer. It is found in the Atlantic boreal region of eastern Canada, on poorly drained mineral soils or deep peats and minerotrophic peatland margins. The peats and groundwater are intermediate between acidic and alkaline conditions.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range: This intermediate conifer swamp is found in the Atlantic boreal region of eastern Canada.

IVC Nations: CA

IVC States/Provinces: LB, NF, QC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Baldwin and Canadian NVC Committee, in Faber-Langendoen et al. (2014)
IVC Description Author:
IVC Description Date: 2014-09-26
IVC Acknowledgments:

G806 Ontario-Quebec Boreal Black Spruce Poor - Intermediate Treed Wetland

Tourbières oligotrophes et tourbières minérotrophes pauvres d'épinettes noires de la zone boréale de l'Ontario et du Québec

IVC Colloquial Name: Ontario-Québec Boreal-Subboreal Black Spruce Poor Swamp
View on NatureServe Explorer

OVERVIEW

CNVC Concept: The CNVC concept CG0019 appears to be the same as this IVC concept (G806), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.

IVC Concept: This is a poor acidic forested peatland (poor to intermediate swamp) found across the eastern boreal and subboreal regions of Canada, extending southward to the northern Great Lakes region and parts of the northeastern United States. The group is primarily moderately to weakly minerotrophic (similar to poor fen), and even approaching ombrotrophic (bog) conditions. They are typically found in poorly drained basins or kettleholes, with level, wet, poorly drained organic soils, and a shallow to thick layer of peat that reduces contact with groundwater. Trees form a partial to full cover over most or all of the peatland. Stunted to well-developed *Picea mariana* is the dominant canopy species. Other common trees include *Larix laricina, Abies balsamea*, and *Pinus banksiana*. Heaths and sedges are common in the understory. A sparse to moderately well-developed low-shrub layer contains mostly ericaceous species such as *Chamaedaphne calyculata, Ledum groenlandicum, Gaultheria hispidula, Vaccinium* spp., and *Kalmia* spp. Mosses commonly include *Sphagnum* spp., *Pleurozium schreberi*, and *Dicranum polysetum*.

IVC Dynamics:

IVC Environment: This group occurs on level, wet sites with organic soils or in kettlehole basins and other types of depressions. Sites are intermediate to acidic and typically poorly to very poorly drained. Peat accumulation ranges from shallow to very deep. *Climate:* Boreal to cool temperate(hemi-boreal). *Soil/substrate/hydrology:* Poorly to very poorly drained organic, acidic to intermediate soils typify this group.

DISTRIBUTION

IVC Geographic Range: This boreal poor swamp peatland group is found in eastern Canada, extending into the most northern parts of northern New England (Maine, New Hampshire, Vermont, and parts of New York) and the Great Lakes region (particularly in northern Minnesota and possibly Wisconsin and Michigan).

IVC Nations: CA,US
IVC States/Provinces: MB, ME, MI, MN, NB, NF, NH, NS, NY, ON, PE?, QC, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G3 rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert

knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Elcode: CG0019
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00046 *Picea mariana* - (*Abies balsamea*) / *Carex* spp. / *Sphagnum* spp.** [Black Spruce - (Balsam Fir) / Sedge species / Peat Moss species] [Épinette noire - (Sapin baumier) / Carex / Sphaignes]
- **A0197 *Picea mariana - Larix laricina / Sphagnum* spp. Poor Swamp Forest Alliance** [Black Spruce - Tamarack / Peatmoss species Poor Swamp Forest Alliance] []
  This poor (acidic) conifer swamp alliance dominated by *Picea mariana* is found in the boreal and subboreal region of eastern Canada, (excluding the Atlantic boreal region), southward into the northern Great Lakes region and northeastern United States, on poorly drained mineral soils or deep peats and minerotrophic peatland margins.
- **A2124 *Picea mariana - Larix laricina* Eastern Boreal Poor Swamp Alliance** [Black Spruce - Tamarack Eastern Boreal Poor Swamp Alliance] []
- **CA00045 *Picea mariana / Alnus incana - Rhododendron groenlandicum / Sphagnum* spp. Alliance** [Black Spruce / Gray Alder - Common Labrador-tea / Peatmoss species Alliance] [Épinette noire / Aulne rugueux - Thé du Labrador / Sphaignes]
- **CA00043 *Picea mariana / Chamaedaphne calyculata - Vaccinium angustifolium / Sphagnum fuscum* Alliance** [Black Spruce / Leatherleaf - Lowbush Blueberry / Brown Peatmoss Alliance] [Épinette noire / Cassandre caliculé - Bleuet à feuilles étroites / Sphaigne brune]
- **CA00044 *Picea mariana / Rhododendron groenlandicum - Vaccinium angustifolium / Sphagnum* spp. Alliance** [Black Spruce / Common Labrador-tea - Lowbush Blueberry / Peatmoss species Alliance] [Épinette noire / Thé du Labrador - Bleuet à feuilles étroites / Sphaignes]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2015)
IVC Description Author: D. Faber-Langendoen, D. Meidinger and K. Baldwin
IVC Description Date: 2016-01-15
IVC Acknowledgments:

CA00046 Black Spruce - (Balsam Fir) / Sedge species / Peat Moss species

Épinette noire - (Sapin baumier) / Carex / Sphaignes
Picea mariana - (*Abies balsamea*) / *Carex* spp. / *Sphagnum* spp.

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00271 *Picea mariana - Abies balsamea - Betula papyrifera / Rhododendron groenlandicum / Sphagnum* spp.** [Black Spruce - Balsam Fir - Paper Birch / *Rhododendron groenlandicum* / Peat Moss species] [Épinette noire - Sapin baumier - Bouleau à papier / Thé du Labrador / Sphaignes]
  GNR.
- **CNVC00290 *Picea mariana* (*Abies balsamea*) / *Rhododendron groenlandicum / Sphagnum* spp.** [Black Spruce (Balsam Fir) / *Rhododendron groenlandicum* / Peat Moss species] [Épinette noire (Sapin baumier) / Thé du Labrador / Sphaignes]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A0197 Black Spruce - Tamarack / Peatmoss species Poor Swamp Forest Alliance

[ ]

Picea mariana - Larix laricina / Sphagnum spp. Poor Swamp Forest Alliance

Eastern Boreal-Subboreal Spruce Poor Swamp Forest

IVC Scientific Name: *Picea mariana - Larix laricina / Sphagnum* spp. Poor Swamp Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This poor (acidic) conifer swamp is found in the boreal region of eastern Canada, excluding the Atlantic boreal region, southward into the subboreal regions of northern Great Lakes region and northeastern United States. The vegetation is dominated by *Picea mariana* with other canopy associates including *Abies balsamea, Larix laricina*, and *Betula papyrifera*. Most stands have a well-developed shrub layer. Shrubs are typically ericaceous species such as *Chamaedaphne calyculata, Gaylussacia baccata* (in the east), *Kalmia angustifolia* (in Quebec), *Ledum groenlandicum, Linnaea borealis, Rhododendron canadense* (in the east), *Vaccinium angustifolium*, and *Vaccinium myrtilloides*. Herbs include *Carex trisperma, Drosera* spp., *Eriophorum* spp., and *Sarracenia purpurea*. There is a continuous and often deep sphagnum layer, including especially *Sphagnum capillifolium*, but also *Sphagnum fuscum, Sphagnum girgensohnii*, and *Sphagnum magellanicum*. The habitat is characterized by poorly drained mineral soils or deep peats and minerotrophic peatland margins. The peats and groundwater are acidic and are most typically nutrient-poor. Most stands are on level ground, but some are on gentle lower slopes adjacent to wetlands.

IVC Dynamics:

IVC Environment: The habitat is characterized by poorly drained mineral soils or deep peats and minerotrophic peatland margins. The peats and groundwater are acidic and are most typically nutrient-poor, but with at least a weak minerotrophic influence. Most stands are on level ground, but some are on gentle lower slopes adjacent to wetlands.

DISTRIBUTION

IVC Geographic Range: This type is found in eastern Canada, excluding the Atlantic boreal region, and adjacent northern regions of the northeastern United States from the western Great Lakes to northern New England.

IVC Nations: CA,US

IVC States/Provinces: MB, ME, MI, MN, NB, NH, NS?, NY, ON, QC, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005271 *Picea mariana - (Larix laricina) / Ledum groenlandicum / Sphagnum* spp. Swamp Forest** [Black Spruce - (Tamarack) / Bog Labrador-tea / Peatmoss species Swamp Forest] []
  G5 (2000-06-27) MB, ME, MI, MN, NB, NH, NY, ON, QC?, VT, WI
- **CEGL005166 *Pinus banksiana - (Picea mariana)* - Mixed Hardwoods / *Sphagnum* spp. Swamp Forest** [Jack Pine - (Black Spruce) - Mixed Hardwoods / Peatmoss species Swamp Forest] []
  GNRQ (1996-10-03) MI, ON, WI
- **CEGL006509 *Larix laricina / Chamaedaphne calyculata - Vaccinium corymbosum / Carex trisperma* Forest** [Tamarack / Leatherleaf - Highbush Blueberry / Three-seeded Sedge Forest] []
  GNR. ME, NH, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: A.G. Harris et al. (1996)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-09-26
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by K. Baldwin.

A2124 Black Spruce - Tamarack Eastern Boreal Poor Swamp Alliance

[ ]
Picea mariana - Larix laricina Eastern Boreal Poor Swamp Alliance
Eastern Boreal Black Spruce - Tamarack Poor Swamp

IVC Scientific Name: *Picea mariana - Larix laricina* Eastern Boreal Poor Swamp Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is tentatively proposed to represent wet conifer forests in the Eastern Boreal region of Canada dominated by black spruce and tamarack.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: LB, MB, ON, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00319 *Picea mariana / Chamaedaphne calyculata - Vaccinium uliginosum / Rubus chamaemorus / Sphagnum* spp.** [Black Spruce / Leatherleaf - Bog Blueberry / Cloudberry / Peat Moss species] [Épinette noire / Cassandre caliculé - Airelle des marécages / Chicouté / Sphaignes]
  GNR.
- **CNVC00320 *Larix laricina / Alnus incana / Carex trisperma / Sphagnum* spp.** [Tamarack / Gray Alder / Three-Seeded Sedge / Peat Moss species] [Mélèze laricin / Aulne rugueux / Carex trisperme / Sphaignes]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00045 Black Spruce / Speckled Alder - Common Labrador Tea / Peat Mosses

Épinette noire / Aulne rugueux - Thé du Labrador / Sphaignes
Picea mariana / *Alnus incana - Rhododendron groenlandicum* / *Sphagnum* spp. Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00298** ***Picea mariana / Alnus incana / Gaultheria hispidula / Sphagnum spp.*** [Black Spruce / Speckled Alder / Creeping Snowberry / Peat Mosses] [Épinette noire / Aulne rugueux / Petit thé / Sphaignes]
  GNR.
- **CNVC00300** ***Larix laricina - Picea mariana / Alnus incana / Gaultheria hispidula / Sphagnum spp.*** [Tamarack – Black Spruce / Speckled Alder / Creeping Snowberry / Peat Mosses] [Mélèze laricin – Épinette noire / Aulne rugueux / Petit thé / Sphaignes]
  GNR.
- **CNVC00326** ***Larix laricina / Alnus incana / Rubus pubescens*** [Tamarack / Speckled Alder / Dwarf Raspberry] [Mélèze laricin / Aulne rugueux / Ronce pubescente]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00043 Black Spruce / Leatherleaf - Early Lowbush Blueberry / Brown Peat Moss

Épinette noire / Cassandre caliculé - Bleuet à feuilles étroites / Sphaigne brune

Picea mariana / *Chamaedaphne calyculata - Vaccinium angustifolium* / *Sphagnum fuscum* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00283** ***Picea mariana / Chamaedaphne calyculata - Vaccinium angustifolium / Sphagnum spp.*** [Black Spruce / Leatherleaf – Early Lowbush Blueberry / Peat Mosses] [Épinette noire / Cassandre caliculé – Bleuet à feuilles étroites / Sphaignes] GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00044 Black Spruce / Common Labrador Tea - Early Lowbush Blueberry / Peat Mosses

Épinette noire / Thé du Labrador - Bleuet à feuilles étroites / Sphaignes

Picea mariana / *Rhododendron groenlandicum* - *Vaccinium angustifolium* / *Sphagnum* spp. Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00288** ***Picea mariana - Larix laricina / Rhododendron groenlandicum / Gaultheria hispidula / Sphagnum spp.*** [Black Spruce – Tamarack / Common Labrador Tea / Creeping Snowberry / Peat Mosses] [Épinette noire – Mélèze laricin / Thé du Labrador / Petit thé / Sphaignes]
  GNR.
- **CNVC00282** ***Picea mariana / Rhododendron groenlandicum - Kalmia angustifolia / Sphagnum spp.*** [Black Spruce / Common Labrador Tea – Sheep Laurel / Peat Mosses] [Épinette noire / Thé du Labrador – Kalmia à feuilles étroites / Sphaignes]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G843 West-Central Boreal Black Spruce - Tamarack Poor - Intermediate Treed Wetland

Tourbières oligotrophes et tourbières minérotrophes pauvres d'épinettes noires de la zone boréale du Centre-Ouest

IVC Colloquial Name: West-Central Boreal Black Spruce - Tamarack Poor Swamp
View on NatureServe Explorer

OVERVIEW

CNVC Concept: The CNVC concept CG0022 appears to be the same as this IVC concept (G843), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: AB, BC?, MB, SK, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0022
CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2118** ***Picea mariana - Larix laricina*** **Alaskan-Yukon Poor Swamp Alliance** [Black Spruce - Tamarack Alaskan-Yukon Poor Swamp Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2118 Black Spruce - Tamarack Alaskan-Yukon Poor Swamp Alliance

[ ]

Picea mariana - Larix laricina Alaskan-Yukon Poor Swamp Alliance

West-Central Black Spruce - Tamarack Poor Swamp

IVC Scientific Name: *Picea mariana - Larix laricina* Alaskan-Yukon Poor Swamp Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is tentatively proposed to represent wet conifer forests in the West-Central Boreal region of Canada dominated by black spruce and tamarack.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA

IVC States/Provinces: AB, BC, MB, SK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002730** ***Picea mariana / Salix myrtillifolia / Arctostaphylos alpina / Aulacomnium palustre*** **Swamp Woodland** [Black Spruce / Blueberry Willow / Alpine Bearberry / Ribbed Bog Moss Swamp Woodland] []
  G4 (2004-10-13) AB, BC
- **CNVC00445** ***Picea mariana - Abies lasiocarpa / Rubus chamaemorus / Pleurozium schreberi - Sphagnum*** **spp.** [Black Spruce - Subalpine Fir / Cloudberry / Schreber's Big Red-Stem Moss - Peat Moss species] [Épinette noire - Sapin subalpin / Chicouté / Pleurozie dorée - Sphaignes]
  GNR.
- **CNVC00440** ***Picea mariana / Vaccinium uliginosum / Equisetum*** **spp.** ***/ Hylocomium splendens*** [Black Spruce / Bog Blueberry / Horsetail species / Splendid Feathermoss] [Épinette noire / Airelle des marécages / Prêles / Hylocomie brillante]
  GNR.
- **CNVC00314** ***Picea mariana / Betula glandulosa / Vaccinium vitis-idaea / Sphagnum*** **spp.** [Black Spruce / Resin Birch / Lingonberry / Peat Moss species] [Épinette noire / Bouleau glanduleux / Airelle rouge / Sphaignes]
  GNR.
- **CNVC00462** ***Picea mariana / Rhododendron tomentosum / Eriophorum vaginatum / Sphagnum*** **spp.** [Black Spruce / *Rhododendron tomentosum* / Tussock Cottongrass / Peat Moss species] [Épinette noire / Petit thé du Labrador / Linaigrette à large gaine / Sphaignes]
  GNR.
- **CNVC00461** ***Picea mariana / Carex bigelowii / Sphagnum*** **spp.** [Black Spruce / Bigelow's Sedge / Peat Moss species] [Épinette noire / Carex de Bigelow / Sphaignes]
  GNR.
- **CNVC00355** ***Picea glauca / Betula glandulosa / Carex aquatilis*** [White Spruce / Resin Birch / Water Sedge] [Épinette blanche / Bouleau glanduleux / Carex aquatique]
  GNR.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source:

IVC Description Author:

IVC Description Date:

IVC Acknowledgments:

G546 Alaskan-Yukon Boreal Black Spruce Wet Forest

[ ]

IVC Colloquial Name: Alaskan-Yukon Boreal Black Spruce Wet Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This type includes both forested bogs and acidic swamps. In forested bogs *Picea mariana* is the dominant overstory species, generally growing with a stunted growth form in a sparse to open canopy (10-30% canopy cover). Common understory species include *Ledum palustre ssp. decumbens, Ledum groenlandicum, Andromeda polifolia, Betula nana, Empetrum nigrum, Vaccinium vitis-idaea, Vaccinium uliginosum, Chamaedaphne calyculata, Rubus chamaemorus, Carex pluriflora, Carex* spp., and *Eriophorum angustifolium*. *Sphagnum* spp. dominate the bryophyte layer. Well-developed bogs may have a significant lichen component in the ground layer composed largely of *Cladina* spp. and *Cladonia* spp. In acidic swamps, *Picea mariana* is the dominant overstory species in an open canopy (30-50% canopy cover). Other overstory associates may include *Larix laricina, Picea glauca* or, in the subboreal Rocky Mountain region, *Picea glauca x engelmannii* (hybrid white spruce). Shrubs may include *Alnus incana ssp. tenuifolia, Betula nana* and *Ledum groenlandicum*. Characteristic herbaceous species include *Carex aquatilis, Equisetum* spp., and *Petasites frigidus*. Moss cover is high; typical species include *Aulacomnium palustre, Tomentypnum nitens, Pleurozium schreberi, Sphagnum* spp., and *Hylocomium splendens*, among others.

IVC Dynamics: Acidic swamps are in contact with weakly minerotrophic water, typically in peatland soils. An abundance of woody material in swamps provides another important distinction in that the peat is primarily composed of both decomposing woody material (shrub and tree) and *Sphagnum*- or sedge-dominated peats. (National Wetlands Working Group 1998).

IVC Environment: This type often occurs as part of a larger wetland complex, where there is an adequate flow of near-surface groundwater, often along peatland edges or inactive floodplain channels. Trees root on microsites that are elevated above the water table. Soils are saturated and may be made up of well-decomposed woody peat or fine-textured mineral deposits.

DISTRIBUTION

IVC Geographic Range: This type is found throughout the western boreal and subboreal regions of northern British Columbia, Yukon Territories and boreal Alaska, and acidic swamp more typically occurring as small patches within larger wetland complexes.

IVC Nations: CA,US

IVC States/Provinces: AK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: T. Boucher and D. Faber-Langendoen, in Faber-Langendoen et al. (2011)

IVC Description Author: T. Boucher and D. Faber-Langendoen

IVC Description Date: 2016-01-15

IVC Acknowledgments:

G953 Subarctic Black Spruce Poor - Intermediate Treed Wetland

Terres humides boisées subarctiques de l'Amérique du Nord

IVC Colloquial Name: Subarctic Black Spruce Poor - Intermediate Treed Wetland
View on NatureServe Explorer

OVERVIEW

CNVC Concept: The CNVC concept CG0025 has been provisionally replaced with G953, a provisional group developed to provide a linkage to the CNVC associations defined for the subarctic intermediate-poor wetlands of Canada.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: LB, MB, NF, NT, NU, ON, QC, SK
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0025
CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

M300 North American Boreal Flooded & Rich Swamp Forest

Marécages riches et inondés de l'Amérique du Nord

IVC Colloquial Name: North American Boreal Flooded & Rich Swamp Forest

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: Boreal rich swamp and floodplain forests develop on wet soils where the interaction of climate and landscape results in permanent or semipermanent water tables at or near to the soil surface, but where water, nutrient and temperature regimes lie within the range required for tree establishment and growth. These wet forests are of two main types in boreal North America: (1) forests and woodlands that are strongly influenced by permanently high water tables where the flow rate, subsurface depth and alkaline chemistry of groundwater determine site moisture and nutrient characteristics, and (2) forests and woodlands on sites that do not have permanent water tables at or near the soil surface, but that may be seasonally flooded for short periods during the growing season; soils are freely drained such that anoxic conditions are quickly relieved after subsidence of floodwaters. The first case describes rich swamps. In the second case, flood ecosystems develop alongside waterbodies that periodically overflow their banks or where subsurface water tables are within the rooting zone for part of the growing season. These conditions do not usually cover extensive areas and typically occur on fine-textured mineral soils beside flood-prone rivers or lakes.

Across all regions of the North American boreal, *Larix laricina* occurs with *Picea mariana* across all regions in treed wetlands that are moderately well-supplied with nutrients (intermediate to rich). In eastern Canada, *Abies balsamea* and *Betula papyrifera* also occur in intermediate wetlands; in western Canada, *Picea glauca* can be present. On nutrient-rich sites (rich swamps or flooded sites) with primarily mineral soils and where water tables draw down during the growing season, broad-leaved deciduous trees often dominate. *Populus balsamifera, Populus tremuloides, Betula papyrifera*, and *Picea glauca* are common across all regions. In Alberta, Saskatchewan and Manitoba, *Acer negundo* may also be an important constituent. East of the Manitoba-Ontario border, *Fraxinus nigra, Thuja occidentalis*, and *Abies balsamea* are prevalent. In Alaska, *Populus balsamifera ssp. balsamifera* is the dominant deciduous tree in floodplains in the continental boreal region, while *Populus balsamifera ssp. trichocarpa* is dominant in the subboreal region. *Picea glauca* may be codominant in mid-seral stages and becomes dominant in late-seral stages. *Picea x lutzii* replaces *Picea glauca* in the transitional region between the subboreal and temperate biomes.

The moss flora of rich swamps (rich wooded fens) is dominated by brown mosses (e.g., *Tomentypnum nitens, Aulacomnium palustre*). Rich swamps with standing and flowing water and higher nutrient status support *Salix* spp. and *Betula* spp. shrubs as well as a higher diversity of sedges (especially *Carex* spp.) and grasses (especially *Calamagrostis canadensis*). *Cornus sericea* and, especially in eastern Canada, *Alnus incana* are important shrub species on nutrient-rich sites. The understories of hardwood swamps on moist, rich sites are typically vigorous and species-rich because of high light levels beneath the transmissive canopies of these small-leaved broadleaf trees. In Alaska, *Alnus viridis ssp. sinuata* occurs more commonly in the subboreal, while *Alnus viridis ssp. fruticosa* is more common to the north in the continental boreal. *Alnus incana ssp. tenuifolia* occurs on poorly drained floodplain terraces in both boreal regions. *Salix alaxensis* is the most common willow across both the subboreal and boreal regions. Other common willows include *Salix pulchra* and *Salix barclayi* (subboreal only).

IVC Geographic Range: This type is found across the North American boreal region, from Alaska to Newfoundland.

IVC Nations: CA,US

IVC States/Provinces: AB, AK, BC?, LB, MB, ME, MI, MN, NB, NF, NH, NS, NY, ON, PE?, QC, SK, VT, WI, YT

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments:

Groups in Canada:

- **G810 Atlantic Boreal Rich Treed Wetland [Forêts inondées et marécages riches dans la région boréale de l'Atlantique]**
- **G809 Ontario-Quebec Boreal Rich Treed Wetland [Forêts inondées et marécages riches de la zone boréale de l'Ontario et du Québec]**
- **G844 West-Central Boreal Rich Treed Wetland [Marécages riches et forêts inondées de la Codillère boréale]**
- **G548 Alaskan-Yukon Boreal Flooded & Rich Swamp []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al.

IVC Description Author: D. Faber-Langendoen and G. Kittel
IVC Description Date: 2017-03-29
IVC Acknowledgments:

G810 Atlantic Boreal Rich Treed Wetland

Forêts inondées et marécages riches dans la région boréale de l'Atlantique

IVC Colloquial Name: Atlantic Boreal Flooded & Rich Swamp Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept: The CNVC concept CG0018 appears to be the same as this IVC concept (G810), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept: This group occurs in the Atlantic Boreal region of Canada (Newfoundland and Labrador) and occurs on wet, nutrient-rich organic soils, often in the transition between upland forests and open peatlands. Tree dominants include *Picea mariana, Abies balsamea* and *Larix laricina.* Shrubs include *Alnus incana* and *Cornus stolonifera.* A full characterization is needed.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: LB, ME, NB?, NF, NS?, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0018
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00042 *Picea mariana* / *Carex* spp. / *Rhytidiadelphus triquetrus* Alliance** [Black Spruce / Sedge species / Rough Gooseneck Moss Alliance] [Épinette noire / Carex / Ébouriffe triangulaire]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00042 Black Spruce / Sedges / Electrified Cat's-tail Moss

Épinette noire / Carex / Ébouriffe triangulaire
Picea mariana / *Carex* spp. / *Rhytidiadelphus triquetrus* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00293** ***Picea mariana / Sanguisorba canadensis / Rhytidiadelphus triquetrus*** [Black Spruce / Canada Burnet / Electrified Cat's-tail Moss] [Épinette noire / Sanguisorbe du Canada / Ébouriffe triangulaire]
  GNR.
- **CNVC00303** ***Picea mariana / Carex* spp. / *Rhytidiadelphus triquetrus*** [Black Spruce / Sedge species / Rough Gooseneck Moss] [Épinette noire / Carex / Hypne triquètre]
  GNR.
- **CNVC00353** ***Picea mariana / Alnus incana / Carex vaginata / Rhytidiadelphus triquetrus*** [Black Spruce / Gray Alder / *Carex vaginata* / Rough Gooseneck Moss] [Épinette noire / Aulne rugueux / Carex engaîné / Ébouriffe triangulaire]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G809 Ontario-Quebec Boreal Rich Treed Wetland

Forêts inondées et marécages riches de la zone boréale de l'Ontario et du Québec

IVC Colloquial Name: Ontario-Québec Boreal Flooded & Rich Swamp Forest
View on NatureServe Explorer

OVERVIEW

CNVC Concept: The CNVC concept CG0021 appears to be the same as this IVC concept (G809), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.

IVC Concept: This is a moderately to richly minerotrophic forested peatland or floodplain type found across the eastern boreal regions of Canada, extending southward to the most northern Great Lakes region and most northern parts of the glaciated northeastern United States. Stands are typically found in glacial lakeplains, poorly drained basins, and kettleholes, with level, wet, poorly drained organic soils, and a shallow to thick layer of moderately decomposed peat. The pH typically exceeds 5.5. Trees form a partial to full cover over most or all of the peatland. Dominant trees include *Picea mariana, Abies balsamea, Larix laricina, Betula papyrifera*, and, less commonly, *Picea glauca* and *Thuja occidentalis*, either solely or in combination. On nutrient-rich flooded sites with primarily mineral soils and where water tables draw down during the growing season, broad-leaved deciduous trees often dominate. *Populus balsamifera, Populus tremuloides, Betula papyrifera*, and *Picea glauca* are common across all regions. In Alberta, Saskatchewan and Manitoba, *Acer negundo* may also be an important constituent. East of the Manitoba-Ontario border, *Fraxinus nigra, Thuja occidentalis*, and *Abies balsamea* are prevalent. Tall shrubs, especially *Alnus incana* and regenerating tree species, may form an open to dense, almost impenetrable layer. Other tall shrubs include *Acer spicatum, Cornus sericea, Sorbus americana, Sorbus decora, Salix* spp., *Ilex mucronata*, and *Viburnum nudum var. cassinoides* (in Quebec). Low shrubs and herbs are common in the understory. A sparse to moderately well-developed low-shrub layer contains ericaceous species such as *Ledum groenlandicum, Gaultheria hispidula, Vaccinium angustifolium*, and *Vaccinium myrtilloides*, but also includes minerotrophic species, such as *Lonicera canadensis* and *Ribes* spp., as well as *Linnaea borealis*. The diverse herb layer includes the sedges *Carex disperma, Carex leptalea, Carex trisperma*, and the forbs *Clintonia*

borealis, Coptis trifolia, Cornus canadensis, Equisetum spp., *Lycopodium annotinum, Maianthemum canadense, Maianthemum trifolium, Oxalis montana, Rubus pubescens*, and *Trientalis borealis*. Fern species, including *Osmunda cinnamomea, Osmunda claytoniana, Gymnocarpium dryopteris*, and *Dryopteris* spp., can be abundant in richer stands. Mosses range from partial mats of sphagnum (especially *Sphagnum fuscum, Sphagnum girgensohnii, Sphagnum magellanicum*) and feathermosses (*Hylocomium splendens, Pleurozium schreberi*, and *Ptilium crista-castrensis*), especially on hummocks, to brown moss species, especially in hollows.

IVC Dynamics:

IVC Environment: Stands are intermediate to rich in minerals and moderate to high pH. The pH typically exceeds 5.5 (Minnesota DNR 2003). Stands are typically found in glacial lakeplains, poorly drained basins, and kettleholes, with level, wet, poorly drained organic soils, and a shallow to thick layer of peat. The peat is moderately decomposed (hemic). During high water levels, pools may form on the peat surface, but undulating topography and low hummocks at the base of trees provide substrates that remain dry and aerated enough to support trees and shrubs (Minnesota DNR 2003).

DISTRIBUTION

IVC Geographic Range: This group is found in eastern Canada (excluding Atlantic Canada), extending into the most northern parts of northern New England (Maine, New Hampshire, Vermont, and parts of New York) and the Great Lakes region (particularly in northern Minnesota, Wisconsin and Michigan). Separation of an Atlantic boreal region type is under review.

IVC Nations: CA,US

IVC States/Provinces: LB, MB, ME, MI, MN, NB, NF, NH, NS, NY, ON, PE?, QC, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Elcode: CG0021

CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00047 *Abies balsamea - Betula papyrifera - Picea mariana / Alnus incana / Carex* spp. / *Sphagnum* spp.** [Balsam Fir - Paper Birch - Black Spruce / Gray Alder / Sedge species / Peat Moss species] [Sapin baumier (Épinette noire) / Aulne rugueux / Carex / Sphaignes]
- **CA00048 Ontario-Quebec Boreal Floodplain Forest** [Ontario-Quebec Boreal Floodplain Forest] []
- **A3829 *Picea mariana - Abies balsamea / Osmunda cinnamomea* Swamp Forest Alliance** [Black Spruce - Balsam Fir / Cinnamon Fern Swamp Forest Alliance] []
  This intermediate black spruce - balsam fir swamp alliance is dominated by a mix of boreal conifers, and northern hardwood and conifer species are essentially absent. It is found in eastern Canada, excluding the Atlantic boreal region, and adjacent northern regions of the northeastern United States from the western Great Lakes to northern New England.
- **A3828 *Picea mariana - Larix laricina / Alnus incana* Swamp Forest Alliance** [Black Spruce - Tamarack / Gray Alder Swamp Forest Alliance] []
  This rich black spruce - tamarack swamp alliance is dominated by boreal conifers with minerotrophic indicators such as *Alnus incana*. It is found in eastern Canada, excluding the Atlantic boreal region, and adjacent northern regions of the northeastern United States from the western Great Lakes to northern New England.
- **A3888 *Populus balsamifera - Fraxinus nigra* Boreal Floodplain Forest Alliance** [Balsam Poplar - Black Ash Boreal Floodplain Forest Alliance] []
  This boreal floodplain forest is found in eastern Canada, and possibly the adjacent U.S., and is characterized by *Populus balsamifera* and *Fraxinus nigra*.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2015)

IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2015-06-08
IVC Acknowledgments:

CA00047 Balsam Fir - Paper Birch - Black Spruce / Gray Alder / Sedge species / Peat Moss species

Sapin baumier (Épinette noire) / Aulne rugueux / Carex / Sphaignes
Abies balsamea - Betula papyrifera - Picea mariana / Alnus incana / Carex spp. / *Sphagnum* spp.

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00299 *Abies balsamea / Alnus incana / Sphagnum* spp.** [Balsam Fir / Gray Alder / Peat Moss species] [Sapin baumier / Aulne rugueux / Sphaignes]
  GNR.
- **CNVC00275 *Betula papyrifera - Abies balsamea - Picea mariana / Alnus incana / Sphagnum* spp.** [Paper Birch - Balsam Fir - Black Spruce / Gray Alder / Peat Moss species] [Bouleau à papier - Sapin baumier - Épinette noire / Aulne rugueux / Sphaignes]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00048 Ontario-Quebec Boreal Floodplain Forest

[ ]
Ontario-Quebec Boreal Floodplain Forest

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3829 Black Spruce - Balsam Fir / Cinnamon Fern Swamp Forest Alliance

[ ]

Picea mariana - Abies balsamea / Osmunda cinnamomea Swamp Forest Alliance

Black Spruce - Balsam Fir Intermediate-Rich Swamp Forest

IVC Scientific Name: *Picea mariana - Abies balsamea / Osmunda cinnamomea* Swamp Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This intermediate-rich black spruce - balsam fir swamp alliance is found in eastern Canada, excluding the Atlantic boreal region, and adjacent northern regions of the northeastern United States from the western Great Lakes to northern New England. It is dominated by *Picea mariana*, with *Abies balsamea, Betula papyrifera, Larix laricina*, or *Picea glauca* occasional to codominant. Northern hardwood and conifer species such as *Acer rubrum, Betula alleghaniensis*, and *Tsuga canadensis* are essentially absent. The sphagnum layer is well-developed. Ericaceous shrubs are mixed with more minerotrophic shrubs, such as *Alnus incana, Acer spicatum, Ilex mucronata, Viburnum nudum var. cassinoides*, and *Ribes* spp. Minerotrophic herbs, such as *Mitella nuda*, fern species (*Dryopteris* spp., *Osmunda claytoniana, Osmunda cinnamomea, Gymnocarpium dryopteris*), and *Rubus pubescens* are usually present.

IVC Dynamics:

IVC Environment: This vegetation is commonly associated with wetlands influenced by moderately minerotrophic groundwater, in poorly drained depressions with substantial peat accumulation, along streams, or on slopes with emergent groundwater seepage evident as rivulets at the surface. Soils range from organic to mineral (Sims et al. 1989, MNNHP 1993). The groundwater is usually moderately minerotrophic and has circumneutral pH (Schwintzer and Tomberlin 1982, Wilcox et al. 1986).

DISTRIBUTION

IVC Geographic Range: This type is found in eastern Canada and adjacent northern regions of the northeastern United States from the western Great Lakes to possibly northern New England.
IVC Nations: CA,US
IVC States/Provinces: MB, ME?, MI, MN, NB, NF, NH?, NS, NY?, ON, QC, VT?, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002452 *Picea mariana / Alnus incana / Sphagnum* spp. Swamp Forest** [Black Spruce / Gray Alder / Peatmoss species Swamp Forest] []
  G5 (1996-10-03) MB, MI, MN, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: A.G. Harris et al. (1996)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-09-26
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by K. Baldwin.

A3828 Black Spruce - Tamarack / Gray Alder Swamp Forest Alliance

[ ]
Picea mariana - Larix laricina / Alnus incana Swamp Forest Alliance
Black Spruce - Tamarack Intermediate Swamp Forest

IVC Scientific Name: *Picea mariana - Larix laricina / Alnus incana* Swamp Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This rich black spruce - tamarack swamp alliance is found in eastern Canada, excluding the Atlantic boreal region, and adjacent northern regions of the northeastern United States from the western Great Lakes to northern New England. It is dominated by *Picea mariana, Larix laricina*, and *Abies balsamea*, with occasional *Betula papyrifera* or *Picea glauca*. The broad-leaved shrub layer is typically dense, dominated by *Alnus incana*, with moderate to abundant low ericaceous shrubs such as *Ledum groenlandicum*. The sphagnum layer is partially to fully developed. In the herb layer, minerotrophic species such as *Carex* spp., *Mitella nuda, Ribes* spp., and *Rubus pubescens* are commonly present.
IVC Dynamics:
IVC Environment: Stands are found on poorly drained sites, usually with intermediate to alkaline, organic soils but sometimes on wet mineral soils (Sytsma and Pippen 1981b, Sims et al. 1989). Most stands of this alliance have moderate to rich nutrient status (MNNHP 1993). Fires can spread through stands of this alliance in dry years and kill many of the thin-barked *Larix laricina*. Insect infestations, notably by the larch sawfly, can also cause great damage (Eyre 1980).

DISTRIBUTION

IVC Geographic Range: This rich black spruce - tamarack swamp alliance is found in eastern Canada, excluding the Atlantic boreal region, and adjacent northern regions of the northeastern United States from the western Great Lakes to northern New England.
IVC Nations: CA,US
IVC States/Provinces: MB?, ME?, MI?, MN, NB, NF, NH?, NS, NY?, ON, QC, VT?, WI?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: A.G. Harris et al. (1996)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-09-26
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by K. Baldwin.

A3888 Balsam Poplar - Black Ash Boreal Floodplain Forest Alliance

[ ]
Populus balsamifera - Fraxinus nigra Boreal Floodplain Forest Alliance
Eastern Boreal Floodplain Forest

IVC Scientific Name: *Populus balsamifera - Fraxinus nigra* Boreal Floodplain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This boreal floodplain forest is found in eastern Canada, and the adjacent U.S. The tree layer is characterized by *Populus balsamifera* and *Fraxinus nigra*. The shrub layer is characterized by *Alnus incana* and *Cornus sericea*. The herbaceous layer is often dominated by the ferns *Onoclea sensibilis* and *Matteuccia struthiopteris*. Other associates of the herbaceous layer include *Athyrium filix-femina, Calamagrostis canadensis, Carex vesicaria, Clematis virginiana, Laportea canadensis, Rubus pubescens*, and *Solidago flexicaulis*. This vegetation occupies the silty floodplains of mid-sized rivers in parts of Quebec, Ontario and the Canadian Maritime Provinces, and possibly northern Maine. Flooding frequency and duration are usually less than that of more southern floodplains characterized by *Acer saccharinum*.
IVC Dynamics: Flooding frequency and duration are usually less than that of more southern floodplains characterized by *Acer saccharinum*.
IVC Environment: This vegetation occupies the silty floodplains of mid-sized rivers of parts of Quebec, Ontario and the Canadian Maritime Provinces, and northern Maine. Flooding frequency and duration are usually less than that of more southern floodplains characterized by *Acer saccharinum*.

DISTRIBUTION

IVC Geographic Range: This alliance ranges across boreal parts of eastern Canada, from Ontario east to the Maritimes, and adjacent U.S.
IVC Nations: CA,US
IVC States/Provinces: LB, MB?, ME, MN?, NB, NF, NH?, ON, QC, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL006432 *Populus balsamifera - Fraxinus nigra / Matteuccia struthiopteris* Forest** [Balsam Poplar - Black Ash / Ostrich Fern Forest] []
  GNR. ME, NB, QC, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S.C. Gawler and A. Cutko (2010)
IVC Description Author: D. Faber-Langendoen and L. Sneddon
IVC Description Date: 2015-06-09
IVC Acknowledgments:

G844 West-Central Boreal Rich Treed Wetland

Marécages riches et forêts inondées de la Codillère boréale

IVC Colloquial Name: West-Central Boreal Flooded & Rich Swamp
View on NatureServe Explorer

OVERVIEW

CNVC Concept: The CNVC concept CG0024 appears to be the same as this IVC concept (G844), so the CNVC type has been provisionally replaced with the IVC type in the CNVC.
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: AB, BC?, MB, SK, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Elcode: CG0024
CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CA00051 *Picea mariana* - *Larix laricina* / *Carex* spp. / *Aulacomnium palustre* Alliance** [Black Spruce - Tamarack / Sedge species / Ribbed Bog Moss Alliance] [Épinette noire - Mélèze laricin / Carex / Aulacomnie des marais]
- **CA00050 *Picea mariana* (*Larix laricina*) / *Vaccinium vitis-idaea* - *Equisetum* spp. Alliance** [Black Spruce (Tamarack) / Lingonberry - Horsetail species Alliance] [Épinette noire (Mélèze laricin) / Airelle rouge / Prêle]
- **CA00049 *Picea mariana* / *Rhododendron groenlandicum* / *Vaccinium vitis-idaea* / *Sphagnum* spp. Alliance** [Black Spruce / Common Labrador-tea / Lingonberry / Peatmoss species Alliance] [Épinette noire / Thé du Labrador / Airelle rouge / Sphaignes]
- **CA00052 *Populus balsamifera* / *Alnus incana* - *Rosa acicularis*** [Balsam Poplar / Gray Alder - Prickly Rose] [Peuplier baumier / Aulne blanc - Rosier aciculaire]

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00050 Black Spruce (Tamarack) / Lingonberry - Horsetails

Épinette noire (Mélèze laricin) / Airelle rouge / Prêle
Picea mariana (*Larix laricina*) / *Vaccinium vitis-idaea* - *Equisetum* spp. Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00327** ***Picea mariana - Larix laricina / Vaccinium vitis-idaea - Mitella nuda*** [Black Spruce - Tamarack / Lingonberry - Naked Miterwort] [Épinette noire - Mélèze laricin / Airelle rouge - Mitrelle nue]
  GNR.
- **CNVC00130** ***Picea mariana / Equisetum arvense (E. pratense) / Hylocomium splendens*** [Black Spruce / Field Horsetail (Meadow Horsetail) / Stairstep Moss] [Épinette noire / Prêle des champs (Prêle des prés) / Hylocomie brillante]
  GNR.
- **CNVC00114** ***Picea mariana / Salix myrtillifolia / Hylocomium splendens - Aulacomnium palustre*** [Black Spruce / Low Blueberry Willow / Ribbed Bog Moss – Stairstep Moss] [Épinette noire / Saule à feuilles de myrtille / Aulacomnie des marais – Hylocomie brillante]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00051 Black Spruce - Tamarack / Sedges / Ribbed Bog Moss

Épinette noire - Mélèze laricin / Carex / Aulacomnie des marais
Picea mariana - Larix laricina / *Carex* spp. / *Aulacomnium palustre* Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00116** ***Larix laricina - Picea mariana / Betula pumila - B. glandulosa / Tomentypnum nitens*** [Tamarack – Black Spruce / Bog Birch – Glandular Birch / Golden Fuzzy Fen Moss] [Mélèze laricin – Épinette noire / Bouleau nain boréal – Bouleau glanduleux / Tomenteuse à feuilles droites]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00049 Black Spruce / Common Labrador Tea / Lingonberry / Peat Mosses

Épinette noire / Thé du Labrador / Airelle rouge / Sphaignes
Picea mariana / *Rhododendron groenlandicum* / *Vaccinium vitis-idaea* / *Sphagnum* spp. Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00113** ***Picea mariana* / *Equisetum arvense* (*E. pratense*) / *Sphagnum* spp.** [Black Spruce / Field Horsetail (*E. pratense*) / Peat Moss species] [Épinette noire / Prêle des champs (Prêle des prés) / Sphaignes]
  GNR.
- **CNVC00112** ***Picea mariana / Vaccinium vitis-idaea / Sphagnum spp.*** [Black Spruce / Lingonberry / Peat Mosses] [Épinette noire / Airelle rouge / Sphaignes]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CA00052 Balsam Poplar / Gray Alder - Prickly Rose

Peuplier baumier / Aulne blanc - Rosier aciculaire

Populus balsamifera / *Alnus incana - Rosa acicularis*

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00077 *Populus balsamifera* (*Picea glauca*) / *Alnus incana - Cornus stolonifera*** [Balsam Poplar (White Spruce) / Gray Alder - *Cornus stolonifera*] []
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G548 Alaskan-Yukon Boreal Flooded & Rich Swamp

[ ]

IVC Colloquial Name: Alaskan-Yukon Boreal Flooded & Rich Swamp

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group includes glacially-fed and non-glacially-fed, low- and high-volume rivers and streams throughout the boreal and subboreal regions of Alaska. It occurs on active and inactive portions of the floodplain. The substrate is typically well-drained sand or cobble, although silts are found on higher terraces, distal floodplains, and in lower-energy systems. Frequent river channel migration, flooding, scour and other fluvial processes constitute the major disturbances in this type. Vegetation is variable, and may be dominated by short- or tall-statured *Populus balsamifera ssp. balsamifera, Populus balsamifera ssp. trichocarpa, Picea glauca, Salix* species, or *Alnus viridis* with mesic herbaceous species. Stands of full-statured *Populus balsamifera* often have an understory of tall willow, *Calamagrostis canadensis*, ferns and scattered forbs.

IVC Dynamics: Flooding is the dominant process for this group and can be caused by snowmelt, precipitation, ice jams, and glacial runoff. Different rivers or portions of rivers may be more prone to certain types of flooding. Frequent flooding and channel migration create a pattern of gravel bars and early-successional stages across the valley bottom. Sediment deposition raises the surface of the floodplain over time. As the terrace becomes farther removed from the channel, flooding becomes less frequent. Water availability on terraces plays a major role in community structure and composition. Water inputs are from overbank flow

(flooding), groundwater, and precipitation. Fine sediments are trapped when the floodwaters recede; this ongoing sediment input maintains high productivity.

IVC Environment: This group includes large floodplains associated with high- and low-volume rivers. Flooding regime is characterized by large spring floods at breakup. The active flooding zone is often several kilometers wide. Ice-scour and ice dams are important dynamics that may cause regeneration of early-seral willow stands where scoured by ice. Wetland development in abandoned channels is intermixed with succession on more mesic sites. The substrate is typically well-drained sand, gravel, or cobble, although finer silts and clays can be found on higher terraces, in ponds, on distal floodplains, and in lower-energy systems. Permafrost is usually absent.

DISTRIBUTION

IVC Geographic Range: This group occurs along glacially-fed and non-glacially-fed rivers and streams throughout the boreal and boreal transition regions of Alaska.

IVC Nations: CA,US

IVC States/Provinces: AK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Standard

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4266 *Betula papyrifera - Picea* spp. Central Floodplain Forest Alliance** [Paper Birch - Spruce species Central Floodplain Forest Alliance] []
- **A4265 *Picea glauca - Populus balsamifera / Alnus viridis ssp. crispa* Central Floodplain Forest Alliance** [White Spruce - Balsam Poplar / Mountain Alder Central Floodplain Forest Alliance] []
- **A4267 *Picea glauca - Populus balsamifera / Salix alaxensis* Northern Floodplain Forest Alliance** [White Spruce - Balsam Poplar / Feltleaf Willow Northern Floodplain Forest Alliance] []
- **A4268 *Picea glauca - Populus balsamifera ssp. trichocarpa / Viburnum edule* Southwest Floodplain Forest Alliance** [White Spruce - Black Cottonwood / Squashberry Southwest Floodplain Forest Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program

IVC Description Author: T. Boucher

IVC Description Date: 2016-01-19

IVC Acknowledgments: M.E. Hall

A4266 Paper Birch - Spruce species Central Floodplain Forest Alliance

[ ]

Betula papyrifera - Picea spp. Central Floodplain Forest Alliance

Central Alaskan-Yukon Spruce - Birch Floodplain Forest

IVC Scientific Name: *Betula papyrifera - Picea* spp. Central Floodplain Forest Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4265 White Spruce - Balsam Poplar / Mountain Alder Central Floodplain Forest Alliance

[ ]
Picea glauca - Populus balsamifera / Alnus viridis ssp. crispa Central Floodplain Forest Alliance
Central Alaskan-Yukon Spruce - Poplar Floodplain Forest

IVC Scientific Name: *Picea glauca - Populus balsamifera / Alnus viridis ssp. crispa* Central Floodplain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00414** ***Populus balsamifera* / *Salix* spp. / *Lupinus arcticus* - *Chamerion angustifolium*** [Balsam Poplar / Willow species / Arctic Lupine - Fireweed] [Peuplier baumier / Saules / Lupin Arctique - Épilobe à feuilles étroites]
  GNR.
- **CNVC00413** ***Picea glauca - Populus balsamifera / Shepherdia canadensis - Geocaulon lividum / Hylocomium splendens*** [White Spruce - Balsam Poplar / Russet Buffaloberry - False Toadflax / Splendid Feathermoss] [Épinette blanche - Peuplier baumier / Shépherdie du Canada - Comandre livide / Hylocomie brillante]
  GNR.

- **CNVC00422 *Picea glauca - Populus balsamifera / Viburnum edule / Equisetum* spp.** [White Spruce - Balsam Poplar / Squashberry / Horsetail species] [Épinette blanche - Peuplier baumier / Viorne comestible / Prêles]
  GNR.
- **CNVC00101 *Picea glauca / Elaeagnus commutata*** [White Spruce / Silverberry] [Épinette blanche / Chalef argenté]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4267 White Spruce - Balsam Poplar / Feltleaf Willow Northern Floodplain Forest Alliance

[ ]
Picea glauca - Populus balsamifera / Salix alaxensis Northern Floodplain Forest Alliance
Northern Alaskan-Yukon Spruce - Poplar Floodplain Forest

IVC Scientific Name: *Picea glauca - Populus balsamifera / Salix alaxensis* Northern Floodplain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4268 White Spruce - Black Cottonwood / Squashberry Southwest Floodplain Forest Alliance

[ ]
Picea glauca - Populus balsamifera ssp. trichocarpa / Viburnum edule Southwest Floodplain Forest Alliance

Southwest Alaskan Spruce - Black Cottonwood Floodplain Forest

IVC Scientific Name: *Picea glauca - Populus balsamifera ssp. trichocarpa / Viburnum edule* Southwest Floodplain Forest Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

2. SHRUB & HERB VEGETATION

Grasslands, shrublands, open tree savannas, marshes, bogs and fens dominated by broadly mesomorphic (including scleromorphic) shrub and herb growth forms (including *broad-leaved, needle-leaved*, and *sclerophyllous shrubs*, and *forb* and *graminoid herbs*) with an irregular horizontal canopy structure, mesomorphic trees typically <10% cover (but tropical tree savannas typically <40%), tropical to boreal and subalpine climates, and wet to dry substrate conditions.

2.B. Temperate & Boreal Grassland & Shrubland

Temperate & Boreal Grassland & Shrubland is dominated by mesomorphic grasses and shrubs, with or without scattered trees (and trees typically <10% cover), ranging from temperate coastal to inland lowland and montane grasslands and shrublands, with a strongly seasonal climate and at least some frost to extended cold seasons.

2.B.2. Temperate Grassland & Shrubland

Temperate Grassland, Meadow & Shrubland is dominated by perennial grasses, forbs and shrubs typical of moderately dry to moist habitats and is found in the mid-latitude regions of all continents (23° to 55°N and S), varying from large open grassland landscapes to droughty hillside meadows in forested landscapes.

Macrogroups in Canada:

- **M054 Central Lowlands Tallgrass Prairie [Prairies à graminées hautes des basses terres centrales]**
  This Great Plains tallgrass prairie macrogroup is dominated by a suite of tall and mid-height grasses and forbs, including the grasses *Andropogon gerardii, Panicum virgatum, Schizachyrium scoparium, Sorghastrum nutans, Sporobolus heterolepis*, and *Tripsacum dactyloides*. It is found over a range of moisture conditions on glaciated and unglaciated soils from Texas to Manitoba. Because of the relatively moist climate, the type is dependent on fire for maintenance of species richness and suppression of woody plant encroachment.
- **CM051 Great Plains Mixedgrass Prairie [Prairies de graminées mixtes des Grandes Plaines]**
- **CM332 Great Plains Rough Fescue Prairie [Prairies de fétuque de Hall des Grandes Plaines]**
- **M052 Great Plains Sand Grassland & Shrubland []**
  This Great Plains macrogroup is found from Texas to southern Canada on somewhat excessively to excessively well-drained, deep sandy to loamy sand soils and contains grasses and scattered to moderately dense shrubs well-adapted to these soil conditions. Wind erosion, grazing and fire can significantly impact this macrogroup.
- **M498 Great Plains Ruderal Grassland & Shrubland []**
  This macrogroup is found on dry to mesic sites in the central and western Great Plains dominated by exotic herbaceous species or deciduous shrubs.
- **M505 Laurentian-Acadian Acidic Rocky Scrub & Grassland [Arbustaies et herbaçaies laurentiennes et acadiennes sur sol acide sur roc]**
  This macrogroup comprises infertile scrub vegetation characterized by variable cover of ericaceous shrubs or heath, graminoids, lichens, mosses, and occasional scattered trees, occurring on sandplains and rock outcrops in cool temperate regions of northeastern and north-central North America.
- **M507 Laurentian-Acadian Calcareous Scrub & Grassland [Arbustaies et herbaçaies laurentiennes et acadiennes sur sol calcaire]**
  This macrogroup encompasses open shrub, stunted or very sparse tree, and herb calcareous rocky vegetation, including rocky outcrops and limestone pavements (alvars). It is found in isolated patches in the Laurentian-Acadian region of southeastern Canada and the northeastern United States.
- **M123 Eastern North American Ruderal Grassland & Shrubland []**
  These ruderal grasslands and shrublands are found in the northern and central regions of the eastern United States on sites that have been cleared and plowed (for farming or development) and then abandoned, and are now dominated by a wide variety of exotic and weedy native forbs, grasses, ferns, and shrubs, but have not succeeded to a recognizable native type.
- **M048 Central Rocky Mountain Montane-Foothill Grassland & Shrubland [Prairies et arbustaies montagnardes et des contreforts des Rocheuses centrales]**
  This macrogroup occurs in the foothills and mountains throughout the Central Rockies, from central and eastern Wyoming north and west into British Columbia and Alberta and is composed of shrub- and/or herbaceous-dominated stands forming shrublands, shrub-steppe, or grasslands. Characteristic shrubs include *Acer glabrum, Amelanchier alnifolia, Holodiscus discolor, Menziesia ferruginea, Physocarpus malvaceus, Symphoricarpos albus, Symphoricarpos occidentalis*, and species of *Prunus, Rhus, Ribes, Rosa, Rubus parviflorus, Spiraea*, and *Vaccinium*. The herbaceous layer is characterized by *Festuca idahoensis, Pseudoroegneria spicata*, and other cool-season graminoids.
- **M168 Rocky Mountain-Vancouverian Subalpine-High Montane Mesic Meadow [Prairies mésiques subalpines et de haute montagne des Rocheuses et de la région de Vancouver]**
  This macrogroup includes montane and subalpine mesic meadows from the Rocky Mountains west to the Sierra Nevada and eastern Cascades, and drier grasslands from the southern Rocky Mountains west in the high plateaus and ranges. Vegetation is composed of low (<1 m) open to dense perennial graminoid layer. Characteristic grassland species include *Danthonia intermedia, Danthonia parryi, Festuca arizonica, Festuca thurberi*, and *Muhlenbergia montana* in montane and subalpine grasslands in the southern Rocky Mountains. Dominant mesic meadow species include *Achillea millefolium, Carex spectabilis, Chamerion angustifolium, Erigeron speciosus, Lupinus latifolius, Senecio hydrophiloides, Senecio serra, Solidago canadensis, Symphyotrichum* spp., *Thalictrum occidentale*, and *Zigadenus elegans*.
- **M050 Southern Vancouverian Lowland Grassland & Shrubland [Prairies et arbustaies des basses terres de la région de Vancouver Sud]**
  This macrogroup consists of dry to mesic grasslands with patches of dwarf-shrublands found along the Pacific Coast on terraces and ridgeline balds at low elevations on the lee side of coastal mountains. Dominant species include *Festuca rubra, Festuca idahoensis ssp. roemeri*, and/or *Danthonia californica*. Shrub and dwarf-shrub species may include *Arctostaphylos uva-ursi,*

Arctostaphylos columbiana, Arctostaphylos nevadensis, Baccharis pilularis, Gaultheria shallon, Juniperus communis, Rosa nutkana, Symphoricarpos albus, and *Vaccinium ovatum*. It is found from Vancouver Island down the Pacific Coast to central California.

- **M172 Northern Vancouverian Lowland-Montane Grassland & Shrubland [Prairies et arbustaies montagnardes et des basses terres de la région de Vancouver Nord]**
  This macrogroup consists of low to tall shrublands, meadows, and mosaics of the two in coastal and southeastern Alaska and British Columbia. Shrublands dominate and characteristic species include, but are not limited to, *Alnus viridis, Rubus spectabilis, Salix alaxensis, Salix barclayi, Salix glauca, Elliottia pyroliflora, Athyrium filix-femina, Calamagrostis canadensis, Chamerion angustifolium, Heracleum maximum*, and *Veratrum viride*.
- **M493 Western North American Ruderal Grassland & Shrubland []**
  This upland macrogroup contains ruderal grasslands, meadows and shrublands found on human-disturbed sites, and dominated by non-native and generalist native species that occur in temperate areas throughout the western U.S. (Rockies westward) and southwestern Canada.

M054 Central Lowlands Tallgrass Prairie

Prairies à graminées hautes des basses terres centrales

IVC Colloquial Name: Central Lowlands Tallgrass Prairie

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: M054 describes tallgrass prairie in central North America, in Canada found primarily in the Red River valley and adjacent parkland areas of southern Manitoba. Tallgrass prairie occurs as extensive grasslands south and west of the limit of tree growth in the eastern Great Plains and also forms the grassland patches that occur between forest/woodland groves in this part of the *Great Plains Parkland* vegetation zone. M054 is dominated by tall (up to 2 m) perennial grasses, such as big bluestem (*Andropogon gerardii*), prairie dropseed (*Sporobolus heterolepis*), yellow Indiangrass (*Sorghastrum nutans*) and old switch panicgrass (*Panicum virgatum*). Other important grasses include plains porcupine grass (*Hesperostipa spartea*), mat muhly (*Muhlenbergia richardsonis*), little bluestem (*Schizachyrium scoparium*), prairie junegrass (*Koeleria macrantha*) and slender wildrye (*Elymus trachycaulus*). Prairie cordgrass (*Spartina pectinata*), bluejoint reedgrass (*Calamagrostis canadensis*), slim-stemmed reedgrass (*C. stricta*) and sedges (*Carex* spp.) often occur on moist sites. Forbs can be abundant and often have high local diversity. Common forbs in the Canadian range include downy false indigo (*Amorpha canescens*), prairie pasqueflower (*Anemone patens*), purple prairie-clover (*Dalea purpurea*), narrow-leaved purple coneflower (*Echinacea angustifolia*), sunflowers (*Helianthus* spp.), eastern yellow stargrass (*Hypoxis hirsuta*), blazing stars (*Liatris* spp.), black-eyed Susan (*Rudbeckia hirta*), blue-eyed-grasses (*Sisyrinchium* spp.), goldenrods (*Solidago* spp.), asters (*Symphyotrichum* spp.) and golden alexanders (*Zizia aurea*).

In Canada, M054 occurs primarily in a subhumid continental temperate climate with cold winters and warm summers. Mean annual temperatures average approximately 2.8ËšC, and precipitation averages approximately 525 mm. Soils associated with most stands of M054 are generally developed in deep fine-textured sediments within the basin of glacial Lake Agassiz in southern Manitoba. However, tallgrass prairie also occurs on dry, shallow rocky sites and coarse-textured sands and gravels in southwestern Ontario and near Lake of the Woods in northwestern Ontario. Tallgrass prairie, in its broad definition, ranges southward to Texas and eastward to Michigan and Ohio. Historically, grazing, fire and periodic drought influenced species composition and distribution of native tallgrass prairie, but most of the historical range has been converted to annual cropland so very few unaltered examples persist on the landscape.

IVC Geographic Range: Tallgrass prairie occurs in a band from southern Manitoba, Canada, south to the Gulf coast of Texas and includes the Prairie Peninsula, where annual precipitation is considerably more than 50 cm (20 inches) a year. Tallgrass prairie may once have covered 150,000 square km (400,000 square miles). Most prairie has long since vanished under the plow. Large tracts are uncommon; many reserves are less than 0.08 square km (20 acres) in size. Important remnants occur in the Loess Hills of western Iowa, the Prairie Coteau in eastern South Dakota, the Flint Hills in Kansas, Osage Hills in Oklahoma, Osage Plains in Kansas, and the Fort Worth Prairie in Oklahoma and Texas (Woodward 2008).

IVC Nations: CA,MX?,US

IVC States/Provinces: AR, IA, IL, IN, KS, LA, MB, MI, MN, MO, ND, NE, OH, OK, ON, SD, TX, WI

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments: CNVC may recognize subtypes of M054 in the future (e.g., the southern Ontario condition), but this is pending development of Associations from ground plot data.

Sporobolus rigidus here refers to variety *rigidus* (prairie sandreed, calamovilfa à feuilles longues).

Groups in Canada:

- **G333 Central Tallgrass Prairie []**
- **G075 Northern Tallgrass Prairie []**

CNVC Concept Author: Ken Baldwin, Lorna Allen, USNVC
CNVC Concept Date: 2015-02-01
CNVC Description Author: Ken Baldwin, Jeff Thorpe
CNVC Description Date: 2016-03-01
IVC Primary Concept Source: J.E. Weaver and T.J. Fitzpatrick (1934)
IVC Description Author: S. Menard, J. Drake, D. Faber-Langendoen, B. Hoagland, D. Diamond
IVC Description Date: 2014-10-15
IVC Acknowledgments:

G333 Central Tallgrass Prairie

[ ]

IVC Colloquial Name: Central Tallgrass Prairie
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is found primarily in the central Midwestern states from northwestern Indiana to eastern Nebraska and northeastern Kansas. Dominant species are tallgrasses 1-2 m tall or tallgrasses mixed with midgrasses approximately 1 m tall. Vegetation cover is high except for the growing season after a fire. *Andropogon gerardii, Panicum virgatum*, and *Sorghastrum nutans* are typical tallgrasses while *Bouteloua curtipendula, Schizachyrium scoparium*, and *Sporobolus heterolepis* are typical midgrasses. A wide variety of forbs contribute to the vegetation cover. Trees and shrubs are widely scattered or absent in high-quality examples of this group. These tallgrass prairies occur on flat to rolling landscapes with deep, rich Mollisol soils. Fire is critical to maintain sites. A substantial reduction in fire frequency will allow woody plants or other grasses to become dominant and change the vegetation community. The great majority of sites where this group existed in the past have been converted to agricultural uses or succeeded to woodlands or shrublands due to a lack of fire.

IVC Dynamics: Disturbance is necessary to maintain and rejuvenate stands of this group. The climate and soils that support it will also support trees and/or shrubs. Historically, fire and/or grazing prevented woody species from taking over sites and also reduced litter from previous years' growth. Fire was a frequent event in tallgrass prairies. The fire-return interval for a given site in the Central Tallgrass Prairie region has been estimated to be 3-5 years (Wright and Bailey 1982b). This level of fire frequency prevents woody species from becoming established, prevents litter from accumulating, and allows a diverse assemblage of herbaceous species to grow. In addition to removing woody species, burning and/or clipping reduces litter and increases productivity for many native species in tallgrass prairie, including dominant grasses (Ehrenreich 1959). Without the removal of litter, these tallgrass prairies tend to experience a reduction in forb cover.

IVC Environment: *Soil/substrate/hydrology:* This group is characterized by deep, rich Mollisols, usually over 1 m deep. Soils can range from wet-mesic to dry-mesic and are not flooded or saturated regularly.

DISTRIBUTION

IVC Geographic Range: This group covered much of the presettlement landscape in USFS Ecoregions 251C and 251D (Cleland et al. 2007) which include eastern Nebraska, southern Iowa, northeastern Kansas, northern Missouri, central Illinois, and parts of northwestern Indiana. Smaller examples of this group extended further into all of those states and into many adjacent states.

IVC Nations: CA,US

IVC States/Provinces: AR, IA, IL, IN, KS, MI, MN, MO, NE, OH, ON, SD, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G1 rank that was calculated from closely related ecological system global ranks. A rank of G1 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: long-term decline very high and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4057 *Andropogon gerardii - Sorghastrum nutans - Coreopsis palmata* Central Grassland Alliance** [Big Bluestem - Indiangrass - Stiff Tickseed Central Grassland Alliance] []
  This mesic tallgrass prairie alliance occurs mainly in the glaciated midwestern United States and southern Ontario where the tallgrasses *Andropogon gerardii, Panicum virgatum*, and *Sorghastrum nutans* dominate the moderate to dense vegetation cover.
- **A4058 *Schizachyrium scoparium - Bouteloua curtipendula* Central Loamy Grassland Alliance** [Little Bluestem - Sideoats Grama Central Loamy Grassland Alliance] []
  This dry to dry-mesic prairie alliance is widespread in the midwestern United States and southern Ontario, typically on slopes with well-drained, thin soils over bedrock on or steep slopes where *Bouteloua curtipendula, Schizachyrium scoparium*, and *Sorghastrum nutans* are among the dominant species.
- **A4047 *Schizachyrium scoparium - Sorghastrum nutans* Central Sand & Gravel Grassland Alliance** [Little Bluestem - Indiangrass Central Sand & Gravel Grassland Alliance] []

This alliance is found in the central United States and southern Canada on shallow to deep, well-drained to excessively well-drained soils and contains moderate to dense cover of medium and tall grasses and a diverse mixture of forbs.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard, in Faber-Langendoen et al. (2011)
IVC Description Author: J. Drake
IVC Description Date: 2015-05-07
IVC Acknowledgments:

A4057 Big Bluestem - Indiangrass - Stiff Tickseed Central Grassland Alliance

[ ]
Andropogon gerardii - Sorghastrum nutans - Coreopsis palmata Central Grassland Alliance
Central Mesic Tallgrass Prairie

IVC Scientific Name: *Andropogon gerardii - Sorghastrum nutans - Coreopsis palmata* Central Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This mesic tallgrass prairie alliance occurs mainly in the glaciated midwestern United States and southern Ontario with outliers in north-central Kansas and adjacent Nebraska. Tallgrasses dominate the moderate to dense vegetation cover. *Andropogon gerardii* and *Sorghastrum nutans* are the most widespread and common species. *Panicum virgatum, Schizachyrium scoparium*, and *Sporobolus heterolepis* are frequent associated grasses. Forb composition tends to vary more than the grasses with a wide variety possible. *Aletris farinosa, Coreopsis palmata, Dalea candida, Eryngium yuccifolium, Helianthus pauciflorus ssp. pauciflorus, Liatris pycnostachya, Liatris spicata, Oligoneuron rigidum, Ratibida pinnata, Rosa carolina, Rudbeckia hirta*, and *Symphyotrichum ericoides* are a few. *Amorpha canescens*, a sub-shrub species, and *Salix humilis* are also typically present. This alliance is found on flat to rolling landscapes. Soils are usually fine-textured but one variant occurs on sandy soils near the southern Great Lakes.
IVC Dynamics: This alliance is found in a climate that can support trees and shrubs but woody vegetation is inhibited by frequent fires, periodic drought, and, historically, by grazing from large ungulates (Anderson 1990b). Historically, fire-return intervals were short, estimated at between 2 and 5 years (Stambaugh et al. 2006, Landfire 2007a). The frequent but unpredictable fires created a patchwork of habitats across the landscape, with recently burned sites having less litter and forb cover and sites with infrequent fires possibly having more woody species and dense stands of grasses (Kucera and Koelling 1964). Lack of fire, grazing, or mowing results in a decrease in productivity due to the soil surface staying cooler and shaded longer in the spring (Rice and Parenti 1978, Hulbert 1988). Lack of fire allows tree cover to increase rapidly, especially on lower, more mesic slopes (Heineman and Bragg 1982). This alliance is well-adapted to moderate grazing over time or heavy grazing for short periods, but when used as long-term pasture and with high stocking rates, the dominant native grasses are reduced or eliminated. Heavy haying or grazing or, if those are done consistently during the mid-summer months, negatively affects the dominant warm-season grasses by removing their biomass before they have flowered. Cool-season grasses and forbs which set seed earlier are favored by these activities. Native and non-native forbs, woody species, and C3 grasses increase in the absence of fire, especially when combined with grazing by livestock. Drier sites on hilltops or rocky soils persist longer but mesic sites on lower slopes can be invaded by trees and shrubs after just several years without fire. Non-native grasses have been planted for forage on some sites, as well.
IVC Environment: Stands of this alliance occur on flat to rolling topography. Soils are generally fertile, deep, slightly acidic, and moderately to well-drained (Curtis 1959, Tatina 1987). In glacial lakeplains near the Great Lakes, soils tend to be more poorly drained (Comer et al. 1995b). Soil moisture is generally mesic, although it can vary from dry-mesic to wet-mesic. Soil texture can range from clay loams to sands. Litter can build up quickly in these productive grasslands unless removed by fire, grazing, or haying.

DISTRIBUTION

IVC Geographic Range: This alliance is found from southern Minnesota south to north-central Kansas and northern Missouri and east to southern Michigan, southern Ontario, and western Ohio.
IVC Nations: CA,US
IVC States/Provinces: IA, IL, IN, KS, MI, MN, MO, NE, OH, ON, SD, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005096** ***Andropogon gerardii - Sorghastrum nutans - Schizachyrium scoparium - Aletris farinosa*** **Grassland** [Big Bluestem - Indiangrass - Little Bluestem - White Colicroot Grassland] []
  G2 (1998-06-22) IL, IN, MI, OH, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake and D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake and D. Faber-Langendoen
IVC Description Date: 2015-06-09
IVC Acknowledgments:

A4058 Little Bluestem - Sideoats Grama Central Loamy Grassland Alliance

[ ]
Schizachyrium scoparium - Bouteloua curtipendula Central Loamy Grassland Alliance
Central Dry Loamy Tallgrass Prairie

IVC Scientific Name: *Schizachyrium scoparium - Bouteloua curtipendula* Central Loamy Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This dry to dry-mesic tallgrass prairie alliance is widespread in the midwestern United States and southern Ontario. The vegetation is characterized by moderate to dense cover of medium and tall grasses and a diverse mixture of forbs. Woody species are absent to rare but can be uncommon in some communities. The most abundant species across the range of this alliance are *Bouteloua curtipendula, Schizachyrium scoparium*, and *Sorghastrum nutans*. Other graminoids species common in parts of this alliance are *Andropogon gerardii, Bouteloua hirsuta, Carex* spp., *Danthonia spicata, Hesperostipa spartea*, and *Sporobolus heterolepis*. Some of the many forbs which can be found in this alliance include *Symphyotrichum ericoides, Echinacea pallida, Helianthus* spp., *Stenaria nigricans var. nigricans* (in Illinois and Missouri), *Lespedeza capitata* (especially on sand), *Lithospermum canescens, Clinopodium arkansanum* (in Illinois), and *Solidago nemoralis*. Woody species that are found in stands of this alliance are those that can adapt to the dry to dry-mesic conditions. Stands of this alliance are found on gentle to moderately steep slopes or on flatter sites with thin soils over bedrock. The most prevalent slope aspects are south or west. Soils range from shallow to deep and are well-drained to excessively well-drained. Most are loams or sands, but some can be gravel or clay. These soils are formed from eolian or alluvial sand, limestone, dolomite, sandstone, glacial till, glacial outwash, chert, loess, or shale.
IVC Dynamics: Fire, climate, native grazing and edaphic factors all played a roll historically in maintaining an open structure in this vegetation. Loss of these natural processes often results in a decrease in native grass cover and increase in woody invaders. Threats to these communities include fire suppression, livestock grazing, and damage by feral hogs and vehicles. The current range of this alliance has been reduce greatly from its historic extent.
IVC Environment: Most stands of this alliance are found on steep to moderate slopes of various textures or flatter sites on thin soils over bedrock. (Curtis 1959, Nelson 1985). The most prevalent slope aspects are southern or western. Soils range from shallow to deep and are well-drained to excessively well-drained (White and Madany 1978, Chapman 1984). Most are stony loams or sands, but some can be gravel or clay.

DISTRIBUTION

IVC Geographic Range: This dry to dry-mesic prairie alliance is widespread in the midwestern United States and southern Ontario.
IVC Nations: CA,US
IVC States/Provinces: IA, IL, IN, KS, MI, MN, MO, OH, ON, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake and D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake and D. Faber-Langendoen
IVC Description Date: 2015-06-09
IVC Acknowledgments:

A4047 Little Bluestem - Indiangrass Central Sand & Gravel Grassland Alliance

[ ]
Schizachyrium scoparium - Sorghastrum nutans Central Sand & Gravel Grassland Alliance
Central Dry Sand & Gravel Tallgrass Prairie

IVC Scientific Name: *Schizachyrium scoparium - Sorghastrum nutans* Central Sand & Gravel Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: The vegetation is characterized by moderate to dense cover of medium and tall grasses and a diverse mixture of forbs. The typical species across the range of this alliance include *Bouteloua curtipendula, Schizachyrium scoparium*, and *Sorghastrum nutans*. Other graminoids species common in parts of this alliance are *Andropogon gerardii, Bouteloua hirsuta, Carex* spp., *Hesperostipa spartea*, and *Sporobolus heterolepis*. Some stands may be dominated by a shrub layer including *Corylus americana* and *Salix humilis*. This alliance is found in the central United States and southern Canada. It occurs on shallow to deep, well-drained to excessively drained soils. Soils are typically sandy or gravelly.
IVC Dynamics: Droughty conditions and fires interact to maintain this alliance. Windstorms can create sand blowouts.
IVC Environment: Stands can occur on steep slopes on sandy outwash, sandy lakeplains, and alluvial deposits along rivers and streams. They may occur on sand ridges, inland dunes, sandy areas of coarse-textured end moraines, and on blowouts. The deep, well-drained soils formed from eolian or alluvial sand south of the limit of glaciation and also from glacial outwash, old dunes, alluvium, or sandy glacial lakeplains. Soils are well-drained to excessively drained, coarse-textured sands, loamy sands, and sandy loams. Gravels are very minor (Curtis 1959, White and Madany 1978, Homoya et al. 1985, Chapman et al. 1989, MNNHP 1993, Anderson 1996).

DISTRIBUTION

IVC Geographic Range: This dry sand prairie community is widespread throughout the midwestern region of the United States and adjacent Canada, extending from Indiana, Michigan and southern Ontario, west to Iowa and east-central Minnesota.
IVC Nations: CA,US
IVC States/Provinces: AR, IA, IL, IN, KS, MI, MN, MO, NE, OH, ON, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002318 *Schizachyrium scoparium - Danthonia spicata - Carex pensylvanica - (Viola pedata)* Sand Grassland** [Little Bluestem - Poverty Oatgrass - Pennsylvania Sedge - (Bird's-foot Violet) Sand Grassland] []
  G2G3 (1998-06-22) IA, IL, IN, MI, MN, MO, ON, WI
- **CEGL002210 *Schizachyrium scoparium - Sorghastrum nutans - Andropogon gerardii - Lespedeza capitata* Sand Grassland** [Little Bluestem - Indiangrass - Big Bluestem - Round-head Bushclover Sand Grassland] []
  G3 (1998-06-22) IL, IN, MI, MN, MO, OH, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: P.W. Nelson (1985); M.D. Hutchison (1994)
IVC Description Author: S. Menard and D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G075 Northern Tallgrass Prairie

[ ]

IVC Colloquial Name: Northern Tallgrass Prairie
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This northern tallgrass prairie group is found on mesic sites from northwestern Iowa in the United States northward through Minnesota and the Dakotas to southeastern Manitoba, Canada. It is dominated by tallgrass species such as *Andropogon gerardii, Panicum virgatum*, and *Sorghastrum nutans*. Key diagnostics include *Hesperostipa spartea, Muhlenbergia richardsonis*, and *Sporobolus heterolepis*. The soils in this region are only moderately rich and deep. Where this group occurs on well-drained, drier soils, it grades into Northeastern Great Plains Aspen Woodland Group (G146) to the north and east. Grazing and fire influenced species composition and distribution of this group historically, but much of it has been converted to agriculture and very few unaltered examples persist in the modern, highly fragmented landscape.
IVC Dynamics: Grazing and fire influenced species composition and distribution of this group historically, but much of it has been converted to agriculture and very few unaltered examples persist in the modern, highly fragmented landscape.
IVC Environment: This group occurs on soils that are black, friable, and organic-rich but are not as rich nor deep as grasslands to the south. They range from somewhat poorly drained to well-drained. During the warm season, soils can be intermittently dry for long periods. *Climate:* The annual temperature where this group typically occurs is around 2.5°C with mean summer temperatures of 16°C and mean winter temperatures of -12.5°C. Mean annual precipitation typically ranges from 450-700 mm.

DISTRIBUTION

IVC Geographic Range: This group is found in the United States and Canada from northwestern Iowa, northward along the Red River basin and Prairie Coteau in Minnesota and the Dakotas to Lake Manitoba in southeastern Manitoba.
IVC Nations: CA,US
IVC States/Provinces: IA, MB, MN, ND, NE, ON, SD
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G1 rank that was calculated from closely related ecological system global ranks. A rank of G1 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: long-term decline very high and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4018 *Andropogon gerardii - Sporobolus heterolepis - Muhlenbergia richardsonis* Northern Grassland Alliance** [Big Bluestem - Prairie Dropseed - Mat Muhly Northern Grassland Alliance] []
  This alliance is found in the northern tallgrass prairie region of the United States and Canada and is dominated by tall grasses with some stands contained within a matrix of shrubs.
- **A4019 *Schizachyrium scoparium - Bouteloua curtipendula* Northern Grassland Alliance** [Little Bluestem - Sideoats Grama Northern Grassland Alliance] []
  This dry and dry-mesic prairie alliance occurs in the northern tallgrass region of the United States and possibly Canada on glacial features that have a high proportion of sand and gravel. It can be moderately open and is dominated by tall and mid-sized grasses.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard, in Faber-Langendoen et al. (2011)
IVC Description Author: S. Menard and D. Faber-Langendoen
IVC Description Date: 2015-08-25
IVC Acknowledgments: B. Hoagland

A4018 Big Bluestem - Prairie Dropseed - Mat Muhly Northern Grassland Alliance

[ ]

Andropogon gerardii - Sporobolus heterolepis - Muhlenbergia richardsonis Northern Grassland Alliance

Northern Mesic Tallgrass Prairie

IVC Scientific Name: *Andropogon gerardii - Sporobolus heterolepis - Muhlenbergia richardsonis* Northern Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is found in the northern tallgrass prairie region of the United States and Canada. Occurrences are dominated by tall grasses such as *Andropogon gerardii, Sporobolus heterolepis*, and *Hesperostipa spartea*; *Muhlenbergia richardsonis* is a key diagnostic grass species. Some stands are nested within a matrix of shrubs, including *Populus tremuloides, Salix* spp. (including *Salix humilis*), and *Quercus macrocarpa*. This prairie type occurs on poorly drained to well-drained, sandy clay loam to loamy fine sandy soils, including very organic-rich soils. Fire can be important in maintaining the prairie and brush prairie structure. Without fire, these areas can succeed to aspen-oak woodlands.

IVC Dynamics: Fire helps maintain this alliance. In the absence of fires, trees become more abundant, and the stands can eventually succeed to aspen-oak woodland.

IVC Environment: Stands of this alliance occur on flat to rolling topography. Soils are black, friable, organic-rich, have surface horizons that are high in bases and can range from somewhat poorly drained to well-drained, sandy clay loams to loamy fine sands to coarser outwash sands (MNNHP 1993). During the warm season, soils are intermittently dry for long periods or have subsurface horizons in which salts or carbonates have accumulated.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northern tallgrass prairie region of the United States and Canada, ranging from northwestern Iowa and South Dakota, north to Manitoba.

IVC Nations: CA,US
IVC States/Provinces: IA, MB, MN, ND, NE, ON, SD
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002202** ***Andropogon gerardii - Hesperostipa spartea - Sporobolus heterolepis*** **Grassland** [Big Bluestem - Porcupine Grass - Prairie Dropseed Grassland] []
  G2G3 (1998-06-22) IA, MB, MN, ND, NE, ON, SD
- **CEGL002182** ***Populus tremuloides - Quercus macrocarpa - Salix*** **spp. /** ***Andropogon gerardii*** **Shrubland** [Quaking Aspen - Bur Oak - Willow species / Big Bluestem Shrubland] []
  G2G3 (2000-03-03) MB?, MN

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: H.C. Hanson and W. Whitman (1938)
IVC Description Author: S. Menard and D. Faber-Langendoen
IVC Description Date: 2015-06-09
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by B. Hoagland.

A4019 Little Bluestem - Sideoats Grama Northern Grassland Alliance

[ ]
Schizachyrium scoparium - Bouteloua curtipendula Northern Grassland Alliance
Northern Dry & Dry-Mesic Tallgrass Prairie

IVC Scientific Name: *Schizachyrium scoparium - Bouteloua curtipendula* Northern Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This dry and dry-mesic grassland alliance occurs in the northern tallgrass prairie region of the United States and possibly Canada. It can be moderately open and is dominated by midgrasses such as *Bouteloua curtipendula, Bouteloua gracilis, Hesperostipa spartea*, and *Schizachyrium scoparium*, with *Andropogon gerardii* and *Calamovilfa longifolia* occurring in some examples. Lichens and mosses often occur on bare soil and gravel. Occurrences of this alliance are on rocky, loamy south-facing slopes and on glacial outwash, glacial beaches, or other glacial features that have a high proportion of sand and gravel, such as kames and eskers. Soils are often Mollisols but not deep, and they contain fine to coarse gravel, sand, and often larger rocks. Soil moisture is typically low due to being well- to excessively drained. The lower nutrient levels, lower levels of organic matter, and lower water-retaining capacity influence the species composition and structure of this alliance.
IVC Dynamics: Fire is important to prevent the invasion of woody species into stands. However, fire is not as important as in more mesic grasslands, because drought conditions slow encroachment by woody species.
IVC Environment: Occurrences of this alliance are on rocky, loamy south-facing slopes and on glacial outwash, glacial beaches, or other glacial features such as kames and eskers in the northern tallgrass region. Soils are often Mollisols but not deep, and they contain fine to coarse gravel, sand, and often larger rocks. Soil moisture is typically low due to being well- to excessively drained.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northern tallgrass prairie region of the United States, ranging from northwestern Iowa and South Dakota, north to Minnesota and into neighboring Canada.
IVC Nations: CA,US
IVC States/Provinces: IA, MB, MN, ND, ON, SD
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002576 Inland Lakes Tallgrass Foredune Grassland** [Inland Lakes Tallgrass Foredune Grassland] []
  GNR. MB

- **CEGL002499 *Schizachyrium scoparium - Bouteloua* spp. - *Hesperostipa spartea* Gravel Grassland** [Little Bluestem - Grama species - Porcupine Grass Gravel Grassland] []
  G2G3 (2007-02-06) MN, ND, SD

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: H.C. Hanson and W. Whitman (1938); J.E. Weaver and F.W. Albertson (1956)
IVC Description Author: S. Menard and D. Faber-Langendoen
IVC Description Date: 2015-06-09
IVC Acknowledgments:

CM051 Great Plains Mixedgrass Prairie

Prairies de graminées mixtes des Grandes Plaines

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: CM051 describes the Canadian expression of North American Great Plains mixedgrass prairie, including the grasslands of the dry climate of southern Alberta and Saskatchewan. The name "mixedgrass" refers to the characteristic mixture of mid-height grasses (mid-grasses) and short grasses. In Canadian mixedgrass prairie, the mid-grass component is generally dominant, but the short grass component becomes more conspicuous in the drier portions of the range. The dominant mid-grasses include needle-and-thread grass (*Hesperostipa comata*), northern porcupine grass (*H. curtiseta*), thick-spike wildrye (*Elymus lanceolatus*) and western wheatgrass (*Pascopyrum smithii*). The most important short graminoids are prairie junegrass (*Koeleria macrantha*), blue grama (*Bouteloua gracilis*) and several upland sedges (*Carex* spp.). Abundant forbs and dwarf shrubs are scattered throughout the grassland.

CM051 occurs in a dry continental temperate climate with cold winters and warm summers. Mean annual temperatures average approximately 3.6ËšC, and precipitation varies from approximately 300 to 430 mm. CM051 stands occur on a variety of well-drained soils, including Chernozems on sandy, loamy and clayey parent materials, Solonetzic soils with a dense hardpan layer and Regosols on dune sands. Mixedgrass prairie, in its broad definition, ranges southward to northern Texas and northeastern New Mexico, but the Canadian expression is somewhat distinctive in species composition.

IVC Geographic Range:

IVC Nations: CA

IVC States/Provinces:

ADDITIONAL INFORMATION

CNVC Status: Standard

Related IVC Macrogroups:

Elcode	Name	Rel to CNVC	Note
M051	Great Plains Mixedgrass & Fescue Prairie	>	

CNVC Classification Comments: Vegetation similar to mixedgrass prairie is also found in the somewhat moister climate of the Great Plains Parkland CNVC vegetation zone (see M151 [Great Plains Forest & Woodland] & CM332 [Great Plains Rough Fescue Prairie]) in Alberta, Saskatchewan and Manitoba, where it results from grazing impacts on rough fescue or tallgrass prairie communities.

CNVC may recognize subtypes of CM051 in the future (e.g., the dry vs moist mixedgrass conditions), but this is pending development of Associations from ground plot data.

Carex inops here refers to subspecies *heliophila* (sun sedge, carex héliophile).

Sporobolus rigidus here refers to variety *rigidus* (prairie sandreed, calamovilfa à feuilles longues).

Groups in Canada:

- **G331 Northern Great Plains Dry Mixedgrass Prairie []**
- **G141 Northern Great Plains Mesic Mixedgrass Prairie []**

CNVC Concept Author: Ken Baldwin, Lorna Allen

CNVC Concept Date: 2015-02-01

CNVC Description Author: Jeff Thorpe, Ken Baldwin, Lorna Allen

CNVC Description Date: 2015-12-01

IVC Primary Concept Source:

IVC Description Author:

IVC Description Date:

IVC Acknowledgments:

G331 Northern Great Plains Dry Mixedgrass Prairie

[ ]

IVC Colloquial Name: Northern Great Plains Dry Mixedgrass Prairie

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This dry mixedgrass prairie grassland is common in southeastern Alberta, southwestern Saskatchewan, south into the northern Great Plains of the United States. The vegetation is dominated by moderate to moderately dense medium-tall and short grasses and scattered shrubs. Dominant midgrass species include *Hesperostipa comata, Pascopyrum smithii, Pseudoroegneria spicata*, and *Elymus lanceolatus*. Short grasses, including *Bouteloua gracilis* and *Koeleria macrantha*, are common and become dominant in dry locations such as upper slopes. Upland sedges, such as *Carex inops ssp. heliophila* and *Carex filifolia*, may also be important components. *Calamovilfa longifolia* is often found with high cover values on sandier soils. *Pascopyrum smithii* and *Elymus lanceolatus* will decline in abundance with grazing pressure, while *Bouteloua gracilis* and *Koeleria macrantha* cover increases on degraded sites. Other common species include *Hesperostipa curtiseta*. Common woody species include *Artemisia cana, Symphoricarpos occidentalis, Rhus trilobata*, and *Sarcobatus vermiculatus*. Some examples may range into more of a shrub-steppe. Common forbs include *Opuntia polyacantha, Sphaeralcea coccinea*, and *Artemisia frigida*. Fire, drought, and grazing constitute the primary dynamics affecting this group. Its presence is generally correlated with arid areas that have mean precipitation of 350 mm per year or less. Stands occur on a wide variety of landforms, with flat to rolling topography and some low-relief hummocky areas. Surficial materials are predominantly glacial till in the Canadian areas, with some glacio-lacustrine areas. Glacio-fluvial sediments are common along major river valleys, and eolian materials are prevalent in some areas. Predominant soils are deep and well-drained to imperfectly drained, have a thick, dark A horizon and are classed as Brown Chernozems in the Canadian system. Textures are sandy loam to loam, medium- to coarser-textured soils. There are significant areas of Solonetzic soils, characterized by a subsoil hardpan layer with a high proportion of sodium.

IVC Dynamics: Drought and grazing constitute the primary processes affecting stand dynamics in this group (Adams et al. 2013). The role of fire may be a third primary process. See Adams et al. (2013) for a discussion of the recovery of dry mixedgrass prairie following cultivation and abandonment.

IVC Environment: *Climate:* This type is generally found in arid areas that have mean precipitation of 350mm per year or less. *Soils/substrate*: Stands occur on flat to rolling topography with some low-relief hummocky areas. Surficial materials are predominantly glacial till in the Canadian areas, with some glacio-lacustrine areas. Glacio-fluvial sediments are common along major river valleys, and eolian materials are prevalent in some areas (Adams et al. 2013). Predominant soils are deep and well-drained to imperfectly drained, have a thick, dark A horizon and are classed as Brown Chernozems in the Canadian system. Textures are sandy loam to loam, medium- to coarser-textured soils. There are significant areas of Solonetzic soils, characterized by a subsoil hardpan layer with a high proportion of sodium (Adams et al. 2013).

DISTRIBUTION

IVC Geographic Range: This group is common in southeastern Alberta, southwestern Saskatchewan, south into the Great Plains of the United States in Montana and Wyoming and east to western Dakotas.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, KS, MB, MT, ND, NE, SD, SK, WY

IVC Omernik Ecoregions: 6.2.10.17:P, 6.2.14.21:P, 9.3.1.42:P, 9.3.3.43:P, 9.3.4.44:P

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G3 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline moderate to high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4381 *Atriplex gardneri* - *Artemisia tridentata* Northwestern Plains Dwarf-shrubland Alliance** [Gardner's Saltbush - Big Sagebrush Northwestern Plains Dwarf-shrubland Alliance] []
  This dwarf shrub alliance occurs in the dry Northwestern Great Plains, dominated by *Atriplex gardneri* and *Artemisia tridentata* with mixedgrass prairie associates.
- **A4389 *Hesperostipa comata* Northern Dry Grassland Alliance** [Needle-and-Thread Northern Dry Grassland Alliance] []
  This widespread alliance is found in the northwestern Great Plains. *Hesperostipa comata* is a common dominant, with codominants of *Bouteloua gracilis, Carex filifolia*, and *Carex inops ssp. Heliophile.* Sites are on flat to rolling uplands or hillsides with medium-textures.

- **A4029 *Hesperostipa curtiseta - Elymus lanceolatus* Grassland Alliance** [Short-bristle Needle-and-Thread - Thick-spike Wheatgrass Grassland Alliance] []
  This mixedgrass alliance is found in the northwestern Great Plains, both in prairie provinces of Canada and adjacent United States. *Hesperostipa curtiseta* and *Elymus lanceolatus* are dominant, possibly in combination with other northern midgrasses such as *Pascopyrum smithii* and *Koeleria macrantha*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: R.T. Coupland (1961)
IVC Description Author: S. Menard, L. Allen and J. Drake
IVC Description Date: 2015-05-07
IVC Acknowledgments:

A4381 Gardner's Saltbush - Big Sagebrush Northwestern Plains Dwarf-shrubland Alliance

[ ]
Atriplex gardneri - Artemisia tridentata Northwestern Plains Dwarf-shrubland Alliance
Northwestern Great Plains Dry Mixedgrass Shrubland Alliance

IVC Scientific Name: *Atriplex gardneri - Artemisia tridentata* Northwestern Plains Dwarf-shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This dwarf shrub alliance occurs in the dry Northwestern Great Plains, dominated by *Atriplex gardneri* and *Artemisia tridentata* with mixedgrass prairie associates.Common grasses include *Bouteloua gracilis, Hesperostipa comate, Pascopyrum smithii, Pseudoroegneria spicata. Other dwarf shrubs include Artemisia pedatifida, Ericameria nauseosa, and Krascheninnikovia lanata.*
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This dwarf shrub alliance occurs in the dry Northwestern Great Plains, from Montana and Wyoming to North and South Dakota.
IVC Nations: CA?,US
IVC States/Provinces: MT, ND, SD, SK?, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008298 *Krascheninnikovia lanata / Hesperostipa comata* Great Plains Dwarf-shrubland** [] []
  This dwarf-shrub grassland is known from the northwestern Great Plains in northeastern Montana, and the open to moderate dwarf-shrub layer is dominated by *Krascheninnikovia lanata* with an open to moderate herbaceous layer dominated by *Hesperostipa comata and other Great Plains forbs and graminoids.* GNR. MT, SK?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Hoagland and Faber-Langendoen (2021)
IVC Description Author: D. Faber-Langendoen

IVC Description Date:
IVC Acknowledgments:

A4389 Needle-and-Thread Northern Dry Grassland Alliance

[ ]
Hesperostipa comata Northern Dry Grassland Alliance
Needle-and-Thread Northern Dry Grassland

IVC Scientific Name: *Hesperostipa comata* Northern Dry Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This widespread alliance is found in the northwestern Great Plains. Mid and short grasses and sedges dominate this dry-mesic prairie. *Hesperostipa comata* is common throughout this alliance. *Bouteloua gracilis, Carex filifolia*, and *Carex inops ssp. heliophila* are also common. *Festuca idahoensis* is generally absent, but may be locally dominant in small parts of the range. *Koeleria macrantha* increases on degraded sites. *Calamovilfa longifolia* is more abundant on sandier soils while *Pascopyrum smithii* is usually present but not abundant. Forb cover is typically low. Sites are on flat to rolling uplands or hillsides. If soils are sufficiently coarse-textured, it can occur in valley bottoms. Soils are medium-textured or coarser and derived from sandstone or limestone

IVC Dynamics: These mixed grasslands occur in the subhumid/semi-arid steppes in the western Great Plains where high variability of precipitation, both seasonally and yearly allows both short and mid grasses to co-exist (Coupland 1992a). *Hesperostipa comata* will decline with overgrazing, leaving the more grazing-tolerant *Bouteloua gracilis* to dominate (Smoliak 1965, Smoliak et al. 1972, Laurenroth et al. 1994a). Fire also can change the species composition of these grasslands. Burning generally kills or severely damages *Hesperostipa comata* plants. After fire, regeneration of this non-rhizomatous bunchgrass is through seed and may take many years to reach prefire densities (FEIS 1998). Burning *Bouteloua gracilis* during the growing season will top-kill the plant, but the rhizomes are usually unharmed and quickly regrow (FEIS 1998). *Bouteloua gracilis* is usually unharmed by fires in years with above normal winter and spring precipitation (soil moisture prevents lethal soil temperatures), but it can be severely damaged by fires that occur during drought years (FEIS 1998). Exotic species such as *Taraxacum officinale, Medicago sativa, Melilotus officinalis*, or *Salsola kali* are present in some stands

IVC Environment: Grasslands included in this alliance are common in the west-central and northwestern Great Plains. Elevations range from 600-2350 m. Climate is temperate, continental and semi-arid to subhumid. Mean annual precipitation ranges from 25-50 cm. The year-to-year variation is great, in both total annual precipitation and the proportion of precipitation occurring in the winter and spring versus summer.Stands typically occur on upland sites in rolling plains, breaks, foothills, and plateaus. Sites are flat to moderately steep slopes on any aspect. Soils are shallow to moderately deep, non-saline, often calcareous and alkaline, with sandy loam, loam, or sometimes clay loam texture. Parent materials often include limestone, sandstone, or shale with glacial deposits in the northern Great Plains.Adjacent stands in the plains are often grasslands dominated by *Pascopyrum smithii* in mesic bottomlands and *Bouteloua gracilis* in the xeric plains and *Festuca idahoensis* in the mountains, shrublands dominated by *Artemisia tridentata, Ribes* spp., or *Rhus trilobata*, and woodlands dominated by *Pinus edulis, Pinus flexilis, Pinus ponderosa*, or *Juniperus* spp.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northwestern Great Plains from western Kansas and eastern Colorado to southern Alberta and southern Saskatchewan.
IVC Nations: CA,US
IVC States/Provinces: AB, CO, KS, MB, MT, ND, NE, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008297 *Hesperostipa comata - Bouteloua gracilis - Carex filifolia* Northern Grassland** [Needle-and-Thread - Blue Grama - Threadleaf Sedge Northern Grassland] []
  This needle-and-thread - grama grass prairie community is common in the northern Great Plains of the United States.

Hesperostipa comata, Bouteloua gracilis and *Carex filifolia are th*e common dominants. G5 (2021-09-30) AB, MB, MT, ND, NE, SD, SK, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Hoagland and Faber-Langendoen (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments: Jim Drake

A4029 Short-bristle Needle-and-Thread - Thick-spike Wheatgrass Grassland Alliance

[ ]
Hesperostipa curtiseta - Elymus lanceolatus Grassland Alliance
Needle-and-Thread - Wheatgrass Dry Grassland

IVC Scientific Name: *Hesperostipa curtiseta - Elymus lanceolatus* Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This dry mixedgrass alliance is found in the drier climate of the northwestern Great Plains, from southwestern Manitoba to western Saskatchewan and south into northern North Dakota and Montana. It is dominated by *Hesperostipa curtiseta* and *Elymus lanceolatus*, possibly in combination with other northern midgrasses such as *Pascopyrum smithii* and *Koeleria macrantha*.
IVC Dynamics:
IVC Environment: Sites are typically on drier sites, related to the drier climate of the northwestern Great Plains.

DISTRIBUTION

IVC Geographic Range: Stands of this alliance are found from southwestern Manitoba to western Saskatchewan and south into northern North Dakota and Montana.
IVC Nations: CA,US
IVC States/Provinces: AB?, MB, MT, ND, SK
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003789 *Hesperostipa curtiseta - Pascopyrum smithii* Grassland** [Short-bristle Needle-and-Thread - Western Wheatgrass Grassland] []
  G3G4 (2009-07-17) AB?, MT, ND?, SK?
- **CEGL002237 *Elymus lanceolatus - Koeleria macrantha* Grassland** [Thick-spike Wheatgrass - Prairie Junegrass Grassland] []
  GNR. MB, SK?
- **CEGL002253 *Hesperostipa curtiseta - Elymus lanceolatus* Grassland** [Short-bristle Needle-and-Thread - Thick-spike Wheatgrass Grassland] []
  GNR. MT, ND, SK

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G141 Northern Great Plains Mesic Mixedgrass Prairie

[ ]

IVC Colloquial Name: Northern Great Plains Mesic Mixedgrass Prairie
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This mixedgrass group is widespread from northern Nebraska into southern Canada. The vegetation is dominated by moderate to moderately dense medium-tall grasses or sometimes, in the western Great Plains and Sandhills region of northwest Nebraska, a mix of tall and medium-tall grasses. Shrubs are usually scattered or absent but can form dense, local patches, particularly in swales or low areas. Dominant species include *Pascopyrum smithii, Schizachyrium scoparium, Carex inops ssp. heliophila*, and *Carex filifolia*. In Montana, this includes *Festuca idahoensis*. Sites with a strong component of *Nassella viridula* indicate a more favorable moisture balance and perhaps a favorable grazing regime as well because this is one of the most palatable of the midgrasses. *Calamovilfa longifolia* is often found with high cover values on sandier soils, and *Koeleria macrantha* cover increases on degraded sites. Common or dominant tallgrasses in the western Great Plains are *Andropogon gerardii, Panicum virgatum*, and *Sorghastrum nutans*. Other common species include *Bouteloua curtipendula, Bouteloua gracilis, Hesperostipa curtiseta, Hesperostipa neomexicana, Muhlenbergia montana, Pseudoroegneria spicata, Sorghastrum nutans*, and *Sporobolus cryptandrus*. Common woody species include *Amelanchier alnifolia, Artemisia cana, Dasiphora fruticosa ssp. floribunda, Juniperus horizontalis, Prunus virginiana, Rhus trilobata*, and *Symphoricarpos occidentalis*. Some examples may range into more of a shrub-steppe. Fire and grazing constitute the primary dynamics affecting this group. Drought can also impact it, in general favoring the shortgrass component at the expense of the midgrasses. With intensive grazing, cool-season exotics such as *Poa pratensis, Bromus inermis*, and *Bromus arvensis* can increase in dominance. Shrub species such as *Juniperus virginiana* can also increase in dominance with fire suppression. Conversion to agriculture likewise has decreased the range of this group. This group occurs on a wide variety of landforms (e.g., mesatops, stream terraces) and in proximity to a diversity of other groups. Soils range from fine-textured loams to sandy or gravelly soils.

IVC Dynamics: Fire and grazing constitute the primary dynamics affecting this group. Drought can also impact it, in general favoring the shortgrass component at the expense of the midgrasses. With intensive grazing, cool-season exotics such as *Poa pratensis, Bromus inermis*, and *Bromus arvensis* can increase in dominance. Shrub species such as *Juniperus virginiana* can also increase in dominance with fire suppression. Conversion to agriculture likewise has decreased the range of this group.

IVC Environment: This group occurs on a wide variety of landforms and in proximity to a diversity of other groups. Climate and growing season length for the region in which it occurs are intermediate to the shortgrass regions to the west and southwest and the tallgrass regions to the east. Soils range from loams, clay loams, silty clays, and clays to more coarse-textured sandy or gravelly soils. Some examples may include an impermeable or slowly permeable claypan subsoil layer.

DISTRIBUTION

IVC Geographic Range: This group occurs throughout the Western Great Plains from northern Nebraska into southern Canada, and west to the western Dakotas and central Montana.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, MB, MT, ND, NE, SD, SK, WY

IVC Omernik Ecoregions: 6.2.10.17:P, 6.2.14.21:P, 9.2.1.46:P, 9.2.2.48:P, 9.2.3.47:P, 9.3.1.42:P, 9.3.3.43:P, 9.3.4.44:P, 9.4.1.25:P, 9.4.2.27:P, 9.4.3.26:P, 10.1.7.22:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G3* rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline moderate to high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4382 *Andropogon gerardii - Sorghastrum nutans* Northern Mixedgrass Grassland Alliance** [Big Bluestem - Indiangrass Northern Mixedgrass Grassland Alliance] []
  This alliance contains moist to bottomland stands in the northern Great Plains that are dominated by *Andropogon gerardii*, *Sorghastrum nutans*, and several other tall grasses.
- **A4383 *Juniperus horizontalis - Rhus trilobata - Dasiphora fruticosa* Shrubland Alliance** [Creeping Juniper - Skunkbush Sumac - Shrubby-cinquefoil Shrubland Alliance] []
  This low shrubland type occurs in local areas of the mesic mixedgrass prairie region of the northern Plains, from western Manitoba and the Dakotas to eastern Montana and Wyoming
- **A4031 *Pascopyrum smithii - Nassella viridula* Northwestern Great Plains Grassland Alliance** [Western Wheatgrass - Green Needlegrass Northwestern Great Plains Grassland Alliance] []
  This alliance is found in the northern Great Plains on fine-textured soils in mesic settings where the midgrasses *Pascopyrum smithii* and *Nassella viridula* are dominant or codominant.
- **A4384 *Prunus virginiana - Symphoricarpos occidentalis - Amelanchier alnifolia* Northern Plains Shrubland Alliance** [Chokecherry - Western Snowberry - Saskatoon Serviceberry Northern Plains Shrubland Alliance] []
  This mesic tall shrubland type is found in the Northern Great Plains. Typical dominants include *Amelanchier alnifolia*, *Prunus virginiana, as well as Crataegus* spp and *Viburnum lentago*.
- **A4034 *Schizachyrium scoparium* Northern Mixedgrass Grassland Alliance** [Little Bluestem Northern Mixedgrass Grassland Alliance] []
  This alliance is found in the northwestern Great Plains mixedgrass region on coarse- or medium-textured soils. *Schizachyrium scoparium* is the dominant grass but other mid and short grasses and sedges can be abundant, particularly *Bouteloua curtipendula, Bouteloua gracilis, Carex inops ssp. heliophila*, and *Carex filifolia*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard, in Faber-Langendoen et al. (2011)
IVC Description Author: S. Menard and J. Drake
IVC Description Date: 2015-05-07
IVC Acknowledgments:

A4382 Big Bluestem - Indiangrass Northern Mixedgrass Grassland Alliance

[ ]

Andropogon gerardii - Sorghastrum nutans Northern Mixedgrass Grassland Alliance

Northern Plains Big Bluestem Grassland

IVC Scientific Name: *Andropogon gerardii - Sorghastrum nutans* Northern Mixedgrass Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance contains moist to bottomland stands in the northern Great Plains that are dominated by *Andropogon gerardii*, *Sorghastrum nutans*, and several other tall grasses. Despite the dominance of several grasses typical of tallgrass prairie, these stands lack most diagnostics of the tallgrass prairie region, especially forbs, and more typically share mixedgrass species. Stands occur in valley bottoms and terraces along larger streams and rivers.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This type is found in moist bottomlands of the northwestern Great Plains mixedgrass prairie region, from Wyoming and South Dakota north to Montana and North Dakota.
IVC Nations: CA,US
IVC States/Provinces: CO, MB, MT, ND, NE, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002376** ***Andropogon gerardii - Sporobolus heterolepis - Schizachyrium scoparium - Pascopyrum smithii*** **Grassland** [Big Bluestem - Prairie Dropseed - Little Bluestem - Western Wheatgrass Grassland] []
  G2 (2000-03-23) MB, ND, SD, SK
- **CEGL002205** ***Andropogon gerardii - Schizachyrium scoparium*** **Northern Plains Grassland** [Big Bluestem - Little Bluestem Northern Plains Grassland] []
  G3G5 (1998-06-22) MT, ND, SD, SK?, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Hoagland and Faber-Langendoen (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4383 Creeping Juniper - Skunkbush Sumac - Shrubby-cinquefoil Shrubland Alliance

[ ]
Juniperus horizontalis - Rhus trilobata - Dasiphora fruticosa Shrubland Alliance
Northern Plains Low Shrubland

IVC Scientific Name: *Juniperus horizontalis - Rhus trilobata - Dasiphora fruticosa* Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This low shrubland type occurs in local areas of the mesic mixedgrass prairie region of the northern Plains, from western Manitoba and the Dakotas to eastern Montana and Wyoming. Common shrubs include *Juniperus horizontalis, Rhus trilobata,* and *Dasiphora fruticosa.*
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This type occurs in local areas of the mesic mixedgrass prairie region of the northern Plains, from western Manitoba and the Dakotas to eastern Montana and Wyoming.
IVC Nations: CA,US
IVC States/Provinces: MB, MT, ND, NE, SD, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001394** ***Juniperus horizontalis / Schizachyrium scoparium*** **Dwarf-shrubland** [Creeping Juniper / Little Bluestem Dwarf-shrubland] []
  G4 (1996-02-01) MB, MT, ND, SD

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Hoagland and Faber-Langendoen (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4031 Western Wheatgrass - Green Needlegrass Northwestern Great Plains Grassland Alliance

[ ]
Pascopyrum smithii - Nassella viridula Northwestern Great Plains Grassland Alliance
Northwestern Great Plains Mesic Western Wheatgrass Grassland

IVC Scientific Name: *Pascopyrum smithii - Nassella viridula* Northwestern Great Plains Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found in the northern Great Plains from the southern Prairie Provinces of Canada to Colorado and western Nebraska. Midgrasses are dominant, especially *Pascopyrum smithii*. Other common species are *Elymus lanceolatus, Nassella viridula, Koeleria macrantha*, and *Hesperostipa comata*. The short graminoids *Bouteloua gracilis, Carex filifolia, Carex inops ssp. heliophila, Carex duriuscula*, and the exotics *Bromus racemosus* and *Bromus tectorum* can contribute substantial cover. Shrubs and scattered trees can often be found in the mesic settings occupied by this alliance. It usually occurs on fine-textured soils in mesic settings. Some stands can be on deep sandy soils. It is often in swales or valleys but can also be on rolling uplands.
IVC Dynamics: *Pascopyrum smithii* is rhizomatous and is tolerant of moderate grazing. If severely overgrazed, *Pascopyrum smithii* will decline and may be replaced by less desirable warm-season grasses and exotic species such as *Poa pratensis*.
IVC Environment: Grasslands included in this alliance occur across the Great Plains, on several different soil types (Hanson and Whitman 1938, Johnston 1987, USFS 1992). The soil is most often clay or clay loam; however, it can be loam or sandy loam. In the eastern and central part of this alliance's range, these communities can be found on flat or rolling uplands, hillslopes, or along streams or depressions. In the western part of the range, communities are found where local conditions are wetter than the average. This includes such areas as localized depressions, the base of slopes or along rivers or streams (Weaver and Albertson 1956, Jones 1992b).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northern Great Plains from the southern Prairie Provinces of Canada to western Nebraska.
IVC Nations: CA,US
IVC States/Provinces: AB, CO, MB, MT, ND, NE, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002034 *Pascopyrum smithii - Hesperostipa comata* Central Mixedgrass Grassland** [Western Wheatgrass - Needle-and-Thread Central Mixedgrass Grassland] []
  G4 (1996-10-03) MB, MT, ND, NE, SD, SK
- **CEGL002543 *Nassella viridula - Hesperostipa comata* Grassland** [Green Needlegrass - Needle-and-Thread Grassland] []
  GNR. MB
- **CEGL002270 *Bouteloua gracilis - Bouteloua dactyloides* Northern Plains Grassland** [Blue Grama - Buffalograss Northern Plains Grassland] []
  G3G5 (1998-06-22) ND, NE, SD, SK
- **CEGL001579 *Pascopyrum smithii - Bouteloua gracilis - Carex filifolia* Grassland** [Western Wheatgrass - Blue Grama - Threadleaf Sedge Grassland] []
  G4 (1996-02-01) AB, CO, MT, ND, NE, SD, SK, WY

- **CEGL001583 *Pascopyrum smithii - Nassella viridula* Grassland** [Western Wheatgrass - Green Needlegrass Grassland] []
  This western wheatgrass - needlegrass community is common across much of the northern Great Plains of the United States and possibly Canada. The dominant species are *Pascopyrum smithii* and *Nassella viridula*. Other mid grasses in this community are *Elymus lanceolatus, Hesperostipa comata, Koeleria macrantha, Poa* spp., *Sporobolus cryptandrus*, and, on sandier soils, *Calamovilfa longifolia.* G3G4 (1999-09-09) CO, MT, ND, NE, SD, SK?, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A4384 Chokecherry - Western Snowberry - Saskatoon Serviceberry Northern Plains Shrubland Alliance

[ ]

Prunus virginiana - Symphoricarpos occidentalis - Amelanchier alnifolia Northern Plains Shrubland Alliance

Northern Plains Mesic Tall Shrubland

IVC Scientific Name: *Prunus virginiana - Symphoricarpos occidentalis - Amelanchier alnifolia* Northern Plains Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This mesic tall shrubland type is found in the Northern Great Plains. Typical dominants include *Amelanchier alnifolia*, *Prunus virginiana,* as well as *Crataegus* spp and *Viburnum lentago*.They are found more often in mesic draws. Going north into MT they turn into the wooded draws (*Acer negundo*, *Fraxinus pennsylvanica*). *Dasiphora* is not found in grasslands in Wyoming, but *Ribes cereum may be more common.*
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This mesic tall shrub alliance occurs in the northern Great Plains, from Montana and Wyoming to Nebraska and the Dakotas and possibly into Saskatchewan.
IVC Nations: CA,US
IVC States/Provinces: AB, CO, MB, MT, ND, NE, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL001131 *Symphoricarpos occidentalis* Shrubland** [Western Snowberry Shrubland] []
  G4G5 (1996-02-01) AB, CO, MB, MT, ND, NE, SD, SK
- **CEGL002183 *Amelanchier alnifolia* Shrubland** [Saskatoon Serviceberry Shrubland] []
  GNR. ND, SK

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Hoagland and Faber-Langendoen (2021)
IVC Description Author:

IVC Description Date:
IVC Acknowledgments:

A4034 Little Bluestem Northern Mixedgrass Grassland Alliance

[ ]
Schizachyrium scoparium Northern Mixedgrass Grassland Alliance
Northwestern Plains Little Bluestem Grassland

IVC Scientific Name: *Schizachyrium scoparium* Northern Mixedgrass Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found in the northwestern Great Plains. *Schizachyrium scoparium* is the dominant grass but other mid and short grasses and sedges can be abundant, particularly *Bouteloua curtipendula, Bouteloua gracilis, Carex inops ssp. heliophila*, and *Carex filifolia*. In a few stands in eastern Montana and possibly western North Dakota, *Muhlenbergia cuspidata* can be a codominant. Several other mid or tall grasses can be present, including *Andropogon gerardii, Calamovilfa longifolia, Hesperostipa comata, Koeleria macrantha, Nassella viridula*, and *Pascopyrum smithii*. Forbs do not contribute greatly to the canopy and shrubs and trees are absent or sparse. The alliance is found on coarse- or medium-textured soils and nearly always on moderate or steep slopes.
IVC Dynamics: These grasslands are dominated by deep-rooted perennial mid grasses that are able to utilize moisture that penetrates deep into these well-drained, coarse-textured soils (Morris and Lovegrove 1975). Fire is important to prevent the invasion of these vegetation types by woody species. However, fire is not as important as in more mesic grasslands, because drought conditions slow encroachment by woody species.
IVC Environment: The alliance is found on coarse- or medium-textured soils and nearly always on moderate or steep slopes (Hanson and Whitman 1938, Hansen et al. 1984, Johnston 1987).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northwestern Great Plains from southern Saskatchewan and Manitoba to central South Dakota and eastern Wyoming.
IVC Nations: CA,US
IVC States/Provinces: MB, MT, ND, NE, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL001681 *Schizachyrium scoparium - Bouteloua (curtipendula, gracilis) - Carex filifolia* Grassland** [Little Bluestem - (Sideoats Grama, Blue Grama) - Threadleaf Sedge Grassland] []
  G3G4 (1999-09-09) MB, MT, ND, NE, SD, SK, WY
- **CEGL001683 *Schizachyrium scoparium - Muhlenbergia cuspidata* Grassland** [Little Bluestem - Plains Muhly Grassland] []
  G3? (1997-11-14) MT, ND, SK?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

CM332 Great Plains Rough Fescue Prairie

Prairies de fétuque de Hall des Grandes Plaines

View on NatureServe Explorer

DESCRIPTION

CNVC Concept: CM332 describes prairie grasslands at the northern edge of the North American Great Plains that, in later seral stages, are dominated by a single species, plains rough fescue (*Festuca hallii*). Rough fescue prairie is primarily found in Alberta and Saskatchewan, less commonly in Manitoba, with a few occurrences in North Dakota and Montana. CM332 occurs as extensive grasslands south of the limit of tree domination in the west-central prairies and also forms the grassland patches that occur between forest/woodland groves in most of the *Great Plains Parkland* vegetation zone. Natural stands are dense, mid-height (approximately 20-40 cm) and strongly dominated by plains rough fescue. Other common graminoids include northern porcupine grass (*Hesperostipa curtiseta*), needle-and-thread grass (*H. comata*), plains porcupine grass (*H. spartea*), thick-spike wildrye (*Elymus lanceolatus*), slender wildrye (*E. trachycaulus* ssp. *subsecundus*), western wheatgrass (*Pascopyrum smithii*), Hooker's oatgrass (*Avenula hookeri*), prairie junegrass (*Koeleria macrantha*), mat muhly (*Muhlenbergia richardsonis*) and upland sedges such as blunt sedge (*Carex obtusata*), needle-leaved sedge (*C. duriuscula*) and long-stolon sedge (*C. inops* ssp. *heliophila*). A variety of forbs and shrubs occur but may be restricted in abundance by the dense grass. Species composition and abundance shift with disturbances such as livestock grazing, fire or invasion by non-native species.

CM332 occurs in a continental temperate climate with cold winters and warm summers. Mean annual temperatures average approximately 2.5ËšC, and precipitation varies from approximately 350 to 540 mm. This climate is cooler and moister than that supporting the mixedgrass prairie to the south (CM051 [Great Plains Mixedgrass Prairie]). CM332 usually occurs on level to rolling terrain at elevations <1000 m ASL. Stands are found in a variety of upland or valley settings. Most stands are on Black or Dark Brown Chernozemic soils with loamy to clayey textures but may also develop on sandy sites and on Solonetzic soils with an impervious hardpan layer.

IVC Geographic Range:

IVC Nations: CA

IVC States/Provinces:

ADDITIONAL INFORMATION

CNVC Status: Standard

Related IVC Macrogroups:

Elcode	Name	Rel to CNVC	Note
M051	Great Plains Mixedgrass & Fescue Prairie	>	

CNVC Classification Comments: CM332 is most common in east-central Alberta and west-central Saskatchewan. In southeastern Saskatchewan and southern Manitoba, rough fescue prairie becomes less common because of a longer history of land conversion, invasion by non-native grasses and livestock grazing that have eliminated *Festuca hallii*, and because of the natural transition to tallgrass prairie (M054 [Great Plains Tallgrass Prairie]).

Elymus trachycaulus here refers to subspecies *subsecundus* (one-sided wildrye, élyme aristé).

Sporobolus rigidus here refers to variety *rigidus* (prairie sandreed, calamovilfa à feuilles longues)

Carex inops here refers to subspecies *heliophila* (sun sedge, carex héliophile).

Groups in Canada:

- **G332 Northern Great Plains Rough Fescue Prairie []**

CNVC Concept Author: Ken Baldwin, Lorna Allen, Jeff Thorpe

CNVC Concept Date: 2015-02-01

CNVC Description Author: Jeff Thorpe, Ken Baldwin, Lorna Allen

CNVC Description Date: 2019-07-01

IVC Primary Concept Source:

IVC Description Author:

IVC Description Date:

IVC Acknowledgments:

G332 Northern Great Plains Rough Fescue Prairie

[ ]

IVC Colloquial Name: Northern Great Plains Rough Fescue Prairie

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This fescue grassland type is found at the northern edge of the North American Great Plains that are dominated by a single species, *Festuca hallii*. Northern fescue prairie is primarily found in Alberta and Saskatchewan, less commonly in Manitoba, with a few occurrences in North Dakota and Montana. The type occurs as extensive grasslands south of the limit of tree growth in the west-central prairies, and also forms the grassland patches that occur between forest/woodland groves in this part of the Parkland CNVC vegetation zone. Natural stands are dense, mid-height (approximately 20-40 cm tall), and strongly dominated by plains rough fescue. Other common graminoids include *Elymus lanceolatus, Elymus trachycaulus, Avenula hookeri, Hesperostipa comata, Hesperostipa curtiseta, Koeleria macrantha, Muhlenbergia richardsonis, Pascopyrum smithii*, and upland sedges such as *Carex obtusata, Carex duriuscula*, and *Carex inops*. A variety of forbs and shrubs occur but may be restricted in abundance by the dense grass. They include *Symphyotrichum falcatum, Galium boreale, Achillea millefolium, Artemisia ludoviciana*, and *Cerastium arvense*. *Symphoricarpos occidentalis* and *Rosa arkansana* are common shrub species but may not be readily visible because of the tall growth of the *Festuca hallii*. Other shrubs that may be present include *Rosa woodsii, Artemisia frigida, Amelanchier alnifolia*, and *Rosa acicularis*. Species composition and abundance can shift dramatically with grazing impacts, changes in fire regime, or invasion by exotic species. This type occurs in a cooler and moister climate than does the mixedgrass prairie to the south. It usually occurs on level to rolling terrain at elevations below 1000 m ASL. Stands may occur in a variety of upland or valley settings. Most stands are on Black or Dark Brown Chernozemic soils with loamy to clayey textures, but may also occur on sandy sites and on Solonetzic soils with an impervious hardpan layer.

IVC Dynamics: Historically, fires occurred frequently (perhaps every 2-5 years) in northern fescue prairie, but have been greatly reduced with agricultural settlement. Where stands occur in the parkland landscape, proportions of forest/woodland and grassland fluctuated over the years in a dynamic balance. Compared to other mixedgrass prairie types, this type occurs in a moister climate that is more conducive to woody encroachment and invasion by exotic plant species. In the prolonged absence of fire, shrubs such as *Symphoricarpos occidentalis*, and trees such as *Populus tremuloides* tend to encroach into patches of northern fescue prairie from adjacent forest or woodland groves. If this is not checked by fire or land management practices, grassland may be converted to forest or woodland (e.g., Great Plains Forest & Woodland Macrogroup (M151)). Stands that are exposed to seed sources of exotic plant species (e.g., hayfields, roadsides) are often invaded by species such as *Poa pratensis* and *Bromus inermis*. Invasion of these exotics is fostered by disturbance (e.g., grazing), and these species are persistent once established.

Prior to agricultural settlement, intermittent grazing by native herbivores was an important aspect of prairie grassland dynamics. Bison, elk and other animals grazed an area and then moved elsewhere. In the process, they fertilized stands, dispersed seeds and restricted the spread of woody species into the grasslands. Currently, ungrazed to lightly grazed stands show the high density and dominance of *Festuca hallii* that characterize this type. Although tolerant of winter grazing, *Festuca hallii* is sensitive to grazing during the growing season, and decreases in abundance with increased spring and summer grazing pressure. This decrease is accompanied by an increase in *Hesperostipa curtiseta, Hesperostipa comata, Elymus lanceolatus, Pascopyrum smithii, Koeleria macrantha, Carex* spp., and *Artemisia frigida*. As a result, these stands become more similar to the mixedgrass prairie of drier climates to the south. Along with grazing impacts and fire suppression, conversion to agriculture has reduced the extent and range of natural occurrences of this type.

IVC Environment: This type occupies portions of the Alberta and Saskatchewan Plains, subdivisions of the Interior Plains physiographic region. This area is underlain by level Mesozoic and Tertiary sedimentary rocks. Elevations are generally <1000 m ASL.

Climate: The primary range of this type occurs in the continental temperate climate of central Alberta and Saskatchewan. Winters are cold and summers are warm; mean annual temperatures average approximately 2.5°C, with extreme minimum temperatures below -40°C. Growing degree days above 5°C (GDD) vary between about 1300 and 1600. Mean annual precipitation is between 350 and 500 mm in the primary range. In Manitoba, where northern fescue prairie occurs less frequently and tallgrass prairie elements become apparent, the climate is somewhat wetter (mean annual precipitation 475-540 mm) and warmer (1550-1840 GDD).

Soils/substrates: The entire range of this type was affected by Pleistocene glaciation and, although topography is mostly an undulating plain, local relief is provided by postglacial valley complexes, hummocky moraines, and sand dunes. Stands of rough fescue prairie may occur in a variety of upland or valley settings, but are increasingly restricted to warmer south-facing aspects at the northern edge of the range and moister north-facing aspects at the southern edge. Most stands are on well-drained Black or Dark Brown Chernozemic soils with loamy to clayey textures, but may also occur on Solonetzic soils with an impervious hardpan layer caused by excess sodium (Na+) or clays. Stands also occur on sandy soils, but these sites usually have lower dominance of *Festuca hallii*, with higher proportional abundance of *Hesperostipa* spp. and *Calamovilfa longifolia*.

DISTRIBUTION

IVC Geographic Range: This group is found in the northern Great Plains of Canada and in adjacent areas of the United States, from Alberta, Saskatchewan and Manitoba, and south as scattered outliers in Montana and North Dakota.
IVC Nations: CA,US
IVC States/Provinces: AB, MB, MT, ND, ON, SK
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a G2 rank that was calculated from closely related ecological system global ranks. A rank of G2 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately restricted, long-term decline very high, and threats high to very high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4043 *Festuca altaica* Northern Great Plains Grassland Alliance** [Altai Fescue Northern Great Plains Grassland Alliance] [] This alliance is found in the northern Great Plains, largely in southern Canada, on dry-mesic sites dominated or codominated by *Festuca altaica*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: R.T. Coupland and T.C. Brayshaw (1953)
IVC Description Author: J. Thorpe, K. Baldwin, L. Allen, S. Menard, D. Faber-Langendoen
IVC Description Date: 2016-07-05
IVC Acknowledgments:

A4043 Altai Fescue Northern Great Plains Grassland Alliance

[ ]
Festuca altaica Northern Great Plains Grassland Alliance
Northern Plains Altai Fescue Grassland

IVC Scientific Name: *Festuca altaica* Northern Great Plains Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found in the northern Great Plains, largely in southern Canada. It is typically moderately arid and dominated by mid and short graminoids. *Festuca altaica* is abundant in almost every stand. Other species that are commonly found in stands of this alliance are upland *Carex* spp., *Elymus lanceolatus, Festuca idahoensis* (in the center and west), *Koeleria macrantha, Pascopyrum smithii, Pseudoroegneria spicata, Hesperostipa comata*, and *Hesperostipa curtiseta*. Forb diversity may be low to moderately high in stands of this alliance. Common forbs include *Achillea millefolium, Antennaria rosea*, Asteraceae spp., *Geum triflorum, Lupinus sericeus*, and *Solidago missouriensis*. Low and medium-tall shrubs may be found in some stands. These include *Amelanchier alnifolia, Arctostaphylos uva-ursi, Artemisia frigida, Gutierrezia sarothrae*, and *Rosa acicularis*.
IVC Dynamics:
IVC Environment: Stands of this alliance are found on level to steeply sloping topography of all aspects. Soils are usually loamy and moderately deep (Mueggler and Stewart 1980).

DISTRIBUTION

IVC Geographic Range: This alliance is found primarily in the southern Canadian prairie areas of Saskatchewan, Manitoba, and possibly into Ontario. It extends into far northern North Dakota and Montana.
IVC Nations: CA,US
IVC States/Provinces: MB, MT, ND, ON, SK

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002436 *Festuca altaica - (Hesperostipa* spp., *Achnatherum* spp.) Grassland** [Altai Fescue - (Needle-and-Thread species, Ricegrass species) Grassland] []
  GNR. MB, ND, ON, SK
- **CEGL002435 *Festuca altaica - Danthonia intermedia* Grassland** [Altai Fescue - Timber Oatgrass Grassland] []
  GNR. SK
- **CEGL002429 *Festuca altaica - Elymus lanceolatus* Grassland** [Altai Fescue - Thick-spike Wheatgrass Grassland] []
  GNR. SK

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M052 Great Plains Sand Grassland & Shrubland

[ ]

IVC Colloquial Name: Great Plains Sand Grassland & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This Great Plains macrogroup is found from Texas to southern Alberta and Saskatchewan on somewhat excessively to excessively well-drained, deep sandy to loamy sand soils and contains species well-adapted to these soil conditions. Grass and shrub species composition in sand prairies is determined not only by soil texture and drainage, but by morphological (root architecture) and physiological (photosynthetic, water use efficiency) adaptations. Dominant grasses in this macrogroup exhibit many of these adaptations. *Andropogon hallii* and *Calamovilfa longifolia* are the most common species, but other grass and forb species, such as *Bouteloua* spp., *Calamovilfa gigantea, Carex inops ssp. heliophila, Hesperostipa comata, Panicum virgatum, Schizachyrium scoparium*, and *Sporobolus cryptandrus*, can be common. A sparse to moderately dense shrub layer is common. The most common shrub species is *Artemisia filifolia*. Other possible shrub species include *Artemisia cana ssp. cana, Betula occidentalis, Juniperus horizontalis, Prunus angustifolia, Rhus trilobata*, and *Yucca glauca*. *Quercus havardii* and *Prosopis glandulosa* may also be present and dominant in some stands in the southern range of this macrogroup. Northward in Alberta, *Hesperostipa comata* and *Calamovilfa longifolia* are common, often with *Sporobolus cryptandrus* and *Achnatherum hymenoides*. *Symphoricarpos occidentalis, Artemisia cana*, and *Rosa arkansana* are common shrubs. The largest expanse of relatively intact examples of this macrogroup (approximately 5 million ha) can be found in the Sandhills of north-central Nebraska and southwestern South Dakota. The climate is semi-arid to arid for much of the region where this macrogroup occurs. Soils are somewhat excessively to excessively well-drained, deep sands that are often associated with dune systems and ancient floodplains. These soils can be relatively undeveloped (Entisols) and are highly permeable. This macrogroup is particularly susceptible to wind erosion. Blowouts and sand draws are some of the unique wind-driven disturbances in the sand prairies. Grazing and fire constitute other important dynamics for this macrogroup. Overgrazing and fire suppression can impact the species distribution and dominance.

IVC Geographic Range: This macrogroup is found throughout the central and western Great Plains region ranging from North Dakota, and possibly southern Canada, south to Texas and west into eastern Montana, Wyoming, Colorado, and New Mexico.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, KS, MB, MT, ND, NE, NM, OK, SD, SK, TX, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G889 Northern Great Plains Sand Grassland & Shrubland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J.E. Weaver and T.J. Fitzpatrick (1934); W.L. Tolstead (1942)

IVC Description Author: S. Menard, K. Kindscher, B. Hoagland and D. Diamond

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G889 Northern Great Plains Sand Grassland & Shrubland

[ ]

IVC Colloquial Name: Northern Great Plains Sand Grassland & Shrubland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, CO, MB, MT, ND, NE, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G3G4 rank that was calculated from closely related ecological system global ranks. A rank of G3G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, long-term decline moderate, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1201 *Calamovilfa longifolia - Andropogon hallii* Sand Prairie Alliance** [Prairie Sandreed - Sand Bluestem Sand Prairie Alliance] []
  This alliance, found in the north Great Plains, occurs on sandy dry-mesic sites. Stands are almost exclusively found on sand deposits; a few are on coarse loams. There are two prominent vegetation layers in stands of this alliance and a moderate amount of bare ground. The tallest layer, about 0.6-1.5 m tall, is dominated by midgrasses, particularly *Calamovilfa longifolia and Andropogon hallii*.
- **A1540 *Yucca glauca - Calamovilfa longifolia* Sand Prairie Scrub Alliance** [Soapweed Yucca - Prairie Sandreed Sand Prairie Scrub Alliance] []
  This alliance includes stands of herbaceous vegetation with a sparse shrub layer growing on sandstone outcrops and sandy soils in the northwestern Great Plains. Elevations range from 1100-1850 m. Stands of this alliance contain an open to moderately dense (at least 10% cover), low-shrub layer above a species-rich herbaceous layer. Dominance of the shrub layer by *Yucca glauca* is characteristic (cover ranging from 5-15%). *Artemisia tridentata ssp. wyomingensis* and *Artemisia cana ssp. cana* may be present but are sparse and contribute little cover.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Hoagland and Faber-Langendoen (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A1201 Prairie Sandreed - Sand Bluestem Sand Prairie Alliance

[ ]
Calamovilfa longifolia - Andropogon hallii Sand Prairie Alliance
Northern Plains Prairie Sandreed - Sand Bluestem Prairie

IVC Scientific Name: *Calamovilfa longifolia - Andropogon hallii* Sand Prairie Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance, found in the northern Great Plains, occurs on sandy dry-mesic sites. There are two prominent vegetation layers in stands of this alliance and a moderate amount of bare ground. The tallest layer, about 0.6-1.5 m tall, is dominated by mid grasses, particularly *Calamovilfa longifolia*. Other species present include *Andropogon hallii, Hesperostipa comata, Schizachyrium scoparium, Koeleria macrantha*, and *Sporobolus cryptandrus*. The shorter layer includes several short graminoid species, forbs, and some small shrubs. Graminoids make up the majority of this layer, especially upland Carices. Among the most frequent are *Carex duriuscula, Carex inops ssp. heliophila*, and *Carex filifolia*. *Bouteloua gracilis* is prominent in some

stands, especially in the western portion of this alliance's range. Forbs and shrubs do not usually contribute greatly to the vegetation cover, although forb species diversity can be moderately high. The forbs that are present typically include *Chenopodium leptophyllum, Lathyrus* spp., *Lygodesmia juncea, Phlox hoodii*, and *Liatris punctata*. *Psoralidium lanceolatum* and *Rumex venosus* are most common on the least stabilized locations. Shrubs are uncommon, but when they are present, short shrubs such as *Yucca glauca, Rosa* spp., and *Artemisia frigida* are the most likely to be found. *Artemisia cana* and *Elaeagnus commutata* may be associated with more northern stands. Stands of this alliance are almost exclusively found on sand deposits; a few are on coarse loams. Stands are usually on gentle slopes but can be on flat ground or steep slopes. The soil is sand, loamy sand, or sandy loam, and there is little horizon development. Water penetrates the coarse soil quickly. This results in the upper soil having little available moisture for most of the growing season. Water and wind erosion can be frequent disturbances in this alliance.

IVC Dynamics: Wind is a dominant factor that shapes the landscape where this alliance occurs. Wind sometimes scours sand and vegetation from small areas and creates blowouts. These bare spots are initially colonized by species that are relatively uncommon in this alliance, such as *Redfieldia flexuosa, Muhlenbergia pungens, Yucca glauca*, and *Achnatherum hymenoides*. Eventually, these blowouts succeed to other communities (Savage 1937, Ramaley 1939b, Tolstead 1942, Harrison 1980). Tolstead (1942) cites Nebraska pioneer accounts that dunes were less vegetated than at present, and blowouts and stands were more common before cattle ranching. Fire frequency and extent are also thought to have declined since settlement because of fuel removal by livestock grazing and fire control (Burzlaff 1962, Wolfe 1973). Consequently, active dunes and large blowouts are less common now, as are the pioneer plant species *Redfieldia flexuosa, Andropogon hallii*, and *Yucca glauca* (Harrison 1980).

These grasslands provide excellent summer forage and need careful management to prevent grazing out desirable species. Generally, overgrazing this alliance decreases the cover of species of *Andropogon, Calamovilfa, Eragrostis*, and *Hesperostipa*, and increases the cover of *Bouteloua gracilis, Bouteloua hirsuta, Muhlenbergia pungens, Achnatherum hymenoides*, and *Sporobolus cryptandrus* (Savage 1937, Tolstead 1942, Harrison 1980). Overgrazing also kills out desirable shrubs, especially *Amorpha canescens* and *Prunus pumila var. besseyi* (Ryan et al. 1994). This grassland responds rapidly to management. Deferment of grazing in the late spring and summer favors warm-season grasses such as *Andropogon hallii, Bouteloua hirsuta, Bouteloua gracilis, Calamovilfa longifolia, Eragrostis trichodes, Koeleria macrantha*, and *Schizachyrium scoparium*.

Drought also causes declines in cover of all species, especially tall grasses, and can make the grassland more vulnerable to blowouts. Savage (1937) found large declines in tallgrass cover on sandy sites during drought in 1935. He ranked the cause of damage by decreasing effect: heat, drought, and, to a much lesser extent, grazing and then soil blowing. Ramaley (1939a, b) reports that in Colorado there is marginally enough precipitation to maintain this alliance. Drought causes retrogression to mixed sandhill, sand sage, or blowout communities, which increases *Muhlenbergia pungens, Artemisia filifolia*, and *Achnatherum hymenoides*. Grazing during droughts increases the intensity of the damage (Ramaley 1939a, b). Many of these stands, especially those disturbed by wind and grazing, are vulnerable to invasion by exotic annual species of *Bromus* such as *Bromus arvensis, Bromus squarrosus*, or *Bromus tectorum* (Comer et al. 1999).

IVC Environment: Stands of this alliance occur on sandy sites in the central and northern Great Plains. The climate is temperate, continental with annual precipitation ranging from 46-61 cm. Elevations are generally between 1000 and 1600 m. Stands are found on stabilized sand dunes, interdune valleys, colluvial sand on toeslopes and badland benches (DeVelice et al. 1995). Sites where this alliance is found are usually on gentle to steep slopes on any aspect, but sometimes occur on flat ground (Tolstead 1942, Steinauer 1989). The soils are sand, loamy sand, or sandy loam, and they can be poorly to moderately well-developed (Looman 1980, Johnston 1987, Steinauer 1989). Parent materials include eolian sand and coarse-textured colluvium from sandstone, shales and other sedimentary rocks. There is little runoff or evaporation because moisture quickly sinks into the coarse soil. Soil near the surface is consequently dry throughout much of the year, but moisture is present deeper in the soil profile. This favors deep-rooting species such as *Andropogon hallii* and *Calamovilfa longifolia* (Barnes and Harrison 1982). Water and wind erosion can be frequent disturbances in this alliance. In the north and western extent, adjacent grasslands dominated by *Pascopyrum smithii* or *Bouteloua* spp. occur on fine-textured soils.

DISTRIBUTION

IVC Geographic Range: Grasslands in this alliance occur on sandy sites in the northern Great Plains, including the sandhills of NE, Wyoming and north to Alberta, Saskatchewan and Manitoba, Canada.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, MB, MT, ND, NE, SD, SK, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001473 *Calamovilfa longifolia - Hesperostipa comata* Grassland** [Prairie Sandreed - Needle-and-Thread Grassland] []
  G3 (1996-02-01) AB, CO, MT, NE, SD, WY
- **CEGL002219 *Calamovilfa longifolia - Achnatherum hymenoides* Grassland** [Prairie Sandreed - Indian Ricegrass Grassland] []
  GNR. SK
- **CEGL001471 *Calamovilfa longifolia - Carex inops ssp. heliophila* Grassland** [Prairie Sandreed - Sun Sedge Grassland] []
  G3 (1996-02-01) CO, MT, ND, SD, SK, WY
- **CEGL008289 *Andropogon hallii - Calamovilfa longifolia* Grassland** [Sand Bluestem - Prairie Sandreed Grassland] []
  This sand prairie community is found in the northern Great Plains of the United States and Canada, including much of Nebraska Sandhills. The most abundant species are *Andropogon hallii* and *Calamovilfa longifolia.* G4G5 (2007-01-30) CO, MB, MT, ND, NE, SD, SK
- **CEGL002578 Forb Dune Sparse Vegetation** [Forb Dune Sparse Vegetation] []
  GNR. MB
- **CEGL002577 Shortgrass Dune Sparse Vegetation** [Shortgrass Dune Sparse Vegetation] []
  GNR. MB

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: W.L. Tolstead (1942); J.E. Weaver and F.W. Albertson (1956)
IVC Description Author: S. Menard, K.A. Schulz, L. Allen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A1540 Soapweed Yucca - Prairie Sandreed Sand Prairie Scrub Alliance

[ ]

Yucca glauca - Calamovilfa longifolia Sand Prairie Scrub Alliance

Great Plains Yucca Sand Prairie Scrub

IVC Scientific Name: *Yucca glauca - Calamovilfa longifolia* Sand Prairie Scrub Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes stands of herbaceous vegetation with a sparse shrub layer growing on caliche, sandstone outcrops and sandy soils in the northwestern Great Plains. Elevations range from 1100-1850 m. In the western Great Plains, precipitation occurs mostly in the spring. Summers are hot and dry, except for locally occurring, high-intensity convective storms. Stands typically occur along ridgetops and upper slopes, on sandstone or scoria outcrops and probably on stabilized sand dunes as well. Soils in some cases are residual and relatively deep, with genetic horizons. Texture varies from nearly pure sand on the surface to medium-textured and medium-coarse-textured at depth. Stands of this alliance contain an open to moderately dense (at least 10% cover), low-shrub layer above a species-rich herbaceous layer. Dominance of the shrub layer by *Yucca glauca* is characteristic (cover ranging from 5-15%). *Artemisia tridentata ssp. wyomingensis* and *Artemisia cana ssp. cana* may be present but are sparse and contribute little cover. In the herbaceous layer, *Hesperostipa comata* and *Calamovilfa longifolia* are the most abundant and constant species, and *Bouteloua gracilis, Schizachyrium scoparium*, and *Carex filifolia* often are present but contribute much less cover than do *Hesperostipa* or *Calamovilfa*. *Pseudoroegneria spicata* is dominant in some stands. Forbs are common but contribute little cover; *Artemisia frigida* has the highest constancy, but no forbs are characteristic of the alliance. Litter covers can be high, up to 50% of the ground surface, and bare soil covers the rest of the ground surface.

IVC Dynamics:

IVC Environment: This alliance includes stands of herbaceous vegetation with a sparse shrub layer growing on sandstone outcrops and sandy soils in the northwestern Great Plains. Elevations range from 1100-1850 m. The climate is temperate, mostly continental and semi-arid to arid. Mean annual precipitation ranges from 25-35 cm. In the western Great Plains, precipitation occurs mostly in the spring. Summers are hot and dry, except for locally occurring, high-intensity convective storms. Stands typically occur along ridge tops and upper slopes, on sandstone or scoria outcrops and probably on stabilized sand dunes as well (Prodgers 1978, Thilenius et al. 1995). Soils in some cases are residual and relatively deep, with genetic horizons. Texture varies from nearly pure sand on the surface to medium-textured and medium-coarse-textured at depth (Thilenius et al. 1995), such as loamy sand, sandy loam, fine sandy loam, or loam textural classes (Prodgers 1978).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northwestern Great Plains in South Dakota and Nebraska west to Montana and Wyoming.
IVC Nations: CA?,US
IVC States/Provinces: MB?, MT, ND, NE, SD, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002184** ***Betula occidentalis - Juniperus horizontalis / Calamovilfa longifolia*** **Shrubland** [Water Birch - Creeping Juniper / Prairie Sandreed Shrubland] []
  GNR. MB?, ND

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.S. Reid and G.P. Jones, in Faber-Langendoen et al. (2013)
IVC Description Author: M.S. Reid, G.P. Jones, and S. Menard
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M498 Great Plains Ruderal Grassland & Shrubland

[ ]

IVC Colloquial Name: Great Plains Ruderal Grassland & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup is found in the Great Plains from north of the U.S.-Canadian border to extreme northern Mexico. It is dominated by exotic, invasive grasses, forbs, or, in the south, deciduous shrubs. These species can become abundant after significant disturbance, often associated with agricultural activities, or a disruption of natural disturbance regimes. Common disturbances which favor establishment of this macrogroup include long-term, heavy grazing, planting exotic species for livestock forage, plowing land and then abandoning it, and a disruption of the natural fire regime. Vegetation cover varies from low to very high. Abundant species vary greatly in this macrogroup, depending on the geographic location, seed sources, and nature of land use. Common species in the north include *Agropyron cristatum, Bromus inermis, Bromus arvensis, Bromus tectorum, Elymus repens* (on more moist sites), *Phleum pratense, Poa pratensis*, and *Thinopyrum intermedium*. In the south, *Bothriochloa ischaemum var. songarica, Bouteloua dactyloides* (a native but can be dominant on overgrazed rangeland), *Dichanthium annulatum, Pennisetum ciliare*, and the shrubs *Baccharis neglecta, Crataegus mollis, Crataegus viridis*, and *Rhus lanceolata* can be common. *Gutierrezia texana* and *Amphiachyris dracunculoides* are often extremely abundant on overgrazed sites in Texas. Across the range the forbs *Ambrosia* spp., *Artemisia absinthium, Carduus nutans, Centaurea* spp., *Cirsium arvense, Convolvulus arvensis, Dipsacus fullonum*, and *Euphorbia esula* can be common. This macrogroup also includes native upland shortgrass prairie areas dominated by invasive *Prosopis glandulosa*. This macrogroup can be found on mesic to dry sites on a variety of soils where disturbance regimes have been altered sufficiently to allow the establishment of the exotic species.

IVC Geographic Range: This macrogroup occurs throughout the western Great Plains from the southern Canadian Prairie Provinces to the U.S.-Mexico border and probably into northern Mexico.

IVC Nations: CA,MX,US

IVC States/Provinces: AB, CO, COA, KS, MB, MT, ND, NE, NLE, NM, OK, SD, SK, TAM, TX, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G679 Northern & Central Great Plains Ruderal Grassland & Shrubland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: J. Drake and K.A. Schulz

IVC Description Date: 2015-11-10

IVC Acknowledgments:

G679 Northern & Central Great Plains Ruderal Grassland & Shrubland

[ ]

IVC Colloquial Name: Northern & Central Great Plains Ruderal Grassland & Shrubland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group occurs in the northern two-thirds of the Great Plains. Sites are strongly dominated by exotic grasses and forbs, mostly perennial species but sometimes annuals. Examples range from having a mix of species to sites strongly dominated by one or two species. Abundant species vary across the group, depending on land-use history, including what may have been planted on the site, nearby seed sources, whether a site is mesic or dry, and other factors. Common abundant or dominant species include the grasses *Agropyron cristatum, Agrostis gigantea, Agrostis stolonifera, Bromus inermis, Lolium perenne, Phleum pratense, Poa annua, Poa pratensis*, and *Thinopyrum intermedium* and the forbs *Ambrosia* spp., *Cirsium arvense, Cirsium vulgare, Euphorbia esula*, and *Melilotus officinalis*.

IVC Dynamics: Examples of this group are, by definition, a result of a change in ecological processes or a direct introduction of exotic species. This is usually the result of some combination of a reduction in fire frequency, increased grazing pressure, intentional planting of exotic species or the unintentional spread of exotic species from nearby sources. Many of the exotic species are persistent once they are established on a site so reversion to a native vegetation type is not certain even if the disturbance that allowed the formation of this group is removed.

IVC Environment: This group can be found on a variety of environmental settings. It can occur on wet-mesic to dry-mesic sites ranging from swales and floodplains to drier ridges and slopes.

DISTRIBUTION

IVC Geographic Range: This group is found across the northern two-thirds of the Great Plains from Colorado and Nebraska north with possible outlier occurrences in Utah. It is likely in Kansas, as well.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, KS?, MB, MT, ND, NE, NM, SD, SK, UT, WA, WY

IVC Omernik Ecoregions: 9.2.1.46:P, 9.2.3.47:P, 9.3.1.42:P, 9.3.3.43:P, 9.3.4.44:P, 9.4.1.25:P, 9.4.2.27:P, 9.4.4.28:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2012-10-01)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4249 *Euphorbia esula - Cirsium arvense* Mixed Ruderal Forbland Alliance** [Leafy Spurge - Canada Thistle Mixed Ruderal Forbland Alliance] []
- **A4375 Northern & Central Great Plains Ruderal Grassland & Shrubland Alliance** [Northern & Central Great Plains Ruderal Grassland & Shrubland Alliance] []
  This alliance is found in the Great Plains from Nebraska and Colorado north where exotic grasses and forbs constitute >75% of the herbaceous cover and trees and shrubs each have less than 25% cover.
- **A4250 *Phleum pratense - Poa pratensis - Bromus inermis* Ruderal Grassland Alliance** [Timothy - Kentucky Bluegrass - Smooth Brome Ruderal Grassland Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2015)

IVC Description Author: J. Drake

IVC Description Date: 2015-05-07

IVC Acknowledgments:

A4249 Leafy Spurge - Canada Thistle Mixed Ruderal Forbland Alliance

[ ]

Euphorbia esula - Cirsium arvense Mixed Ruderal Forbland Alliance

Ruderal North-Central Mixed Forbland

IVC Scientific Name: *Euphorbia esula - Cirsium arvense* Mixed Ruderal Forbland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: AB, CO, MT, ND, SD, SK, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2017-12-14)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005268 *Euphorbia esula* Ruderal Forbland** [Leafy Spurge Ruderal Forbland] []
  GNA (1999-08-24) AB, MT, ND, SD, SK, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Hoagland and Faber-Langendoen (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4375 Northern & Central Great Plains Ruderal Grassland & Shrubland Alliance

[ ]
Northern & Central Great Plains Ruderal Grassland & Shrubland Alliance
Northern & Central Great Plains Ruderal Grassland & Shrubland

IVC Scientific Name: Northern & Central Great Plains Ruderal Grassland & Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance occurs in the northern two-thirds of the Great Plains. Sites are strongly dominated by exotic grasses and forbs, mostly perennial species but sometimes annuals. Examples range from having a mix of species to sites strongly dominated by one or two species. Abundant species vary across the group, depending on land-use history, including what may have been planted on the site, nearby seed sources, whether a site is mesic or dry, and other factors. Common abundant or dominant species include the grasses *Agropyron cristatum, Agrostis gigantea, Agrostis stolonifera, Bromus inermis, Lolium perenne, Phleum pratense, Poa annua, Poa pratensis*, and *Thinopyrum intermedium* and the forbs *Ambrosia* spp., *Cirsium arvense, Cirsium vulgare, Euphorbia esula*, and *Melilotus officinalis*.
IVC Dynamics: Examples of this alliance are, by definition, a result of a change in ecological processes or a direct introduction of exotic species. This is usually the result of some combination of a reduction in fire frequency, increased grazing pressure, intentional planting of exotic species or the unintentional spread of exotic species from nearby sources. Many of the exotic species are persistent once they are established on a site so reversion to a native vegetation type is not certain even if the disturbance that allowed the formation of this group is removed.
IVC Environment: This alliance can be found on a variety of environmental settings. It can occur on wet-mesic to dry-mesic sites ranging from swales and floodplains to drier ridges and slopes.

DISTRIBUTION

IVC Geographic Range: This alliance is found across the northern two-thirds of the Great Plains from Colorado and Nebraska north with possible outlier occurrences in Utah. It is likely in Kansas, as well.
IVC Nations: CA,US
IVC States/Provinces: AB, CO, KS?, MB, MT, ND, NE, NM, SD, SK, UT, WY
IVC Omernik Ecoregions: 9.2.1.46:P, 9.2.3.47:P, 9.3.1.42:P, 9.3.3.43:P, 9.3.4.44:P, 9.4.1.25:P, 9.4.2.27:P, 9.4.4.28:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2019-02-04)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Hoagland and Faber-Langendoen (2021)
IVC Description Author: J. Drake
IVC Description Date: 2015-05-07
IVC Acknowledgments: Jim Drake

A4250 Timothy - Kentucky Bluegrass - Smooth Brome Ruderal Grassland Alliance

[ ]
Phleum pratense - Poa pratensis - Bromus inermis Ruderal Grassland Alliance
Western Ruderal Grassland

IVC Scientific Name: *Phleum pratense - Poa pratensis - Bromus inermis* Ruderal Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, CO, MT, ND, NE, NM, SD, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2017-12-14)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005874 *Phleum pratense - Poa pratensis - Bromus inermis* Ruderal Grassland** [Timothy - Kentucky Bluegrass - Smooth Brome Ruderal Grassland] []
  GNA (2004-02-09) AB, MT, NE, SD, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Hoagland and Faber-Langendoen (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

M505 Laurentian-Acadian Acidic Rocky Scrub & Grassland

Arbustaies et herbaçaies laurentiennes et acadiennes sur sol acide sur roc

IVC Colloquial Name: Laurentian-Acadian Acidic Rocky Scrub & Grassland
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup comprises infertile scrub vegetation characterized by variable cover of shrubs, herbs, lichens, and occasional scattered trees, occurring on sandplains and rock outcrops in cool temperate regions of northeastern and north-central North America. Ericaceous shrubs or heath (*Gaylussacia baccata, Kalmia angustifolia, Vaccinium angustifolium, Vaccinium myrtilloides, Vaccinium pallidum*), scrub oaks (*Quercus ilicifolia* or *Quercus prinoides*), stunted oaks (*Quercus rubra*), and dwarf-shrubs (*Arctostaphylos uva-ursi, Corema conradii, Gaultheria procumbens, Leiophyllum buxifolium, Pyxidanthera barbulata*) characterize this vegetation throughout its range. Graminoids are mostly dominant in the herb layer and include *Carex lucorum, Carex pensylvanica, Danthonia spicata, Deschampsia flexuosa, Schizachyrium scoparium*, and/or the non-native *Poa compressa*. *Pteridium aquilinum* is a common fern. Nonvascular species are often important and may include mosses (e.g., *Dicranum* spp., *Polytrichum* spp.) and/or fruticose lichens (e.g., *Cladonia* spp.). Climate is north-temperate, continental to coastal. This vegetation develops in settings within this primarily forested region where exposed, dry, acidic, nutrient-poor conditions do not sustain forest vegetation.

IVC Geographic Range: This macrogroup ranges across southeastern Canada from the Maritime Provinces to the Great Lakes, and south through the northeastern and upper midwestern U.S. to New Jersey, Pennsylvania, Ohio, and the mountains of Virginia and West Virginia.

IVC Nations: CA,US

IVC States/Provinces: CT, MA, MB, ME, MI, MN, NB, NF, NH, NS, NY, OH, ON, PA, QC, VT, WI

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G788 Laurentian-Acadian Acidic Scrub & Grassland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J.W. Harshberger (1916); A.F. Hill (1923); P.M. Catling and V.R. Brownell (1999)

IVC Description Author: S.C. Gawler and L. Sneddon

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G788 Laurentian-Acadian Acidic Scrub & Grassland

[ ]

IVC Colloquial Name: Laurentian-Acadian Acidic Scrub & Grassland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This Laurentian and near-boreal outcrop group is found across central southern Canada and the upper Midwest of the United States. It is found on ridges or summits of resistant acidic bedrock at low to mid elevations with soils ranging from sands to loams. The vegetation is patchy, often a mosaic of woodlands and open glades and typically dominated by various conifers, including *Pinus banksiana* and *Picea mariana*, with occasional *Picea glauca* or *Populus tremuloides*. Hardwoods include *Quercus rubra, Quercus ellipsoidalis*, and *Populus tremuloides*. Structure can vary from treed to low heath shrubs to open lichen woodland. Common grass species include *Danthonia spicata, Oryzopsis asperifolia*, and *Poa compressa*. Dwarf-shrubs include *Comptonia peregrina, Juniperus* spp. and *Vaccinium* spp. *Pteridium aquilinum* may form an almost continuous canopy of fronds in some stands. Exposure and occasional fire are the major factors in keeping the vegetation relatively open.

IVC Dynamics: Exposure, temperature, and thin soils maintain occurrences in an open condition. Some stands may have arisen as a result of previous logging. Fire, both natural and slash fires following logging, may be important in some examples.

IVC Environment: Stands occur on level plains or rolling uplands with gentle to moderate slopes and in depressions ("frost pockets") in pitted outwash topography. Soils range from loams to fine sands and are somewhat acidic (pH 4.6) and are moderately well-drained to well-drained. Soil characteristics vary depending on the age of the stand.

DISTRIBUTION

IVC Geographic Range: This group occurs in the north-central United States and south-central Canada in the Great Lakes region, ranging east to New England.

IVC Nations: CA,US

IVC States/Provinces: CT, MA, MB, ME, MI, MN, NB?, NF, NH, NS?, NY, ON, PA, QC, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3361 *Acer spicatum - Picea glauca / Clintonia borealis* Scrub Alliance** [Mountain Maple - White Spruce / Bluebead Scrub Alliance] []
  This alliance, currently documented from Isle Royale, Michigan, and perhaps occurring more widely in the boreal regions of the upper midwestern United States and Canada, comprises shrublands with scattered boreal tree species such as *Abies balsamea, Betula papyrifera, Picea glauca*, and *Thuja occidentalis*, and shrubs such as *Acer spicatum, Diervilla lonicera, Oplopanax horridus, Sorbus decora, Taxus canadensis*, and *Viburnum edule*.
- **A3908 *Juniperus communis* - Mixed Scrub / *Danthonia spicata* Acidic Bedrock Alliance** [Common Juniper - Mixed Scrub / Poverty Oatgrass Acidic Bedrock Alliance] []
  This alliance is characterized by abundant acidic bedrock outcrops with patchy vegetation with sparsely distributed trees, shrubs, graminoids, and lichens. A northern but subboreal flora consisting of *Pinus banksiana, Pinus strobus, Pinus resinosa, Quercus rubra, Juniperus communis, Sibbaldiopsis tridentata, Danthonia spicata*, and *Poa compressa* is most frequently found in this alliance.
- **A1599 *Pteridium aquilinum - Bromus kalmii* Sand Grassland Alliance** [Western Brackenfern - Arctic Brome Sand Grassland Alliance] []
  This alliance, currently documented from the Great Lakes region and adjacent Canada, comprises meadows dominated by *Pteridium aquilinum* on level plains or rolling uplands and in depressions ("frost pockets") in pitted outwash topography. It is often of anthropogenic origin.
- **A4110 *Vaccinium angustifolium - Vaccinium pallidum* Northern Rocky Heath Alliance** [Lowbush Blueberry - Blue Ridge Blueberry Northern Rocky Heath Alliance] []
  This acidic rock heath barren occurs in the glaciated Acadian-Northern Appalachian region of the northeast on rocky ridges, outcrops and summits.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J.T. Curtis (1959)

IVC Description Author: S.E. Menard

IVC Description Date: 2015-05-04

IVC Acknowledgments:

A3361 Mountain Maple - White Spruce / Bluebead Scrub Alliance

[ ]

Acer spicatum - Picea glauca / Clintonia borealis Scrub Alliance

Great Lakes Subboreal Scrub

IVC Scientific Name: *Acer spicatum - Picea glauca / Clintonia borealis* Scrub Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance, currently documented from Isle Royale, Michigan, and perhaps occurring more widely in the subboreal regions of the upper midwestern United States and Canada, comprises shrublands with scattered boreal tree species such as *Abies balsamea, Betula papyrifera, Picea glauca*, and *Thuja occidentalis*, and shrubs such as *Acer spicatum, Diervilla lonicera, Oplopanax horridus, Rubus parviflorus, Sorbus decora, Taxus canadensis*, and *Viburnum edule*. This alliance also houses earlier successional shrublands characterized by *Rubus parviflorus* that become established following clearing, burning, or other disturbance.
IVC Dynamics: The dynamics of this alliance have not been studied.
IVC Environment: Stands occupy sites on gentle to moderate slopes at elevations ranging from under 200-230 m (650-750 feet). Soils are loams to sandy loam, and moderately well-drained to well-drained.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in north-central U.S. and south-central Canada in the Great Lakes region.
IVC Nations: CA,US
IVC States/Provinces: MI, MN, ON, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005254** ***Taxus canadensis - Viburnum edule - Cornus sericea - Alnus viridis - Oplopanax horridus*** **Shrubland** [Canada Yew - Squashberry - Red-osier Dogwood - Green Alder - Devil's-club Shrubland] []
  GNR. MI, ON?
- **CEGL005253** ***Sorbus decora - Acer spicatum / Dryopteris carthusiana*** **Shrubland** [Northern Mountain-ash - Mountain Maple / Spinulose Woodfern Shrubland] []
  GNR. ON
- **CEGL005248** ***Rubus parviflorus*** **Shrubland** [Thimbleberry Shrubland] []
  This *Rubus parviflorus* shrubland may be an early-successional stage following disturbance by burning or clearing. It occurs on Isle Royale, Michigan, and perhaps more widely in the subboreal regions of the upper midwestern United States and Canada. GNR (2017-10-24) MI, ON?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: The Nature Conservancy (1999b)
IVC Description Author: L. Sneddon
IVC Description Date: 2017-10-24
IVC Acknowledgments:

A3908 Common Juniper - Mixed Scrub / Poverty Oatgrass Acidic Bedrock Alliance

[ ]
Juniperus communis - Mixed Scrub / *Danthonia spicata* Acidic Bedrock Alliance
Laurentian Acidic Rocky Outcrop & Barrens

IVC Scientific Name: *Juniperus communis* - Mixed Scrub / *Danthonia spicata* Acidic Bedrock Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is characterized by abundant acidic bedrock outcrops with patchy vegetation characterized by sparsely distributed trees, shrubs, graminoids, and lichens. A northern but subboreal flora consisting of *Pinus banksiana, Pinus strobus, Pinus resinosa, Quercus rubra, Juniperus communis, Sibbaldiopsis tridentata, Danthonia spicata*, and *Poa compressa* is most frequently found in this alliance. This alliance ranges from the upper Midwest and Canada east to Quebec and Ontario and south to northern New York. Stands of this alliance occur on rock outcrops on ridgetops and upper slopes. The sandy and coarse loamy soils are found only in cracks and depressions in the bedrock. Aspect and slope are variable, although this alliance does not occur on steep slopes.

IVC Dynamics: Exposure, temperature, and thin soils maintain occurrences in an open condition. Some stands may have arisen as a result of previous logging.

IVC Environment: Stands of this alliance occur on dry, thin-soiled rock outcrops on ridgetops and upper slopes (Grigal and Ohmann 1975). The sandy and coarse loamy soils are found in cracks and depressions in the bedrock (Sims et al. 1989). Aspect is variable, generally gentle to moderately slopes; this alliance generally does not occur on steep slopes.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from the upper Midwest and Canada east to Quebec and Ontario and south to northern New York.

IVC Nations: CA,US

IVC States/Provinces: MA, MB, ME?, MI, MN, NF, NH?, NY, ON, QC, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005197 *Corylus cornuta* - *Amelanchier* spp. - *Prunus virginiana* Rocky Shrubland** [Beaked Hazelnut - Serviceberry species - Chokecherry Rocky Shrubland] []
  GNR. MI, MN, ON
- **CEGL005068 *Aronia melanocarpa* Granite Shrubland** [Black Chokeberry Granite Shrubland] []
  GNR. ON
- **CEGL005065 *Juniperus communis* - *(Quercus rubra) / Juniperus horizontalis* - *Arctostaphylos uva-ursi* Shrubland** [Common Juniper - (Northern Red Oak) / Creeping Juniper - Kinnikinnick Shrubland] []
  G3G4 (1998-06-22) MI, ON
- **CEGL005214 *Picea glauca* - *Abies balsamea* Basalt - Conglomerate Woodland** [White Spruce - Balsam Fir Basalt - Conglomerate Woodland] []
  GNR. MI, MN, ON
- **CEGL002491 *Pinus banksiana* / *Cladonia* spp. Subboreal Rock Outcrop** [Jack Pine / Cup Lichen species Subboreal Rock Outcrop] []
  G3G5 (1996-10-03) MB, MN, ON
- **CEGL005158 Moist Granite Pavement Barren Sparse Vegetation** [Moist Granite Pavement Barren Sparse Vegetation] []
  GNR. ON
- **CEGL005157 *Danthonia spicata* - *Poa compressa* Granite Grassland** [Poverty Oatgrass - Canada Bluegrass Granite Grassland] []
  GNR. MI, MN, ON
- **CEGL005156 Sandstone Pavement Barren Sparse Vegetation** [Sandstone Pavement Barren Sparse Vegetation] []
  GNR. ON
- **CEGL005101 (*Pinus strobus, Quercus rubra*) / *Danthonia spicata* Acidic Bedrock Scrub Grassland** [(Eastern White Pine, Northern Red Oak) / Poverty Oatgrass Acidic Bedrock Scrub Grassland] []
  This acidic bedrock glade and woodland occurs in the Upper Great Lakes region of the United States and Canada, above the granitic bedrock shorelines or on rocky openings. G3G4 (2011-07-28) MI, ON?, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: D.F. Grigal and L.F. Ohmann (1975)
IVC Description Author: L.A. Sneddon
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A1599 Western Brackenfern - Arctic Brome Sand Grassland Alliance

[ ]
Pteridium aquilinum - Bromus kalmii Sand Grassland Alliance
Brackenfern Sand Grassland

IVC Scientific Name: *Pteridium aquilinum - Bromus kalmii* Sand Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance, currently documented from the Great Lakes region and adjacent Canada, comprises meadows dominated by *Pteridium aquilinum* on level plains or rolling uplands and in depressions ("frost pockets") in pitted outwash topography. It is often of anthropogenic origin. Stands may have originated after severe slash fires following logging that destroyed or reduced the humus in the soil. In some cases the sites may have originally been *Pinus resinosa* or *Pinus banksiana* barrens, where the pines occurred as a sparse layer over the grassland. This vegetation is fairly stable, slowly invaded by *Populus tremuloides* and *Abies balsamea*, but frost and other factors may slow their invasion. Stands are dominated by ferns, forbs, and graminoids, with tree cover less than 10%. *Pteridium aquilinum* may form an almost continuous cover of fronds. Graminoid diversity is high, including *Bromus kalmii, Danthonia spicata, Elymus trachycaulus*, and *Poa compressa*. Associated forbs include *Symphyotrichum ciliolatum, Solidago nemoralis*, and *Fragaria virginiana*. Exotic species composition can be high, including *Hieracium aurantiacum, Lactuca serriola, Phleum pratense, Poa compressa, Poa pratensis, Rumex acetosella*, and *Verbascum thapsus*.
IVC Dynamics: These bracken-dominated grasslands likely originated through fire. Many areas have scattered pine stumps. Stands may have originated after severe slash fires following logging that destroyed or reduced the humus in the soil. In some cases the sites may have originally been *Pinus resinosa* or *Pinus banksiana* barrens, where the pines occurred as a sparse layer over the grassland. The bracken grasslands are fairly stable. They are slowly invaded by *Populus tremuloides* and *Abies balsamea*, but frost and other factors may slow their invasion.
IVC Environment: This alliance occurs on level plains or rolling uplands and in depressions ("frost pockets") in pitted outwash topography.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the Great Lakes region, New York, and adjacent Canada.
IVC Nations: CA,US
IVC States/Provinces: WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005142 *Pteridium aquilinum - Bromus kalmii* Grassland** [Western Brackenfern - Arctic Brome Grassland] [] GNR. WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J.T. Curtis (1959)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A4110 Lowbush Blueberry - Blue Ridge Blueberry Northern Rocky Heath Alliance

[ ]

Vaccinium angustifolium - *Vaccinium pallidum* Northern Rocky Heath Alliance

Acadian-Appalachian Rocky Outcrop

IVC Scientific Name: *Vaccinium angustifolium* - *Vaccinium pallidum* Northern Rocky Heath Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This northern or high-elevation acidic rock heath barren occurs in the glaciated northeastern states on rocky ridges, outcrops and summits. The physiognomy of this community is patchy and variable, ranging from woodland to shrubland to sparsely vegetated rock. A tree canopy is absent or poorly developed, usually consisting of scattered and stunted trees with less than 10% cover. Tree species include *Picea rubens, Abies balsamea, Quercus rubra, Pinus strobus, Betula papyrifera, Betula populifolia*, or *Acer rubrum*. Scattered tall shrubs include *Sorbus americana, Viburnum nudum* var. *cassinoides, Ilex mucronata, Aronia melanocarpa, Comptonia peregrina*, or *Amelanchier* spp. Prominent dwarf heath shrubs include *Vaccinium angustifolium, Vaccinium myrtilloides, Vaccinium pallidum, Gaylussacia baccata, Arctostaphylos uva-ursi*, and *Kalmia angustifolia*. The sparse herb layer includes graminoids such as *Deschampsia flexuosa, Danthonia spicata, Carex lucorum, Schizachyrium scoparium*, and *Piptatheropsis pungens*, and the forbs *Sibbaldiopsis tridentata, Solidago simplex* var. *randii, Minuartia glabra, Maianthemum canadense, Gaultheria procumbens, Trientalis borealis*, and *Pteridium aquilinum*. Abundant mosses and lichens form a bryophyte layer characterized by *Polytrichum commune, Polytrichum juniperinum, Polytrichum piliferum, Dicranum polysetum*, and *Cladonia* lichens. These heath balds are distinguished by the presence of boreal species such as *Sorbus americana* and *Sibbaldiopsis tridentata* combined with temperate species such as *Quercus rubra, Quercus montana, Carex pensylvanica, Carex lucorum*, and *Betula populifolia*. The soils are shallow, well-drained, dry, acidic, coarse sands. Expanses of exposed bedrock are typical, with minimal soil development restricted to crevices or shelter areas. Elevations of known examples range from almost sea level on the Maine coast to about 825 m (2700 feet) inland.

IVC Dynamics:

IVC Environment: The soils are shallow, well-drained, dry, acidic, coarse sands. Expanses of exposed bedrock are typical, with minimal soil development restricted to crevices or shelter areas. Elevations of known examples range from almost sea level on the Maine coast to about 825 m (2700 feet) inland.

DISTRIBUTION

IVC Geographic Range: This acidic rock heath barren occurs in the glaciated Acadian-Northern Appalachian region of the northeast.

IVC Nations: CA,US

IVC States/Provinces: CT, MA, ME, NB?, NF, NH, NY, PA, QC?, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005094 *Vaccinium angustifolium* - *Sorbus americana / Sibbaldiopsis tridentata* Dwarf-shrubland** [Lowbush Blueberry - American Mountain-ash / Shrubby Fivefingers Dwarf-shrubland] []
  GNR. CT, MA, ME, NH, PA, QC?, VT
- **CEGL006104 *Adiantum aleuticum* - *Asplenium* spp. - *Cerastium arvense* Sparse Vegetation** [Aleutian Maidenhair - Spleenwort species - Field Chickweed Sparse Vegetation] []
  G1G2 (1998-12-07) MA, NF, VT
- **CEGL008589 *Pinus strobus* - *Quercus rubra / Gaylussacia baccata* Scrub Outcrop** [Eastern White Pine - Northern Red Oak / Black Huckleberry Scrub Outcrop] []
  This acidic open rock outcrop type occurs in scattered locations at relatively low elevations throughout the Appalachian-Acadian region. GNR. ME, NB?, NH, NY, QC?, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen and L. Sneddon
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments: S. Gawler

M507 Laurentian-Acadian Calcareous Scrub & Grassland

Arbustaies et herbaçaies laurentiennes et acadiennes sur sol calcaire

IVC Colloquial Name: Laurentian-Acadian Calcareous Scrub & Grassland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup encompasses calcareous outcrops and alvar grasslands and shrublands that occur in isolated patches in the Laurentian-Acadian region of southeastern Canada and the northeastern United States. Alvars are well-described, and are found in the temperate-boreal transition of the Great Lakes and Lake Winnipeg basins. They are characterized by distinctive scrub and herb flora, of eastern tallgrass prairie elements and eastern subboreal elements, with less than 10% tree cover. Alvars occur both as open grasslands and pavements, with shrubs <25% cover and as shrublands, where shrubs are >25%. Common alvar species include *Carex crawei, Carex scirpoidea, Danthonia spicata, Deschampsia cespitosa, Eleocharis compressa, Juniperus horizontalis, Packera paupercula, Schizachyrium scoparium*, and *Sporobolus heterolepis*. In more exposed areas, there is a mosaic of mossy patches and exposed bedrock that is covered with crustose and foliose lichens. In shrubby areas, the dominant shrub is the short to tall shrub *Juniperus communis*, mixed with *Juniperus horizontalis* and/or *Dasiphora fruticosa ssp. floribunda*, or a mix of scrub forms of tree species such as *Abies balsamea, Larix laricina, Picea glauca*, and *Thuja occidentalis*. Alvars are maintained by associated geologic, hydrologic, and other landscape processes. In particular, most types of alvar tend to flood each spring, then experience moderate to severe drought in summer months. They include open pavement, grassland, and shrubland/woodland types. Alvar communities occur in an ecological matrix with similar bedrock and hydrologically influenced communities. Four key ecological processes influence Great Lakes alvar communities: (1) hydrology and soil moisture regime, (2) fire regime and land-use history, (3) herbivory: browsing by deer and grazing by cattle, and (4) the invasion of exotic plant species. Calcareous rocky outcrops are poorly described in the region.

IVC Geographic Range: Open shrub, scrub and herb calcareous rocky vegetation is found in isolated patches in the Laurentian-Acadian region of southeastern Canada and the northeastern United States, from Minnesota and southeastern Manitoba to Maine and Nova Scotia. Distribution in Lower New England states is uncertain.

IVC Nations: CA,US

IVC States/Provinces: MB, ME, MI, MN, NB, NF, NH, NS, NY, OH, ON, PE?, QC, VT, WI

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G061 Great Lakes Alvar []**
- **G767 Northern Plains-Boreal Transition Alvar []**
- **G681 Laurentian-Acadian Alkaline Rock Barren & Scrub []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2014)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G061 Great Lakes Alvar

[ ]

IVC Colloquial Name: Great Lakes Alvar

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alvar grassland and shrubland group is found in the temperate-boreal transition of the Great Lakes basin. The group is characterized by distinctive scrub and herb flora, of eastern tallgrass prairie elements and eastern subboreal elements, with less than 10% tree cover. It is found primarily in an arc along the Niagara Escarpment from northern Lake Michigan across

northern Lake Huron and eastern Ontario and northwestern New York State. The climate is humid and subhumid, and sites are centered on areas of glaciated horizontal limestone/dolomite (dolostone) bedrock pavement with a discontinuous thin soil mantle. This group can be divided into two main variants: (1) open grasslands and pavements, with shrubs <25% cover and (2) shrublands, where shrubs are >25%. These two variants are distinguished by the amount of exposed bedrock, the cover of herbaceous plants (mostly grasses and sedges), the cover of shrubs, and the cover of trees (<10% cover).

Alvar grasslands are typically dominated by *Schizachyrium scoparium, Deschampsia cespitosa, Sporobolus heterolepis, Eleocharis compressa, Carex crawei, Juniperus horizontalis, Carex scirpoidea*, and *Packera paupercula*. Other characteristic grasses and herbs include *Sporobolus neglectus, Sporobolus vaginiflorus, Trichostema brachiatum*, and *Allium schoenoprasum*. In parts, there is a mosaic of pavement and grassland areas dominated by characteristic native species, such as *Sporobolus neglectus, Sporobolus vaginiflorus, Panicum philadelphicum, Poa compressa, Oligoneuron album, Danthonia spicata, Trichostema brachiatum, Packera paupercula, Carex crawei*, and *Panicum flexile*. In more exposed areas, there is a mosaic of mossy patches and exposed bedrock that is covered with crustose and foliose lichens.

In shrubby areas, the dominant shrub is the short to tall shrub *Juniperus communis*, mixed with *Juniperus horizontalis* and/or *Dasiphora fruticosa ssp. floribunda*, or a mix of scrub forms of tree species such as *Picea glauca, Thuja occidentalis, Larix laricina, Abies balsamea*. Mixed among the shrubs are *Danthonia spicata, Oligoneuron album, Packera paupercula, Clinopodium arkansanum*, and *Tetraneuris herbacea*. Characteristic tall shrubs (2 to 5 m tall) include scrub forms of trees such as *Juniperus virginiana, Thuja occidentalis*, and *Quercus macrocarpa*. Alvars are maintained by associated geologic, hydrologic, and other landscape processes. In particular, most types of alvar tend to flood each spring, then experience moderate to severe drought in summer months. They include open pavement, grassland, and shrubland/woodland types. Alvar communities occur in an ecological matrix with similar bedrock and hydrologically influenced communities. Four key ecological processes influence Great Lakes alvar communities: (1) hydrology and soil moisture regime, (2) fire regime and land-use history, (3) herbivory: browsing by deer and grazing by cattle, and (4) the invasion of exotic plant species.

IVC Dynamics: Fire: Natural fires appear always to have been at least an incidental part of their history, and probably instrumental in maintaining some alvar types, such as juniper alvar shrubland. This suggests that aggressive fire suppression is not needed on alvar habitats. Based on evidence from alvars that are open with old trees and have no burn evidence, it is clear that not all alvars require fire to remain in an open state. If fire is at all required in some of these alvars, it could only be on the basis of a return cycle of many hundreds of years. Therefore, the use of fire as a management tool is not advised for all alvar community types. (Reschke et al. 1999).

Grazing: White-tail deer are a native species in the Great Lakes basin, but artificially high population levels across much of the basin, created and sustained by habitat modifications and management policies, are seriously impacting plant populations in many natural habitats (Rooney et al. 2004). Alvars in the Great Lakes basin and elsewhere have long been influenced by grazing livestock. Grazing has been little studied in North America, but has been documented on alvars of the Swedish island of Oland, where grazing by domestic animals has occurred since the first centuries A.D. (Titlyanova et al. 1988). There, grazing has been considered essential to prevent encroachment in closed grasslands occurring on siliceous soils, where soil depth would potentially support woody vegetation (Bengtsson et al. 1988, Rosen 1992). Closed turf of ungrazed sites hindered germination of perennial herbs, and the short turf and gaps in grazed communities increased the abundance and persistence of some monocarpic plant species (Rusch 1988). However, the intensity of grazing appears to be critical. A comparison of ungrazed, moderately grazed, and heavily grazed sites showed decreased biomass and floristic changes in the heavily grazed sites, with perennial and annual ruderal species replacing the dominant alvar species. Alvar lichens had the highest biomass values in the moderately grazed sites (Titlyanova et al. 1988).

Brownell (1998) has noted that where grazing is intense on Great Lakes alvar grasslands, the grasses may be reduced and that species avoided by cattle such as *Eleocharis compressa* may increase in abundance. Rosette-forming species such as *Symphyotrichum ciliolatum* and *Solidago* species also may increase. *Ranunculus fascicularis* is much more frequent on some alvars subject to grazing than on adjacent non-grazed sites. Nevertheless, even light grazing tends to result in elimination of certain species, such as the disjunct *Orobanche fasciculata* (Catling and Brownell 1995). These factors led the Alvar Working Group to hypothesize that cattle grazing is generally detrimental to alvar communities, but some light grazing may help to keep alvar areas open (Reschke et al. 1999).

Exotics: Several exotic species are invasive and problematic in alvar communities, including *Hypericum perforatum* in Michigan, *Poa compressa* in Ontario and New York, and *Cynanchum rossicum, Rhamnus cathartica, Lonicera tatarica*, and *Lonicera morrowii* in New York. *Poa compressa*, which is considered by most experts to be an introduced species, is also well-established on many alvar sites. These exotic species compete with native species for space and nutrients and, in some cases, become dominant, significantly reducing the ecological value of alvar communities (Reschke et al. 1999).

IVC Environment: *Climate:* Alvars are found in humid and subhumid climates. *Soil/substrate/hydrology:* Alvars are natural systems of humid and subhumid climates, centered on areas of glaciated horizontal limestone/dolomite (dolostone) bedrock pavement with a discontinuous thin soil mantle. Most hydrologic studies of alvars in the Great Lakes region have concentrated on Chaumont Barrens in New York State (Feeney 1996, 1997, Reschke et al. 1999). Reschke (1995) found strong correlations between soil moisture conditions and vegetation types, with "alvar grasslands" (equivalent to tufted hairgrass wet alvar grassland) located in the wettest, seasonally flooded areas, and "calcareous pavement barrens" (equivalent to juniper alvar

shrubland) in the drier, never-flooded areas. At the Limerick Cedars alvar, also in New York State, Gilman (1995) observed that alvar community structure was influenced by rapidly changing environmental conditions and differential tolerances of plants, especially to periodic drought.

Each alvar community type undoubtedly has its own special rhythm of seasonal wetness and dryness, and studies to date have only begun to document these patterns. Based on the Chaumont Barrens work, the hydrology of alvar grasslands has a considerable seasonal variation ranging from near-flooded conditions to near desiccation. Flooded conditions occur during March, April, May, and into June, and again in late September through November until snows accumulate. These alvar grasslands achieve a near-wetland condition based upon the characteristics of the principal grassland soils, vegetation, and the spring and fall hydrologic conditions. Wet spring and fall conditions are usually interrupted by a very dry period in July and August in which all ponding ends and vegetation can be stressed to near, or beyond, the wilting point. Soils are very shallow (average is about 6 cm), and hold limited supplies of water; this limited soil moisture reservoir appears to be quickly depleted in dry periods. Surface temperatures on exposed rock within alvars can reach very high levels, from 43° to 53° C during summer periods (Gilman 1995, Schaefer and Larson 1997). Because of these factors, soils approach total desiccation in August and September, even during cool wet years (Reschke et al. 1999). The rate of drying varies among different alvar community types. Shrubland alvars (in this case juniper alvar shrubland) consistently appear to dry more rapidly than grasslands (including tufted hairgrass wet alvar grassland and little bluestem alvar grassland) or adjacent woods.

The extreme range in hydrologic conditions appears to be a principal factor in limiting the invasion of woody species and maintaining grassland and other open alvar communities (Stephenson and Herendeen 1986, Reschke 1995). A hard summer drought on the Maxton Plains alvars on Drummond Island resulted in a die-back of woody plants that did not have their roots in moist bedrock cracks, along with an increased diversity of annual alvar plants the following year (Stephenson and Herendeen 1986).

DISTRIBUTION

IVC Geographic Range: Almost all of North America's alvars occur within the Great Lakes basin, primarily in an arc along the Niagaran Escarpment from northern Lake Michigan across northern Lake Huron and eastern Ontario and northwestern New York State.

IVC Nations: CA,US

IVC States/Provinces: MI, NY, OH, ON, QC?, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G3 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3103 *Juniperus communis - Picea glauca* Alvar Shrubland Alliance** [Common Juniper - White Spruce Alvar Shrubland Alliance] []
  The juniper alvar shrubland alliance is dominated by tall shrubs (2-5 m tall) or scrub trees, including *Juniperus communis, Juniperus virginiana, Thuja occidentalis*, and *Quercus macrocarpa*. It occurs throughout the Great Lakes region of the United States and Canada, on very shallow soils (usually less than 30 cm deep) over flat limestone outcrops (pavements).
- **A3104 *Sporobolus heterolepis - Deschampsia cespitosa / Dasiphora fruticosa* Alvar Grassland Alliance** [Prairie Dropseed - Tufted Hairgrass / Shrubby-cinquefoil Alvar Grassland Alliance] []
  This mesic to wet-mesic alvar grassland and pavement occurs around the eastern and central Great Lakes, on calcareous bedrock, dominated by sedges and grasses, including *Deschampsia cespitosa, Schizachyrium scoparium*, and *Sporobolus heterolepis*, with scattered short to tall shrubs, especially *Dasiphora fruticosa ssp. floribunda* and *Juniperus horizontalis*.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: P.M. Catling and V.R. Brownell (1995)

IVC Description Author: C. Reschke and D. Faber-Langendoen

IVC Description Date: 2013-09-07
IVC Acknowledgments:

A3103 Common Juniper - White Spruce Alvar Shrubland Alliance

[ ]
Juniperus communis - Picea glauca Alvar Shrubland Alliance
Great Lakes Alvar Shrubland

IVC Scientific Name: *Juniperus communis - Picea glauca* Alvar Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Shrubs dominate this juniper alvar shrubland alliance, with over 25% cover of tall, short, and dwarf-shrubs; the average is about 43% cover of shrubs, with less than 10% of that being tall shrubs. A characteristic short (0.5-2 m) to tall (2-5 m) shrub is *Juniperus communis*, often associated with scrub forms of trees such as *Juniperus virginiana, Thuja occidentalis*, and *Quercus macrocarpa*. Tree forms (>5 m tall) of these species may be present, but trees have less than 10% cover in the community. Other less common trees (>5 m tall) that may be present include *Carya ovata, Ulmus thomasii*, and *Fraxinus americana*. Characteristic short shrubs (0.5-2 m tall) include *Cornus racemosa, Prunus virginiana, Rhus aromatica*, and *Viburnum rafinesqueanum*. Some dwarf-shrubs (under 0.5 m tall) are usually present, including *Arctostaphylos uva-ursi* and *Symphoricarpos albus*. Characteristic vines include *Toxicodendron radicans* and *Vitis riparia*. The herb layer forms a dry, grassy meadow between the shrubs; average cover of herbs is about 23%. The most abundant herbs are *Carex eburnea, Carex umbellata, Danthonia spicata, Iris lacustris*, and *Oligoneuron album*. Less than 50% of the ground surface is exposed limestone bedrock, which is usually covered with lichens, mosses, and algae. Grikes (eroded cracks in the rock up to 2 m or more deep and extending 5-30 m in length) may occur, with shrubs and trees rooted in the cracks. The juniper alvar shrubland occurs throughout the Great Lakes region of the United States and Canada, in northern New York, southern Ontario, northern Ohio, northern Michigan, and eastern Wisconsin. Stands occur on very shallow soils (usually less than 30 cm deep) over flat limestone outcrops (pavements). Moisture varies over the season, but summer droughts are typical. Juniper - white spruce alvar shrublands often occur in a patchy landscape mosaic with other alvar communities, including tufted hairgrass wet alvar grassland, little bluestem alvar grassland, annual alvar pavement-grassland, alvar nonvascular pavement, and poverty grass dry alvar grassland.
IVC Dynamics:
IVC Environment: Stands are found on exposed rocky hilltops, ridges, and slopes. Soils are thin and contain sand and gravel. Exposed bedrock is common. In the Midwest the bedrock is basalt. High winds move over the ridges and slopes and are an important factor in maintaining the structure of these stands.

DISTRIBUTION

IVC Geographic Range: The juniper alvar shrubland alliance occurs throughout the Great Lakes region of the United States and Canada, in northern New York, southern Ontario, northern Ohio, northern Michigan, and eastern Wisconsin.
IVC Nations: CA,US
IVC States/Provinces: MI, NY, OH, ON, QC?, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005212** ***Juniperus communis - (Juniperus virginiana) - Rhus aromatica - Viburnum rafinesqueanum / Oligoneuron album*** **Shrubland** [Common Juniper - (Eastern Red-cedar) - Fragrant Sumac - Downy Arrow-wood / Prairie Goldenrod Shrubland] []
  G3 (1998-12-31) MI, NY, OH, ON, WI
- **CEGL005211** ***Picea glauca - Thuja occidentalis - Juniperus communis / Iris lacustris - Carex eburnea*** **Shrubland** [White Spruce - Northern White-cedar - Common Juniper / Dwarf Lake Iris - Bristleleaf Sedge Shrubland] []
  G1G2 (1998-05-21) MI, ON

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G.J. Edinger et al. (2002)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-09-26
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by O. Loucks.

A3104 Prairie Dropseed - Tufted Hairgrass / Shrubby-cinquefoil Alvar Grassland Alliance

[ ]
Sporobolus heterolepis - Deschampsia cespitosa / Dasiphora fruticosa Alvar Grassland Alliance
Great Lakes Alvar Grassland

IVC Scientific Name: *Sporobolus heterolepis - Deschampsia cespitosa / Dasiphora fruticosa* Alvar Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance occurs around the eastern and central Great Lakes on calcareous bedrock (dolomite or limestone). The physiognomy is dominated by sedges and grasses with scattered short to tall shrubs (<25%), and sometimes trees (<10%), growing in thin soil over calcareous bedrock. Areas of exposed bedrock pavement are common. Dwarf-shrubs such as *Juniperus horizontalis* and *Dasiphora fruticosa ssp. floribunda* may have variable cover. There are three subtypes of this alliance. The dominant species in each are as follows: subtype 1 (mesic alvar grassland) contains *Carex scirpoidea, Carex* spp., *Schizachyrium scoparium*, and *Sporobolus heterolepis*; subtype 2 (wet-mesic alvar grassland) contains *Carex crawei, Deschampsia cespitosa*, and *Eleocharis compressa*; subtype 3 (alvar pavement grassland) contains annual grasses such as *Trichostema brachiatum, Panicum philadelphicum, Sporobolus neglectus*, and *Sporobolus vaginiflorus* as well as various lichen spp. Windthrow can occur in alvars because of the thin soils and proximity to major streams (which often funnel windstorms) and the Great Lakes. The thin soils are also droughty, giving the potential for tree-killing drought or surface fires. Thus, stands of this alliance are maintained as primarily herb-and-dwarf-shrub-dominated communities. Flooding after spring snowmelt may also limit tree growth by creating anaerobic conditions for a few weeks.
IVC Dynamics: At some New York/Ontario sites there is a distinctive soil moisture regime of alternating wet and dry seasons; they are often saturated in early spring and late fall, and they are subject to severe summer drought in most years (except unusually wet years). Due to the very shallow soils, and often saturated conditions during freeze-thaw cycles in early and late winter, needle ice often forms in the soils, causing frost-heaving of the shallow soils. Windthrow can occur in alvars because of the thin soils and proximity to major streams (which often funnel windstorms) and the Great Lakes. The thin soils are also droughty, giving the potential for tree-killing drought or surface fires. Thus, stands of this alliance are maintained as primarily herb-and-dwarf-shrub-dominated communities. Flooding after spring snowmelt may also limit tree growth by creating anaerobic conditions for a few weeks.
IVC Environment: Within these sites, there are mosaic patches, including drier places where there is a soil layer of about 15 cm over bedrock and in areas where soil is present only in crevasses in bedrock, and moist places where soils are mildly to moderately alkaline (pH 7.2-8.0) sandy loams or loamy sands less than 25 cm deep. Although saturated to varying degrees by water in the spring, sites are very droughty in the summer. Lower areas can be more moist and therefore often develop loam. Alvar is found over calcareous bedrock (dolomite or limestone) of Middle and Late Ordovician and Early Silurian origin.

DISTRIBUTION

IVC Geographic Range: This alliance is found in lower Michigan, southern New York, Ohio, and in Canada, in southern Ontario and possibly Quebec.
IVC Nations: CA,US
IVC States/Provinces: MI, NY, OH, ON, QC?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005192 *Tortella tortuosa - Cladonia pocillum - Placynthium* spp. Sparse Vegetation** [Twisted Moss - Cup Lichen - Black-thread Lichen species Sparse Vegetation] []
  G2 (1998-12-31) MI, NY, OH, ON
- **CEGL005235 *Sporobolus neglectus - Sporobolus vaginiflorus - Trichostema brachiatum - Panicum philadelphicum - (Poa compressa)* Alvar Grassland** [Barrens Dropseed - Poverty Dropseed - Fluxweed - Philadelphia Panicgrass - (Canada Bluegrass) Alvar Grassland] []
  G2 (1998-05-21) NY, ON
- **CEGL005236 *Juniperus horizontalis - Dasiphora fruticosa / Schizachyrium scoparium - Carex richardsonii* Dwarf-shrubland** [Creeping Juniper - Shrubby-cinquefoil / Little Bluestem - Richardson's Sedge Dwarf-shrubland] []
  G2 (1998-12-31) MI, ON
- **CEGL005234 *Sporobolus heterolepis - Schizachyrium scoparium - (Carex scirpoidea) / (Juniperus horizontalis)* Grassland** [Prairie Dropseed - Little Bluestem - (Northern Single-spike Sedge) / (Creeping Juniper) Grassland] []
  G2 (1998-05-21) MI, ON
- **CEGL005100 *Danthonia spicata - Poa compressa - (Schizachyrium scoparium)* Grassland** [Poverty Oatgrass - Canada Bluegrass - (Little Bluestem) Grassland] []
  G2? (1998-12-31) MI, NY, ON
- **CEGL005110 *Deschampsia cespitosa - (Sporobolus heterolepis, Schizachyrium scoparium) - Carex crawei - Packera paupercula* Grassland** [Tufted Hairgrass - (Prairie Dropseed, Little Bluestem) - Crawe's Sedge - Balsam Groundsel Grassland] []
  G2 (1998-05-21) MI, NY, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G.J. Edinger et al. (2002)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-09-26
IVC Acknowledgments:

G767 Northern Plains-Boreal Transition Alvar

[ ]

IVC Colloquial Name: Northern Plains-Boreal Transition Alvar
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alvar group is found in Manitoba, in the Interlake region between the southern basins of Lake Manitoba and Lake Winnipeg. It is limited to the central portion of the Interlake region, associated with near-surface dolomitic limestone pavement. This alvar group includes three major types: (a) alvar grassland, (b) alvar shrubland, and (c) alvar wetland. Alvar savanna, with tree cover up to 60%, is treated as a limestone woodland type. Alvar grassland is characterized by a dominant cover of graminoid species, including *Danthonia spicata, Bromus porteri, Elymus trachycaulus, Poa annua*, and *Koeleria macrantha*. Other dominant species include *Juncus dudleyi, Geum triflorum*, and *Antennaria* spp. Trees are typically absent or restricted to the periphery, and shrub cover is very low and typically limited to *Juniperus horizontalis* and *Dasiphora fruticosa ssp. floribunda*. Forb cover is not high and has a lower diversity of species than other alvar types. Alvar shrubland can be divided into several subtypes. These include a prairie shrub subtype dominated by *Juniperus horizontalis* and *Arctostaphylos uva-ursi*, with the dominant grass species *Andropogon gerardii, Danthonia spicata*, and *Festuca hallii*. Tree species include *Populus tremuloides* and *Quercus macrocarpa*. The boreal shrub subtype contains more *Juniperus communis* than prairie shrubs, and *Viburnum rafinesqueanum* and *Betula occidentalis* are common. *Danthonia spicata* is the dominant grass. *Cladonia* species and *Pinus banksiana* also become dominant. Other shrub types include a mixed prairie/boreal subtype and a boulder/exposed ridge subtype. The moist or wet alvar type (alvar wetland) is dominated by *Carex* spp., *Juncus* spp., *Eleocharis* spp., *Deschampsia cespitosa*, and mosses. Where bare limestone occurs there is only moss and occasionally *Juniperus horizontalis* or *Dasiphora fruticosa ssp. floribunda*. Overall it appears that invasives in Manitoba alvars are infrequent at the present time.

IVC Dynamics: Most alvar sites are grazed. The effects of grazing and other land use on alvar in Manitoba is not known, and each type of alvar may respond differently (Manitoba Alvar Initiative 2012).

IVC Environment: These alvars are located on bedrock laid during the Silurian and Ordovician periods, which consists primarily of dolomite (Province of Manitoba (2012, in Manitoba Alvar Initiative 2012). Alvar grassland sites are typically grazed. Soil depth typically ranges from 5 to 10 cm, with occasional patches of bare rock with a few mosses. Some areas have small exposed outcrops along the edge of a plateau formation, typically less than 1 m in height. Alvar shrubland is characterized by bare limestone pavement with a dominant cover of shrubs, few stunted trees, and a high cover of mosses and lichens. Soil is typically <5 cm deep or absent over the bedrock and plant growth is restricted to cracks and seams in the pavement. There is little or no drainage, and after rain, water is trapped and temporarily floods the area. This is followed by drought-like conditions in which some species of lichens and mosses can flourish. Moist or wet alvars average about 5 cm of soil with the occasional patch of bare limestone bedrock. These are low areas compared to the surrounding topography and are bordered partially by other wetland types (Manitoba Alvar Initiative 2012).

DISTRIBUTION

IVC Geographic Range: These alvar ecosystems are found in Manitoba in the Interlake region between the southern basins of Lake Manitoba and Lake Winnipeg.
IVC Nations: CA
IVC States/Provinces: MB
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Manitoba Alvar Initiative (2012)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2015-05-05
IVC Acknowledgments: This information is based on the Manitoba Alvar Initiative (2012) report, authored by Rebekah Neufeld of Nature Conservancy of Canada, Manitoba Region. Brandon Manitoba, Rebekah Neufeld, Chris Friesen , and Cary Hamel.

G681 Laurentian-Acadian Alkaline Rock Barren & Scrub

[ ]

IVC Colloquial Name: Laurentian-Acadian Alkaline Rock Barren & Scrub
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group occurs in southern Canada from Manitoba east and is characterized by sparse vascular vegetation, often occurring as patches. Low shrubs (<0.5 m) or scrubby trees can be present along with grasses and forbs and the cover of all combined is generally 2-25%. Mosses and lichens often have high cover. These sparsely vegetated barrens are not well-described but common species include scrubby *Juniperus virginiana* and *Thuja occidentalis*, shrubs such as *Cornus rugosa, Dasiphora fruticosa ssp. floribunda*, and *Juniperus communis*, and herbaceous species such as *Campanula rotundifolia, Danthonia spicata, Deschampsia cespitosa*, and *Melampyrum lineare*. Sites occur on circumneutral to calcareous bedrock with little soil development on the surface.
IVC Dynamics: Due to the thin soil common in this group, sites can become droughty quickly.
IVC Environment: This group occurs on circumneutral to calcareous bedrock. Soil is thin and patchy and typically confined to cracks and depressions in the bedrock where it can accumulate. Water retention is generally poor but localized depressions may collect water and stay saturated (if soil is present) or form small pools for some time.

DISTRIBUTION

IVC Geographic Range: This group is found in southern Canada from Manitoba east to southern Quebec. It may occur in the United States in northern Michigan and New England.
IVC Nations: CA,US
IVC States/Provinces: MB, MI, NB, NF, NS, ON, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4251 *Juniperus* spp. - *Thuja occidentalis* / *Deschampsia cespitosa* Alkaline Scrub & Grassland Alliance** [Juniper species - Northern White-Cedar / Tufted Hairgrass Alkaline Scrub & Grassland Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2015)
IVC Description Author: J. Drake
IVC Description Date: 2015-05-05
IVC Acknowledgments:

A4251 Juniper species - Northern White-Cedar / Tufted Hairgrass Alkaline Scrub & Grassland Alliance

[ ]
Juniperus spp. - *Thuja occidentalis* / *Deschampsia cespitosa* Alkaline Scrub & Grassland Alliance
Juniper - White Cedar / Mixed Herb Open Rock Barren

IVC Scientific Name: *Juniperus* spp. - *Thuja occidentalis* / *Deschampsia cespitosa* Alkaline Scrub & Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: MB, MI, ON, QC?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005155 *(Juniperus communis, Cornus rugosa)* / Herbaceous Carbonate Rock Barren Sparse Vegetation** [(Common Juniper, Roundleaf Dogwood) / Herbaceous Carbonate Rock Barren Sparse Vegetation] []
  This open calcareous rocky pavement type is found in central Ontario and possibly Quebec. GNR. ON
- **CEGL002568 Limestone Rock Outcrop Sparse Vegetation** [Limestone Rock Outcrop Sparse Vegetation] []
  GNR. MB
- **CEGL005132 *Thuja occidentalis - Pinus banksiana / Dasiphora fruticosa / Clinopodium arkansanum* Wooded Grassland** [Northern White-cedar - Jack Pine / Shrubby-cinquefoil / Limestone Calamint Wooded Grassland] []
  G1G2 (1998-12-31) ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021c)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

M123 Eastern North American Ruderal Grassland & Shrubland

[ ]

IVC Colloquial Name: Eastern North American Ruderal Grassland & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: These ruderal grasslands and shrublands encompass sites in the northern and central regions of the eastern United States that have been cleared and plowed (for farming or development) and then abandoned, and are now are dominated by weedy or generalist native and exotic forbs, grasses, ferns, and shrubs. There are three variants of this vegetation, each of which has its own characteristic herbs and shrubs. The better known variants are the "mesic open old-field meadow variant" and the "mesic old-field shrubland variant." There are also dry variants which are less well-described. The mesic open old-field meadow variant has characteristic forbs that include *Asclepias syriaca, Centaurea stoebe ssp. micranthos, Cerastium arvense, Daucus carota, Euthamia graminifolia, Fragaria virginiana, Oenothera biennis, Picris hieracioides, Potentilla simplex, Rudbeckia hirta, Solidago altissima, Solidago canadensis, Solidago juncea, Solidago nemoralis, Solidago rugosa, Symphyotrichum lateriflorum*, and *Symphyotrichum novae-angliae*. Common grasses include *Anthoxanthum odoratum, Bromus inermis, Dactylis glomerata, Elymus repens, Lolium* spp., *Phleum pratense, Poa compressa*, and *Poa pratensis*. Shrubs may be present, but collectively they have less than 25% cover. Characteristic shrubs in this variant include those of the mesic shrub variant. The mesic old-field shrubland variant is typically dominated by *Amelanchier* spp., *Cornus racemosa, Cornus sericea, Crataegus* spp., *Juniperus virginiana, Prunus americana, Prunus virginiana, Rhus glabra, Rhus typhina, Rubus* spp., *Rubus* spp., *Viburnum lentago*, and *Viburnum recognitum*. The exotic shrubs *Elaeagnus angustifolia, Lonicera* spp., and *Rosa multiflora* may be invasive in some areas. The dry old-field grassland and shrubland variant is found on sandy or rocky substrates and is typically dominated by *Andropogon virginicus, Poa compressa, Schizachyrium scoparium, Solidago nemoralis*, and an assortment of dry weedy species such as the exotic *Centaurea stoebe ssp. micranthos*. Scattered native or exotic trees may be present, including *Acer rubrum, Fraxinus pennsylvanica, Pinus rigida, Pinus strobus, Pinus sylvestris*, and *Populus deltoides*.

IVC Geographic Range: This macrogroup occurs widely across the northern and central regions of the United States, extending westward into the tallgrass region of the midwestern United States.

IVC Nations: CA,US

IVC States/Provinces: AL, CT, DE, GA, IA, IL, IN, KS, KY, MA, MB, MD, ME, MI, MN, MO, MS, NB, NC, ND, NE, NH, NJ, NS, NY, OH, ON, PA, PE, QC, RI, SC, SD, SK, TN, VA, VT, WI, WV

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G059 Eastern North American Ruderal Meadow & Shrubland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: M. Pyne, D. Faber-Langendoen, and S.C. Gawler

IVC Description Date: 2014-10-15

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by D. Faber-Langendoen and S.C. Gawler.

G059 Eastern North American Ruderal Meadow & Shrubland

[ ]

IVC Colloquial Name: Eastern North American Ruderal Meadow & Shrubland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group encompasses shrub or herb meadows or old fields in the northern and central regions of the eastern United States and adjacent Canada dominated by native and exotic forbs, grasses, ferns and shrubs that occur on sites that have been

cleared and plowed (for farming or development), and then abandoned. Characteristics herbs and shrubs include three variants. Dry variants are less well-described. The mesic open old-field meadow variant has characteristic forbs that include *Asclepias syriaca, Cerastium arvense, Centaurea stoebe ssp. micranthos, Daucus carota, Euthamia graminifolia, Fragaria virginiana, Oenothera biennis, Picris hieracioides, Potentilla simplex, Rudbeckia hirta, Solidago altissima, Solidago canadensis, Solidago nemoralis, Solidago rugosa, Solidago juncea, Symphyotrichum lateriflorum*, and *Symphyotrichum novae-angliae*. Common grasses include *Anthoxanthum odoratum, Bromus inermis, Dactylis glomerata, Elymus repens, Phleum pratense, Poa compressa*, and *Poa pratensis*. Shrubs may be present, but collectively they have less than 25% cover. Characteristic shrubs include *Cornus amomum, Cornus racemosa, Cornus sericea, Juniperus virginiana, Lonicera* spp., *Rubus* spp., *Rhus typhina, Rhus glabra*, and *Viburnum recognitum*. The mesic old-field shrubland variant includes *Amelanchier* spp., *Cornus racemosa, Cornus sericea, Crataegus* spp., *Prunus americana, Prunus virginiana, Rhus glabra, Rhus typhina, Rubus* spp., *Viburnum lentago*, and *Viburnum recognitum*. The exotic shrubs *Elaeagnus angustifolia, Lonicera* spp., *Rhamnus cathartica*, and *Rosa multiflora* may be invasive in some areas. The dry old-field grassland and shrubland is found on sandy or rock substrates and includes *Andropogon virginicus, Poa compressa, Solidago nemoralis, Schizachyrium scoparium*, and an assortment of dry weedy species such as *Centaurea stoebe ssp. micranthos*.

IVC Dynamics: Depending on the availability of adjacent seed sources, ongoing mowing, etc., sites may either remain as herb- and shrub-dominated meadows for 20-50+ years, or may succeed to forests. Sites in which *Rhamnus cathartica* establishes may persist in a small-tree state for many years.

IVC Environment: Sites where this group is found have typically been cleared and plowed (for farming or development), and then abandoned. Mesic sites are typically relatively flat to rolling and fairly moist, because of their desirability for agricultural activities. Drier, sand, rocky or steeper sloped sites are subject to other kinds of development or weedy invasion, and are not well-described.

DISTRIBUTION

IVC Geographic Range: This group occurs widely across the northern and central regions of the United States and adjacent Canada, extending westward into the tallgrass region of the midwestern United States.

IVC Nations: CA,US

IVC States/Provinces: AL, CT, DE, GA, IA, IL, IN, KS, KY, MA, MB, MD, ME, MI, MN, MO, MS, NB, NC, ND, NE, NH, NJ, NS, NY, OH, ON, PA, PE, QC, RI, SC, SD, SK, TN, VA, VT, WI, WV

IVC Omernik Ecoregions: 5.2.1.50:P, 5.2.2.49:P, 5.3.1.58:P, 5.3.3.62:P, 8.1.1.83:P, 8.1.3.60:P, 8.1.4.51:P, 8.1.5.52:P, 8.1.6.56:P, 8.1.7.59:P, 8.1.8.82:P, 8.1.10.61:P, 8.2.1.53:P, 8.2.2.57:P, 8.2.3.54:P, 8.2.4.55:P, 8.3.1.64:P, 8.3.2.72:P, 8.3.3.71:P, 8.3.4.45:P, 8.4.1.67:P, 8.4.2.69:P, 8.4.3.70:P, 8.4.4.66:P, 8.4.5.39:P, 8.4.6.38:P, 8.4.7.37:P, 8.4.8.36:P, 8.4.9.68:P, 8.5.4.84:P, 9.2.2.48:P, 9.2.3.47:P, 9.2.4.40:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2010-05-19)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1190 *Dactylis glomerata - Festuca* spp. - *Solidago canadensis* Ruderal Mesic Meadow Alliance** [Orchardgrass - Fescue species - Canada Goldenrod Ruderal Mesic Meadow Alliance] []
  This broadly defined type includes mesic old-field grasslands found on abandoned pastures and agricultural fields and is largely composed of non-native cool-season grasses and herbs (generally of European origin) in early stages of succession.
- **A3934 *Poa compressa - Solidago nemoralis - Centaurea stoebe ssp. micranthos* Ruderal Dry Meadow & Shrubland Alliance** [Canada Bluegrass - Gray Goldenrod - Spotted Knapweed Ruderal Dry Meadow & Shrubland Alliance] []
  This alliance includes three variants of dry ruderal grasslands in the northeastern and midwestern United States: (1) dry ruderal grasslands found on sandy or rock substrates with both exotic and native species; (2) vegetation dominated by the weedy native *Andropogon virginicus var. virginicus* that occurs on old fields, pastures, and rocky sites; and (3) invasive grassland dune vegetation, along the central Atlantic U.S. coast.
- **A3935 *Rhamnus cathartica - Rosa multiflora - Elaeagnus umbellata* Ruderal Mesic Shrubland Alliance** [Common Buckthorn - Multiflora Rose - Autumn-olive Ruderal Mesic Shrubland Alliance] []
  This alliance is common in former agricultural areas in the northeastern and midwestern U.S. and temperate regions of eastern Canada. It comprises shrubby old fields dominated by exotic shrubs, such as *Elaeagnus angustifolia, Lonicera japonica, Lonicera morrowii, Ligustrum vulgare, Rhamnus cathartica*, and *Rosa multiflora*, sometimes mixed with "weedy native" shrubs such as *Cornus racemosa, Rhus glabra*, and *Rhus typhina*.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2011)
IVC Description Author: D. Faber-Langendoen and S.C. Gawler
IVC Description Date: 2015-05-05
IVC Acknowledgments:

A1190 Orchardgrass - Fescue species - Canada Goldenrod Ruderal Mesic Meadow Alliance

[ ]
Dactylis glomerata - *Festuca* spp. - *Solidago canadensis* Ruderal Mesic Meadow Alliance
Northern & Central Ruderal Mesic Old-field Meadow

IVC Scientific Name: *Dactylis glomerata* - *Festuca* spp. - *Solidago canadensis* Ruderal Mesic Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This broadly defined type includes mesic abandoned pastures and agricultural fields and is largely composed of non-native cool-season grasses and herbs (generally of European origin) in the early stages of succession. The fields are typically mowed every one to five years. Physiognomically, these grasslands are generally composed of mid-height (0.5 to 1 m tall) grasses and forbs, with occasional scattered shrubs (<25%). Species composition varies from site to site, depending on land-use history and perhaps soil type, but in general this vegetation is quite wide-ranging in northeastern and midwestern states and at higher elevations (610-1220 m [2000-4000 feet]) in the southeastern states. Dominant grasses vary from site to site but generally include the exotic grasses *Agrostis stolonifera, Agrostis hyemalis, Anthoxanthum odoratum, Bromus inermis, Bromus tectorum, Dactylis glomerata, Schedonorus arundinaceus, Lolium perenne, Phleum pratense* as well as weedy natives such as *Elymus repens, Poa pratensis*, and, less commonly, *Schizachyrium scoparium*. Forbs may be minor or dominant and include the exotic forbs *Achillea millefolium, Cerastium arvense* (and hybrids), *Daucus carota, Hieracium* spp., *Vicia cracca*, as well as weedy natives such as *Ambrosia artemisiifolia, Asclepias syriaca, Euthamia graminifolia, Oenothera biennis, Potentilla simplex, Solidago altissima, Solidago canadensis, Solidago juncea, Solidago nemoralis, Solidago rugosa, Trifolium* spp., *Symphyotrichum lanceolatum, Symphyotrichum lateriflorum, Symphyotrichum novae-angliae*, and many others. This vegetation is quite wide-ranging in northeastern and midwestern states and possibly occurs at higher elevations in the southeastern states and southern Canada.
IVC Dynamics: These grasslands are maintained by periodic mowing or, in some instances, prescribed burning, and in other cases are succeeding to ruderal forests.
IVC Environment: This broadly defined alliance includes pasture and post-agricultural fields, and is largely composed of non-native grasses and herbs (generally of European origin).

DISTRIBUTION

IVC Geographic Range: This vegetation is quite wide-ranging in northeastern and midwestern states and possibly occurs at higher elevations in the southeastern states and southern Canada.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, IL, KY, MA, MB, MD, ME, MI, MN, NB?, NC, NH, NJ, NS?, NY, OH, ON, PA, QC?, RI, TN, VA, VT, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2015-02-17)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL006107 *Dactylis glomerata - Phleum pratense - Festuca* spp. - *Solidago* spp. Ruderal Meadow** [Orchardgrass - Timothy - Fescue species - Goldenrod species Ruderal Meadow] []
  GNA (2005-12-08) CT, DE, KY, MA, MD, ME, NB?, NH, NJ, NS?, NY, PA, QC?, RI, TN, VA, VT, WV?
- **CEGL005249 *Phleum pratense - (Calamagrostis canadensis)* Ruderal Meadow** [Timothy - (Bluejoint) Ruderal Meadow] []
  GNA (2001-11-08) IL, MI, MN, NY, OH, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3934 Canada Bluegrass - Gray Goldenrod - Spotted Knapweed Ruderal Dry Meadow & Shrubland Alliance

[ ]

Poa compressa - Solidago nemoralis - Centaurea stoebe ssp. micranthos Ruderal Dry Meadow & Shrubland Alliance

Northern & Central Ruderal Dry Old-field Meadow & Shrubland

IVC Scientific Name: *Poa compressa - Solidago nemoralis - Centaurea stoebe ssp. micranthos* Ruderal Dry Meadow & Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes three variants of dry ruderal grasslands: (1) Dry semi-natural grasslands found on sandy or rock substrates and includes weedy native grasses *Festuca* spp., *Poa compressa*, and *Schizachyrium scoparium*, and an assortment of dry invasive forbs such as *Centaurea stoebe ssp. micranthos* and *Solidago nemoralis*; (2) Vegetation dominated by the weedy native *Andropogon virginicus var. virginicus* that occurs on old fields, pastures, and rocky sites. Associated species vary with geography and habitat and include a mix of native and exotic species; and (3) Invasive grass dune vegetation, including stands of the non-native sedge *Carex kobomugi* that invades and overtakes coastal sand dunes dominated by *Ammophila breviligulata* and/or *Panicum amarum var. amarum*. It is reported along the central New Jersey coast and at First Landing/Seashore State Park in Virginia.

IVC Dynamics: Exposure of inland sands in the primarily forested landscape of the northeastern U.S. is a result of anthropogenic activity (poor farming practices), or in some cases is a result of past alluvial flooding.

IVC Environment: Stands of this alliance occur on old fields, pastures, and rocky sites, as well as coastal dunes. Stands may also be found on inland dunes, characterized by large expanses of exposed sand formed by anthropogenic activity.

DISTRIBUTION

IVC Geographic Range: This alliance is found across the northeastern, midwestern and through many of the southeastern states, and possibly southern Canada.
IVC Nations: CA?,US
IVC States/Provinces: AL, CT, DE, IL, KY, MA, MD, ME, MN, MO?, MS, NC, NH, NJ, NY, PA, RI, TN, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2015-02-17)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3935 Common Buckthorn - Multiflora Rose - Autumn-olive Ruderal Mesic Shrubland Alliance

[ ]

Rhamnus cathartica - Rosa multiflora - Elaeagnus umbellata Ruderal Mesic Shrubland Alliance

Northern & Central Ruderal Mesic Old-field Shrubland

IVC Scientific Name: *Rhamnus cathartica - Rosa multiflora - Elaeagnus umbellata* Ruderal Mesic Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is common in former agricultural areas in the northeastern and midwestern United States and temperate regions of eastern Canada. It comprises primarily shrubby old fields dominated by exotic shrubs, such as *Berberis thunbergii, Elaeagnus angustifolia, Euonymus alatus, Lonicera japonica, Lonicera morrowii, Ligustrum vulgare, Rhamnus cathartica*, and *Rosa multiflora*, as well as weedy natives, such as *Cornus racemosa, Rhus glabra, Rhus typhina*, and *Viburnum prunifolium* Less commonly, *Gaylussacia baccata, Vaccinium pallidum, Vaccinium stamineum*, and/or *Vaccinium angustifolium* may be dominant. Sapling or small trees are often present but form <10% cover; they include exotic trees such as *Robinia pseudoacacia*, and many weedy natives, such as *Acer rubrum, Betula populifolia, Cornus florida, Fraxinus americana, Juglans nigra, Juniperus virginiana, Populus deltoides, Prunus serotina*, and *Prunus virginiana*. The herbaceous layer is variable depending on the density of shrub cover. Common species include exotics such as *Achillea millefolium, Agrostis gigantea, Alliaria petiolata, Anthoxanthum odoratum, Bromus inermis, Centaurea* spp., *Daucus carota, Galium mollugo, Schedonorus arundinaceus, Trifolium repens*, as well as weedy natives such as *Euthamia graminifolia, Festuca rubra, Monarda fistulosa, Oxalis stricta, Poa pratensis, Solidago rugosa, Solidago gigantea*, and *Solidago nemoralis*, among many others. Vines can be absent or dominant, sometimes covering the tall and short shrubs. Common vines are exotic *Celastrus orbiculatus* and *Lonicera japonica*, and weedy natives such as *Parthenocissus quinquefolia, Toxicodendron radicans, Vitis aestivalis*, and *Vitis labrusca*.

IVC Dynamics:

IVC Environment: Stands are typically found on abandoned agricultural sites or other sites disturbed by human activity, such as roadsides and abandoned quarries.

DISTRIBUTION

IVC Geographic Range: This alliance is typically found in the northeastern and midwestern U.S. and temperate regions of eastern Canada.

IVC Nations: CA,US

IVC States/Provinces: CT, DE, IA, IL, IN, KS, KY, MA, MB, MD, ME, MI, MN, MO, NC, ND, NE, NH, NJ, NS, NY, OH, ON, PA, QC, RI, SD, SK, TN, VA, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2013-09-27)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005461 *Rhamnus cathartica* Ruderal Shrubland** [Common Buckthorn Ruderal Shrubland] []
  GNA (2013-12-30) CT, DE, IA, IL, IN, KS, KY, MA, MB, MD, ME, MI, MN, MO, NC, ND, NE, NH, NJ, NS, NY, OH, ON, PA, QC, RI, SD, SK, TN, VA, VT, WI, WV

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-09-26

IVC Acknowledgments:

M048 Central Rocky Mountain Montane-Foothill Grassland & Shrubland

Prairies et arbustaies montagnardes et des contreforts des Rocheuses centrales

IVC Colloquial Name: Central Rocky Mountain Montane-Foothill Grassland & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup occurs in the foothills and mountains throughout the Central Rockies and montane Intermountain West region, from central and eastern Wyoming north and west into British Columbia and Alberta. This includes the "island ranges" of central Montana, though it is not common west to the East Cascades. It is broadly defined structurally and is composed of shrub- and/or herbaceous-dominated stands forming shrublands (>25% cover), shrub-steppe (10-25% cover), or open grasslands (shrubs <10% cover). Characteristic shrubs between 1 and 3 m in height are *Acer glabrum, Amelanchier alnifolia, Holodiscus discolor, Menziesia ferruginea, Physocarpus malvaceus, Prunus emarginata, Prunus virginiana, Rhus glabra, Rhus trilobata, Ribes lacustre, Rosa nutkana, Rosa woodsii, Rubus parviflorus, Sambucus nigra ssp. cerulea, Spiraea* spp., and *Symphoricarpos albus*. Dwarf-shrubs (<0.3 m tall) composed of *Vaccinium cespitosum, Vaccinium myrtillus, Vaccinium scoparium*, and *Vaccinium membranaceum* may be also form the dominant and characteristic woody layer. Grasslands are dominated by *Festuca idahoensis* and *Pseudoroegneria spicata*, with *Festuca campestris* increasing northward in Alberta. Other characteristic herbaceous graminoids present include *Achnatherum scribneri, Achnatherum hymenoides, Carex geyeri, Carex filifolia, Carex petasata, Danthonia* spp., *Elymus lanceolatus, Festuca campestris, Hesperostipa comata, Koeleria macrantha, Leucopoa kingii, Leymus cinereus, Pascopyrum smithii*, and *Poa secunda*. Associated forbs are numerous and include species of *Arnica, Antennaria, Erigeron, Eriogonum, Gaillardia, Galium, Geum, Heuchera, Liatris, Lithospermum, Lupinus, Lomatium, Oxytropis, Penstemon, Phlox, Potentilla*, and *Solidago*. On dry, sites with low grazing pressure, *Selaginella densa* and lichens provide significant ground cover between clumps of grasses. Non-native grasses can also be abundant and include *Phleum pratense, Bromus inermis*, and *Poa pratensis*. The herbaceous layer of shrublands has similar species composition to many of the grasslands in this macrogroup, except for the mesic shrublands with typically more mesic species such as *Heracleum maximum, Luzula glabrata*, or some other species such as *Chamerion angustifolium* and *Xerophyllum tenax*. *Alnus* spp. may occur in avalanche slopes. Stands occur as extensive foothill and valley grasslands and shrublands below the lower treeline and extend up into the high montane zones. Climate is temperate with predominantly dry summers and cold winters. Annual precipitation is approximately 20-80 cm, and primarily occurs in the winter as snow or rain, with moisture increasing with elevation. These communities tend to occur on gentle to steep-gradient slopes. Sites are highly variable. Grasslands tend to occur on warmer, drier sites and drier micro-climates, especially at higher elevation. Shrublands and dwarf-shrublands often occur on cooler, more mesic sites than grasslands. These shrubland communities also develop near talus slopes as garlands, at the heads of dry drainages, toeslopes in the moist shrub-steppe and steppe zones, and as smaller patches on dry sites that are marginal for tree growth and that have typically also experienced fire. Some site may occupy avalanche areas. Parent materials include basalt colluvium, loess, lava and tuff, glacial outwash composed of fine silts and clays of moderate depth. Soils range from poorly developed, well-drained alluvial or colluvial sands with a high percentage of rock fragments to be moderately deep, silt loam or loam with few rock fragments (less than 15% by volume and no rock cover). This macrogroup also includes grasslands from eastern Washington and Oregon commonly known as Palouse Prairie, which is characterized by rolling topography composed of loess hills and plains over basalt plains.

IVC Geographic Range: This macrogroup occurs in the foothills and mountains throughout the Central Rockies and montane Intermountain West regions, from central and eastern Wyoming north and west into British Columbia and Alberta. This includes the "island ranges" of central Montana, though it is not common. It also occurs in the East Cascades, but how far south into the Sierra Nevada is as yet unclear.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, ND, NV, OR, SK, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments:

Groups in Canada:

- **G267 Central Rocky Mountain Montane Grassland []**
- **G272 Central Rocky Mountain Montane-Foothill Deciduous Shrubland []**
- **G273 Central Rocky Mountain Lower Montane, Foothill & Valley Grassland []**
- **G305 Central Rocky Mountain-North Pacific High Montane Mesic Shrubland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2014)
IVC Description Author: K.A. Schulz and M.S. Reid
IVC Description Date: 2017-03-29
IVC Acknowledgments: Todd Keeler-Wolf and Julie Evens for review of draft macrogroup.

G267 Central Rocky Mountain Montane Grassland

[ ]

IVC Colloquial Name: Central Rocky Mountain Montane Grassland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This is an upper montane to subalpine grassland group is dominated by perennial grasses and forbs on relatively dry sites in the northern Rocky Mountains and Cascades, but is more extensive in the Rocky Mountains cordillera, from the Canadian Rockies south into western Montana, northern Wyoming, eastern Oregon, eastern Washington, and Idaho. The herbaceous layer is frequently composed of *Achnatherum nelsonii, Calamagrostis rubescens, Festuca idahoensis*, and *Leucopoa kingii* with many other perennial graminoid species present to codominant, such as *Achnatherum occidentale, Achnatherum richardsonii, Danthonia intermedia, Deschampsia cespitosa, Elymus trachycaulus, Koeleria macrantha, Leymus innovatus, Phleum alpinum, Poa fendleriana, Trisetum spicatum*, and a variety of Carices, such as *Carex filifolia, Carex hoodii, Carex elynoides, Carex obtusata*, and *Carex scirpoidea*. Important forbs include *Chamerion angustifolium, Eriogonum caespitosum, Fragaria virginiana, Lupinus argenteus var. laxiflorus, Lupinus sericeus, Oxytropis campestris, Phlox pulvinata, Potentilla diversifolia*, and *Potentilla flabellifolia*. The upper montane to subalpine dry grassland stands range from small meadows to large open parks surrounded by conifer trees but lack tree cover within them. In relatively mesic areas such as the northern Rocky Mountains and Cascades, it is found on drier sites, particularly south-facing slopes or ridgetops. In general, soil textures are much finer, and soils are often deeper under grasslands than in the neighboring forests. Although these grasslands are composed primarily of tussock-forming species, they do exhibit a dense sod that makes root penetration difficult for tree species. Disturbance such as fire also plays a role in maintaining these open grassy areas. This group is similar to Central Rocky Mountain Lower Montane, Foothill & Valley Grassland Group (G273) but is found at higher elevations and is more often composed of species of *Festuca, Achnatherum*, and/or *Hesperostipa* with additional floristic components of more subalpine taxa. It is also similar to Rocky Mountain-North Pacific Subalpine-Montane Mesic Grassland & Meadow Group (G271), differing by occurring in drier settings and being predominantly grasslands rather than forby and grassy mesic meadows. Occurrences of this group are often more forb-rich than Southern Rocky Mountain Montane-Subalpine Grassland Group (G268), which tends to be drier.
IVC Dynamics: Disturbance such as fire plays a role in maintaining these open grassy areas in predominantly forested landscapes.
IVC Environment: This is an upper montane to subalpine grassland group dominated by perennial grasses and forbs on dry sites (in the context of the northern Rocky Mountains and Cascades), particularly south-facing slopes or ridgetops. Many occurrences are small patch in spatial character, and are often found in mosaics with woodlands, more dense shrublands, or just below alpine communities. Elevations range from 600 to 2011 m (2000-7500 feet) in the northern Rocky Mountains and up to 2286 to 2682 m (7500-8800 feet) in the mountains of southwestern Montana and Wyoming. These communities occur on gentle to moderate-gradient slopes, although occasionally on steep slopes. Soils are typically seasonally moist in the spring, but dry out later in the growing season. In general, soil textures are much finer, and soils are often deeper under grasslands than in the neighboring forests. Although these grasslands are composed primarily of tussock-forming species (bunchgrasses), they do exhibit a dense sod that makes root penetration difficult for tree species.

DISTRIBUTION

IVC Geographic Range: This group is most extensive in the Canadian Rockies portion of the Rocky Mountains cordillera, extending south into western Montana, northwestern Wyoming, central and eastern Oregon, eastern Washington, and Idaho. It also occurs in the "island ranges" of central Montana, though it is not common, and is also found in the Bighorn Range of north-central Wyoming. A couple of associations in this group also occur in Colorado.
IVC Nations: CA,US
IVC States/Provinces: AB, BC, CA, CO, ID, MT, NV, OR, UT, WA, WY
IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.8.12:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3966 *Festuca idahoensis - Calamagrostis rubescens - Achnatherum nelsonii* Central Rocky Mountain Montane Mesic Grassland Alliance** [Idaho Fescue - Pinegrass - Columbia Needlegrass Central Rocky Mountain Montane Mesic Grassland Alliance] []
  This alliance is characterized by a moderately dense to dense and diverse herbaceous layer dominated by medium-tall perennial graminoids *Achnatherum nelsonii, Calamagrostis rubescens, Carex hoodii, Deschampsia cespitosa*, or *Festuca idahoensis* with *Achnatherum richardsonii, Carex filifolia, Elymus trachycaulus, Koeleria macrantha*, or perennial forb *Lupinus sericeus* present to codominant. It is described from relatively mesic sites on montane slopes in the central Rocky Mountains of central and southern Idaho, western and south-central Montana, eastern Oregon, Washington and northwestern Wyoming.
- **A3965 *Festuca idahoensis - Carex scirpoidea - Danthonia intermedia* Central Rocky Mountain Subalpine Dry Grassland Alliance** [Idaho Fescue - Northern Single-spike Sedge - Timber Oatgrass Central Rocky Mountain Subalpine Dry Grassland Alliance] []
  This alliance is characterized by a sparse to moderately dense herbaceous layer dominated by the diagnostic perennial bunchgrass *Festuca idahoensis* with *Carex obtusata, Carex scirpoidea, Danthonia intermedia, Eriogonum caespitosum, Leucopoa kingii*, or *Potentilla diversifolia* codominating. It is described from dry and often rocky subalpine and lower alpine slopes exposed to desiccating winds in the central Rocky Mountains of central and southern Idaho, western and south-central Montana, and northwestern Wyoming.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: W.F. Mueggler and W.L. Stewart (1980)
IVC Description Author: M.S. Reid and K.A. Schulz
IVC Description Date: 2015-11-09
IVC Acknowledgments:

A3966 Idaho Fescue - Pinegrass - Columbia Needlegrass Central Rocky Mountain Montane Mesic Grassland Alliance

[ ]
Festuca idahoensis - Calamagrostis rubescens - Achnatherum nelsonii Central Rocky Mountain Montane Mesic Grassland Alliance
Central Rocky Mountain Montane Mesic Idaho Fescue Grassland

IVC Scientific Name: *Festuca idahoensis - Calamagrostis rubescens - Achnatherum nelsonii* Central Rocky Mountain Montane Mesic Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: The vegetation of this grassland alliance is characterized by a moderately dense to dense and diverse herbaceous layer dominated by medium-tall perennial graminoids with perennial forbs. The dominant and diagnostic species are *Achnatherum nelsonii, Calamagrostis rubescens, Carex hoodii, Deschampsia cespitosa*, or *Festuca idahoensis* with *Achnatherum richardsonii, Carex filifolia, Elymus trachycaulus, Koeleria macrantha, Lupinus sericeus, Pseudoroegneria spicata*, or *Pascopyrum smithii* present to codominant. Commonly associated forbs are often relatively mesic, such as *Achillea millefolium, Packera pseudaurea, Symphyotrichum foliaceum*, and *Zigadenus elegans*. Shrubs may be present with up to 25% cover, but are not diagnostic of this alliance. Shrub species are relatively mesic with *Amelanchier alnifolia, Rubus parviflorus*, and *Symphoricarpos albus* most common. This alliance is described from montane slopes in the central Rocky Mountains of central and southern Idaho, western and south-central Montana, eastern Oregon, Washington and northwestern Wyoming. These grasslands form in openings on

the slopes and benches in shrublands, woodlands and forests ranging from 1100-3322 m (3600-10,900 feet) elevation. Stands occur on mesic sites under a broad range of environmental conditions, ranging from gentle, broad, dissected plateau ridgetops to steep mountain sideslopes at 1830-2410 m (6000-7900 feet) elevation. Sites are nearly level to gently sloping with gentle topography. The soils are shallow to moderately deep and have high organic matter content. Soil texture varies from loam to sandy loam.

IVC Dynamics:

IVC Environment: This alliance is described from relatively mesic sites on montane slopes in the central Rocky Mountains of central and southern Idaho, western and south-central Montana, eastern Oregon, Washington and northwestern Wyoming. These grasslands form in openings on mesic slopes and benches in shrublands, woodlands and forests ranging from 1100-3322 m (3600-10,900 feet) elevation. Stands occur on mesic sites under a broad range of environmental conditions, ranging from gentle, broad, dissected plateau ridgetops to steep mountain sideslopes at 1830-2410 m (6000-7900 feet) elevation. Sites are nearly level to gently sloping and include drier sites in extensive moist meadows. The soils are shallow to deep and have high organic matter content. Soils are typically medium-textured loams to sandy loams from a variety of parent materials.

DISTRIBUTION

IVC Geographic Range: This alliance is described from montane slopes in the central Rocky Mountains in Waterton Lakes National Park, Alberta, and on the west side of Glacier National Park, Montana, in the mountains of southwestern Montana and northern Wyoming on both sides of the Continental Divide, in the Blue Mountains of eastern Oregon and Washington, and Idaho on high-elevation ridges of the Wallowa and Seven Devil mountains.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, ID, MT, NV, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001625** ***Festuca idahoensis - Achnatherum richardsonii*** **Grassland** [Idaho Fescue - Richardson's Needlegrass Grassland] []
  G3 (1999-12-21) AB?, MT, WY
- **CEGL005860** ***Achnatherum nelsonii - Lupinus sericeus*** **Grassland** [Columbia Needlegrass - Silky Lupine Grassland] []
  G2G3 (2004-02-02) AB, ID, MT
- **CEGL001898** ***Festuca idahoensis - Carex filifolia*** **Grassland** [Idaho Fescue - Threadleaf Sedge Grassland] []
  G3 (1999-12-21) AB, MT, WY
- **CEGL001900** ***Festuca idahoensis - Deschampsia cespitosa*** **Grassland** [Idaho Fescue - Tufted Hairgrass Grassland] []
  G3G4 (2000-02-17) AB?, ID, MT, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-03-14

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by M.S. Reid for group description.

A3965 Idaho Fescue - Northern Single-spike Sedge - Timber Oatgrass Central Rocky Mountain Subalpine Dry Grassland Alliance

[ ]

Festuca idahoensis - Carex scirpoidea - Danthonia intermedia Central Rocky Mountain Subalpine Dry Grassland Alliance

Central Rocky Mountain Subalpine Dry Idaho Fescue Grassland

IVC Scientific Name: *Festuca idahoensis - Carex scirpoidea - Danthonia intermedia* Central Rocky Mountain Subalpine Dry Grassland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The vegetation of this grassland alliance is characterized by a sparse to moderately dense herbaceous layer dominated by the diagnostic perennial bunchgrass *Festuca idahoensis* with *Carex obtusata, Carex scirpoidea, Danthonia intermedia, Eriogonum caespitosum, Leucopoa kingii*, or *Potentilla diversifolia* codominating. In more exposed settings, *Festuca idahoensis* sometimes relinquishes dominance to *Festuca campestris*. Many other species are reported to occur, the most abundant being *Agoseris glauca, Antennaria corymbosa, Carex filifolia, Carex praticola, Deschampsia cespitosa, Erigeron linearis, Eriogonum ovalifolium, Galium boreale, Geum triflorum, Ivesia gordonii, Lupinus argenteus, Packera cana, Phleum alpinum, Phlox hoodii, Potentilla diversifolia, Pseudoroegneria spicata*, and *Stenotus acaulis*. Cushion plants are common on more exposed sites. Scattered low shrubs (*Artemisia frigida* or *Artemisia tridentata ssp. vaseyana*) may be present. This alliance is described from subalpine and lower alpine slopes in the central Rocky Mountains of central and southern Idaho, western and south-central Montana, and northwestern Wyoming. Stands range from 1980-2655 m (6500-8700 feet) elevation. Sites are dry and often rocky, and exposed to desiccating winds. This dry meadow vegetation occurs on a variety of soil types on upland slopes and broad ridgetops. The composition of the vegetation depends in part on soil type; graminoid cover reaches its maximum in stands on coarse-textured soils derived from granitic bedrock, and forb cover reaches its maximum in stands on finer-textured soils derived from sedimentary bedrock.

IVC Dynamics: These stands occur in alpine and in upper subalpine parks and meadows that have been created by fire or where other disturbance or edaphic factors limit tree growth. Environmental factors important to alpine vegetation include soil moisture, amount and length of snow cover, aspect, and exposure to wind. These stands are on warmer/drier southern and western exposures where snow clears relatively early (mid-June) and wind exposure is less than the cushion plant vegetation types (Kuramoto and Bliss 1970).

IVC Environment: This alliance is described from subalpine and lower alpine slopes in the central Rocky Mountains of central and southern Idaho, western and south-central Montana, and northwestern Wyoming. Stands range from 1980-2655 m (6500-8700 feet) elevation. Sites are dry and often rocky, and exposed to desiccating winds. This dry meadow vegetation occurs on a variety of soil types on gentle to moderately steep upland slopes and broad ridgetops. The composition of the vegetation depends in part on soil type; graminoid cover reaches its maximum in stands on coarse-textured soils derived from granitic bedrock, and forb cover reaches its maximum in stands on finer-textured soils derived from sedimentary bedrock. The alliance appears to be restricted to high-elevation sites of intermediate productivity where combined factors of duration of snow cover, exposure to winter desiccation, and growing-season soil-moisture availability allow its occurrence.

DISTRIBUTION

IVC Geographic Range: This alliance is described from subalpine and lower alpine slopes of the Pioneer, White Knob, and Beaverhead mountains of central Idaho and western Montana, the Pryor Mountains in south-central Montana, Blackpine Mountains of southern Idaho, the Bighorn Mountain sand central plateau of Yellowstone National Park and adjacent Grand Teton National Park in northern Wyoming.

IVC Nations: CA?,US

IVC States/Provinces: AB?, CA?, CO, ID, MT, OR, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001623 *Festuca idahoensis - (Festuca campestris) / Potentilla diversifolia* Grassland** [Idaho Fescue - (Rough Fescue) / Varileaf Cinquefoil Grassland] []
  G3 (1999-03-15) AB?, ID, MT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-03-14
IVC Acknowledgments: S.V. Cooper contributed to Classification Comments, and M.S. Reid wrote the group description.

G272 Central Rocky Mountain Montane-Foothill Deciduous Shrubland

[ ]

IVC Colloquial Name: Central Rocky Mountain Montane-Foothill Deciduous Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This shrubland group is found in the lower montane and foothill regions around the Columbia Basin, and north and east into the Northern Rockies. The most common dominant shrubs are *Amelanchier alnifolia, Holodiscus discolor, Physocarpus malvaceus, Prunus emarginata, Prunus virginiana, Rhus glabra, Rosa nutkana, Rosa woodsii, Symphoricarpos albus*, and *Symphoricarpos oreophilus*, occurring alone or any combination. Stands in central and eastern Wyoming can include *Artemisia tridentata ssp. vaseyana* and *Cercocarpus montanus*, but neither of these species are dominant, and where they occur the stands are truly mixes of shrubs, often with *Amelanchier alnifolia, Prunus virginiana*, and others being the predominant taxa. *Aristida purpurea, Calamagrostis rubescens, Carex geyeri, Deschampsia cespitosa, Festuca campestris, Festuca idahoensis, Koeleria macrantha, Poa secunda*, and *Pseudoroegneria spicata* are the most important grasses. *Achnatherum thurberianum* and *Leymus cinereus* can be locally important. *Bromus tectorum* and *Phleum pratense* are common introduced grasses. *Balsamorhiza sagittata, Geum triflorum, Lomatium triternatum, Oenanthe sarmentosa, Potentilla gracilis, Xerophyllum tenax*, and species of *Eriogonum, Phlox*, and *Erigeron* are important forbs. These shrublands typically occur below treeline, within the matrix of surrounding low-elevation grasslands and sagebrush shrublands. They also occur in the ponderosa pine and Douglas-fir zones, but rarely up into the subalpine zone, where they are restricted to dry sites. The shrublands are usually found on steep slopes of canyons and in areas with some soil development, either loess deposits or volcanic clays; they occur on all aspects. Fire, flooding and erosion all impact these shrublands, but they typically will persist on sites for long periods. These communities also develop near talus slopes as garlands, at the heads of dry drainages, and toeslopes in the moist shrub-steppe and steppe zones.

IVC Dynamics:

IVC Environment: This small-patch shrubland group is found in foothill and lower montane sites around the Columbia Basin and Northern Rockies and extends into the northwestern Great Plains at elevations of 500-2500 m depending on latitude. These shrublands typically occur below treeline, within the matrix of surrounding low-elevation grasslands and sagebrush shrublands. They also occur in the ponderosa pine and Douglas-fir zones, but rarely up into the subalpine zone, where they are restricted to dry sites. The shrublands are usually found on steep slopes of canyons and in areas with some soil development, either loess deposits or volcanic clays; they occur on all aspects. Fire, flooding and erosion all impact these shrublands, but they typically will persist on sites for long periods. These communities also develop near talus slopes as garlands, at the heads of dry drainages, and toeslopes in the moist shrub-steppe and steppe zones.

DISTRIBUTION

IVC Geographic Range: This group is found in the lower montane and foothill regions around the Columbia Basin, and north and east into the Northern Rockies, including east into central Montana around the "Sky Island" ranges. It also occurs farther south into central and eastern Wyoming, where it forms compositionally diverse shrublands. They also extend north into Alberta along the foothills of the Front Range.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA, CO, ID, MT, NV, OR, SK?, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.13.19:P, 6.2.15.16:P, 7.1.7.2:P, 7.1.8.1:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.8.12:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3963 *Amelanchier alnifolia* Central Rocky Mountain Montane-Foothill Shrubland Alliance** [Saskatoon Serviceberry Central Rocky Mountain Montane-Foothill Shrubland Alliance] []
  This shrubland alliance is characterized by the dominance of *Amelanchier alnifolia* and is found in the lower montane and foothill regions around the northern Great Basin, Columbia Basin and central Rocky Mountains.
- **A3975 *Physocarpus malvaceus - Symphoricarpos albus* Mesic Shrubland Alliance** [Mallow Ninebark - Common Snowberry Mesic Shrubland Alliance] []
  This mesic shrubland alliance is dominated by diagnostic species *Physocarpus malvaceus, Rosa acicularis, Rosa nutkana, Rosa woodsii*, and/or *Symphoricarpos albus*. It is known from canyons of the northern Wallowa Mountains, Imnaha River, and Snake River within the Columbia Plateau, the foothills and plains of the central Rocky Mountains and ranges in the Great Basin and eastern California.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: E.W. Tisdale (1986)
IVC Description Author: M.S. Reid and K.A. Schulz
IVC Description Date: 2015-05-20
IVC Acknowledgments:

A3963 Saskatoon Serviceberry Central Rocky Mountain Montane-Foothill Shrubland Alliance

[ ]

Amelanchier alnifolia Central Rocky Mountain Montane-Foothill Shrubland Alliance

Central Rocky Mountain Montane-Foothill Saskatoon Serviceberry Shrubland

IVC Scientific Name: *Amelanchier alnifolia* Central Rocky Mountain Montane-Foothill Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The shrubland vegetation is characterized by the dominance of *Amelanchier alnifolia*. Other shrubs may include *Acer glabrum, Artemisia tridentata, Holodiscus discolor, Prunus emarginata, Prunus virginiana, Purshia tridentata, Rosa* spp., *Rubus parviflorus, Spiraea betulifolia*, and *Symphoricarpos albus*. A moderate to dense herbaceous layer is present and may be diverse. Graminoids consist primarily of *Carex geyeri, Calamagrostis rubescens, Festuca idahoensis*, or *Pseudoroegneria spicata*. Common forb species include *Fragaria virginiana, Achillea millefolium*, and *Galium boreale*. *Xerophyllum tenax* may dominate some northern Rocky Mountains stands. Other grasses present include both native and exotic species, such as *Bromus carinatus, Poa pratensis*, and *Phleum pratense*. This small-patch shrubland alliance is found in foothill and lower montane sites around the Columbia Basin and Central Rockies and extends into the northwestern Great Plains at elevations of 1330-2500 m depending on latitude. In the drier Intermountain West, it occurs on all aspects in mesic ranges but is generally best developed on north-facing slopes in xeric areas. Soils are variable, from shallow and skeletal near rock outcroppings, to moderately deep with abundant organic matter. To the north it has been described from sites as disparate as the foothill's mosaic of grasslands, shrublands and forest openings, a gravelly alluvial fan at foothills/mountains transition, to an upper subalpine site that has experienced a hot burn in the last 50 years. Here this type is largely successional, having resulted from stand-replacing fire. Stands occur primarily on south- through west-facing, moderate to steep slopes, often on spur ridges or wind-buffeted slope shoulders. These sites probably had shallow soils before burning, and there are indications that soil loss occurred following the fires. There is also considerable exposed substrate and rock. Soils are moderately to well-drained sandy or clay loams or, occasionally, rapidly drained soils on glacio-fluvial or till deposits. Most of the ground surface is covered with litter and duff.

IVC Dynamics: In the southern portion of the type's range and in certain locations in the foothills and lower elevation sites along the Rocky Mountain Front, this is conceived to be a long-term stable (climax) vegetation type. Northward in its range this type becomes more associated with disturbance phenomena, particularly stand-replacing fire and erosion (subsequent) and is distinctly a seral type. However, reforestation may require well in excess of 100 years if soil loss has accompanied the disturbance. Stumps and burned downed logs are common on some sites within the northern range. Also ubiquitous in the northern range is the severe browsing on *Amelanchier*; on some sites this species is no higher than 0.4-0.5 m, though its potential is several times this height.

Amelanchier utahensis hybridizes with *Amelanchier alnifolia* and distinctions between the two species may be come blurred in areas where their ranges overlap. *Amelanchier* spp. are palatable to both livestock and native ungulates and compose a valuable element of the winter range in the Great Basin and Rocky Mountains.

IVC Environment: This shrubland alliance is found in foothill and lower montane sites around the Columbia Basin and Central Rockies, and extends northeast into the northwestern Great Plains. Climate is cold temperate. Precipitation ranges from 30-50 cm annually with a large proportion falling as winter snow. This small-patch alliance occurs at middle elevations (1800-2500 m) of mountains in the Intermountain West where it occurs on all aspects in mesic ranges but is generally best developed on north-facing slopes in xeric areas. Soils are variable, from shallow and skeletal near rock outcroppings, to moderately deep with abundant organic matter. It has been documented from Montana and extends northward along the Rocky Mountain Front and foothills well into Alberta, at elevations down to 1330 m. To the north it has been described from sites as disparate as the foothill's mosaic of grasslands, shrublands and forest openings, a gravelly alluvial fan at foothills/mountains transition, to an upper subalpine site that has experienced a hot burn in the last 50 years. In Glacier National Park and Waterton Lakes National Park, this type is largely successional, having resulted from stand-replacing fire. Stands occur primarily on south- through west-facing, moderate to steep slopes, often on spur ridges or wind-buffeted slope shoulders. These sites probably had shallow soils before burning, and there are indications (e.g., pedicelling) that soil loss occurred following the fires and continues to this day. There is considerable exposed substrate and rock, not infrequently exceeding 20% on northern examples of this alliance. Soils tend to be moderately to well-drained sandy or clay loams or, occasionally, a rapidly drained Orthic Regosol. Sites are usually situated on glacio-fluvial or till deposits. Most of the ground surface is covered with litter and duff.

DISTRIBUTION

IVC Geographic Range: This small-patch shrubland alliance is found in the prairie breaks, foothill and lower montane sites in the northern Great Basin, Columbia Basin and Central Rockies extending from northwestern Colorado across Wyoming, along the Rocky Mountains of Montana and Alberta and extends out into the northwestern Great Plains.

IVC Nations: CA,US

IVC States/Provinces: AB, CA?, CO, MT, NV, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005885 *Amelanchier alnifolia* / (Mixed Grass, Forb) Shrubland** [Saskatoon Serviceberry / (Mixed Grass, Forb) Shrubland] []
  GNR. AB, MT
- **CEGL001065 *Amelanchier alnifolia / Pseudoroegneria spicata* - Bunchgrass Shrubland** [Saskatoon Serviceberry / Bluebunch Wheatgrass - Bunchgrass Shrubland] []
  G3G4Q (1996-02-01) AB, MT, NV, WA, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-03-14

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by M.S. Reid and D. Sarr .

A3975 Mallow Ninebark - Common Snowberry Mesic Shrubland Alliance

[ ]

Physocarpus malvaceus - Symphoricarpos albus Mesic Shrubland Alliance

Mallow Ninebark - Common Snowberry Mesic Shrubland

IVC Scientific Name: *Physocarpus malvaceus - Symphoricarpos albus* Mesic Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The vegetation of this mesic shrubland alliance is characterized by a moderately dense to dense, sometimes patchy shrub layer (usually less than 2 m tall) that is dominated by diagnostic species *Physocarpus malvaceus, Rosa acicularis, Rosa nutkana, Rosa woodsii*, and/or *Symphoricarpos albus*. Other low-cover associated shrubs may include scattered *Amelanchier alnifolia, Crataegus douglasii, Mahonia repens, Prunus virginiana, Salix scouleriana*, and *Spiraea betulifolia*. *Toxicodendron rydbergii* may be present with moderate cover. The herbaceous layer is typically relatively sparse to moderate (typically 10-25% cover), but may be dense depending on shrub cover, and is composed of a mixture of perennial bunchgrasses such as *Pseudoroegneria spicata* and *Festuca idahoensis* and perennial forbs. Moss and lichen cover is often important and ranges from 10-90% cover. Introduced herbaceous species are sometime abundant, including the forage grass *Poa pratensis*, the weedy forb *Cirsium arvense*, and the annual grass *Bromus briziformis*. This mesic shrubland alliance is known from canyons of the northern Wallowa Mountains, Imnaha River, and Snake River within northeastern Oregon, southeastern Washington, and west-central Idaho, the mountains, foothills and plains of Montana, Idaho, Nevada, and eastern California. It is found on upper slope positions of steep, northeast- to northwest-facing canyon slopes, on flat to gentle benches, valley floors, alluvial terraces, ridges, and slopes and occurs in floodplains and on alluvial terraces along rivers and streams, on hillsides below springs, and in ravines and swales where overland flow from snowmelt and summer thunderstorms provides additional moisture. Soils are moderately deep with textures ranging from sandy and silt loams to silts to clays.

IVC Dynamics: Dominant shrub species *Physocarpus malvaceus, Rosa* spp., and *Symphoricarpos albus* are adapted to low- to moderate-intensity fires by responding with basal sprouting or sprouting from rhizomes located in mineral soil; however, high-intensity fires will kill these species (FEIS 1998, Johnson and Simon 1987). Stands are restricted to relatively mesic northern slopes in river canyons and mountains. Periodic fires may be important in maintaining these stands where *Pseudotsuga menziesii* trees may invade. Exotic plants have invaded many of these stands. Exotic annual grasses, such as *Bromus briziformis, Bromus arvensis*, and *Bromus tectorum*, are often present and may be relatively abundant. Many of these stands have been invaded by the perennial species *Poa pratensis*. Cover of *Poa pratensis* has also increased because of its tolerance to both grazing and shading from the shrubs (Johnson and Simon 1987). Other exotics often include forage species such as *Bromus inermis, Phleum pratense*, and *Dactylis glomerata* (Hansen et al. 1995) and highly invasive forbs such as *Cirsium arvense*.

IVC Environment: This mesic shrubland alliance is known from canyonlands of the northern Wallowa Mountains, Imnaha River, and Snake River within northeastern Oregon, southeastern Washington, and west-central Idaho, the mountains, foothills and plains of Montana, Idaho, Nevada, and eastern California. Stands in the Snake and Salmon river canyons in Idaho and eastern Oregon and eastern Washington occur at elevations from 670-1370 m, and on north slopes in the central Rocky Mountains in Montana are at elevations of 500-1770 m. The climate is temperate continental with mean annual precipitation of approximately 25-30 cm. Precipitation primarily occurs in the winter as snow or rain. This moisture is stored in the soil and utilized during the typically dry summers. Stands are typically found on moderately steep to steep upper and middle canyon slopes. Sites need to be relatively mesic to support these shrubs in the bunchgrass zone, and at lower elevations they are often restricted to north aspects and ravines, swales and depressions where deep snow drifts form and snowmelt and summer thunderstorms provide additional moisture. Stands also occur in floodplains and on alluvial terraces along rivers and streams, on hillsides below springs where soil moisture concentrates, and near the footslopes of rocky slopes where water may seep. These sites are flat to moderately steep and aspect does not appear important because stands have supplemental moisture. Although these sites are temporarily flooded, they are well-drained and do not have a shallow water table. Soils are moderately deep with textures ranging from sandy and silt loams to silts to clays (Hansen et al. 1995). Rock fragments are less than 15% of the soil volume. Parent materials include loess, basalt colluvium, lava, tuff, ash and other volcanic rock. Adjacent stands include grasslands dominated by *Pseudoroegneria spicata* or *Festuca idahoensis* on hotter/drier aspects, and *Pseudotsuga menziesii / Physocarpus malvaceus* forests and woodlands on mid or lower slopes where soil moisture is concentrated from slope seepage. Along rivers and streams, adjacent vegetation includes *Salix exigua* or *Salix amygdaloides* riparian shrublands, and riparian woodlands dominated by *Fraxinus pennsylvanica* or *Acer negundo*.

DISTRIBUTION

IVC Geographic Range: This central Rocky Mountain and Columbia Plateau shrubland alliance is known from canyonlands of the northern Wallowa Mountains, Imnaha River, and Snake River plain of northeastern Oregon, southeastern Washington, and southern Idaho, the mountains, foothills and plains of Montana, Idaho, Nevada, and eastern California.

IVC Nations: CA?,US

IVC States/Provinces: CA, CO, ID, MT, NV, OR, SK?, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-03-14
IVC Acknowledgments:

G273 Central Rocky Mountain Lower Montane, Foothill & Valley Grassland

[ ]

IVC Colloquial Name: Central Rocky Mountain Lower Montane, Foothill & Valley Grassland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These grasslands of the northern Rocky Mountains are found at lower montane to foothill elevations in the mountains and large valleys of northwestern Wyoming and western Montana, west through Idaho into the Blue Mountains of Oregon, and north into the Okanagan and Fraser plateaus of British Columbia and the Canadian Rockies. They also occur to the east in the central Montana mountain "islands" foothills, as well as the Rocky Mountain Front and Big and Little Belt ranges. They also extend along the eastern slopes of the Alberta Rockies. The most important species are cool-season perennial bunchgrasses and forbs (>25% cover), sometimes with a sparse (<10% cover) shrub layer. *Festuca campestris* and *Festuca idahoensis* are dominants, and *Pseudoroegneria spicata* occurs as a codominant, as well as a diversity of other native grasses. To the north, *Danthonia parryi* becomes codominant. Forb diversity is typically high in both mesic and dry aspects of this group. A soil crust of lichen covers almost all open soil between clumps of grasses; *Cladonia* and *Peltigera* species are the most common lichens. Unvegetated mineral soil is commonly found between clumps of grass and the lichen cover. *Festuca campestris* is easily eliminated by grazing and does not occur in all areas of this group.

This group also includes grasslands commonly known as "Palouse Prairie." These northern lower montane and valley grasslands represent a shift in the precipitation regime from summer monsoons and cold snowy winters found in the Southern Rockies to predominantly dry summers and winter precipitation. The Palouse region is characterized by rolling topography composed of loess hills and plains over basalt plains. The climate of this region has warm-hot, dry summers and cool, wet winters. Annual precipitation is high, 38-76 cm (15-30 inches). The soils are typically deep, well-developed, and old.

Outside of the Palouse Prairie region, these grasslands are influenced by shorter summers, colder winters, and young soils derived from recent glacial and alluvial material. In the eastern portion of its range in Montana, winter precipitation is replaced by a huge spring peak in precipitation. Elevations range from 300 to 1650 m, ranging from small meadows to large open parks surrounded by conifers in the lower montane, to extensive foothill and valley grasslands below the lower treeline. Many of these valleys may have been primarily sage-steppe with patches of grassland in the past, but because of land-use history post-settlement (herbicide, grazing, fire suppression, pasturing, etc.), they have been converted to grassland-dominated areas. Soils are relatively deep, fine-textured, often with coarse fragments, and non-saline, often with a microphytic crust.

In Alberta, this group occurs along the lower and eastern flanks of the Foothills Geologic Belt, primarily in the Foothills Fescue Grassland and Foothills Parkland Natural subregions. Glaciation and bedrock topography in combination result in a complex physiography from sloping lower foothills to hummocky to rolling uplands, mainly on glacial till, with significant lacustrine materials in valleys. Elevation ranges from 500 to 1525 m. At upper elevations, stands may be small-patch grasslands on southern slopes between *Populus tremuloides* woodlands or *Salix bebbiana* shrublands becoming quite extensive on moister sites at lower elevation. Soils are deep, usually Black Chernozems.

IVC Dynamics: The natural fire regime of this group likely maintains patchy distribution of shrubs, so the general aspect of the vegetation is a grassland. The fire regime of this group maintains a grassland due to rapid fire return that retards shrub invasion or landscape isolation and fragmentation that limits seed dispersal of native shrub species. Fire frequency is presumed to be less than 20 years. These are extensive grasslands, not grass-dominated patches within the sagebrush shrub steppe group. Shrubs may increase following heavy grazing and/or with fire suppression. Microphytic crust is very important in this group. Summer

overgrazing for 2 to 3 years can result in the loss of *Festuca campestris*, which is very grazing sensitive. Long-term heavy grazing on moister sites can result in a shift to a *Poa pratensis - Phleum pratense* type. *Pseudoroegneria spicata* shows an inconsistent reaction to grazing, increasing on some grazed sites while decreasing on others. It seems to recover more quickly from overgrazing than *Festuca campestris*, tolerates dormant-period grazing well but is sensitive to defoliation during the growing season. Light spring use or fall grazing can help retain plant vigor. Exotic species threatening this group through invasion and potential complete replacement of native species include *Bromus arvensis, Potentilla recta, Euphorbia esula*, and all manner of knapweed, especially *Centaurea stoebe ssp. micranthos*. In the Palouse Prairie, excessive grazing, past land use and invasion by introduced annual species have resulted in a massive conversion to agriculture or shrub-steppe and annual grasslands dominated by *Artemisia* spp. and *Bromus tectorum* or *Poa pratensis*. Remnant grasslands are now typically associated with steep and rocky sites or small and isolated sites within an agricultural landscape.

IVC Environment: These grasslands of the northern Rocky Mountains are found at lower montane to foothill elevations along the mountain flanks, in the mountains and in large intermountain valleys. This group also includes grasslands commonly known as Palouse Prairie. These northern lower montane and valley grasslands reflect a shift in the precipitation regime from summer monsoons and cold snowy winters found in the Southern Rockies to predominantly dry, cool summers and winter precipitation. The Palouse region is characterized by rolling topography composed of loess hills and plains over basalt plains. The climate of this region has warm-hot, dry summers and cool, wet winters. Annual precipitation is high, 38-76 cm (15-30 inches). The soils are typically deep, well-developed, and old. Outside of the Palouse Prairie region, these grasslands are influenced by shorter cooler summers, colder winters, and young soils derived from recent glacial and alluvial material. In the eastern portion of its range in Montana, winter precipitation is replaced by a huge spring peak in precipitation. Elevations range from 300 to 1650 m, ranging from small meadows to large open parks surrounded by conifers in the lower montane, to extensive foothill and valley grasslands below the lower treeline.

Climate: These northern lower montane and valley grasslands reflect a shift in the precipitation regime from summer monsoons and cold snowy winters found in the southern Rockies to predominantly dry summers and winter precipitation. In the Palouse region the climate has warm-hot, dry summers and cool, wet winters. Annual precipitation is high, 38-76 cm (15-30 inches). Outside of the Palouse Prairie region, these grasslands are influenced by shorter summers and colder winters. In the eastern portion of its range in Montana, winter precipitation is replaced by a huge spring peak in precipitation.
Soil/substrate/hydrology: The Palouse region is characterized by rolling topography composed of loess hills and plains over basalt plains. The soils are typically deep, well-developed, and old. Outside of the Palouse Prairie region, these grasslands occur on young soils derived from recent glacial and alluvial material. Soils are relatively deep, fine-textured, often with coarse fragments, and non-saline, often with a microphytic crust.

DISTRIBUTION

IVC Geographic Range: This lower montane, foothill and valley grassland group occurs throughout the southern interior and southern portion of the Fraser Plateau, as well as the valleys around the Fraser River in the Pavilion Ranges, the Nicola River and the Similkameen River in British Columbia. It includes high-elevation grasslands along the eastern mountain slopes down to rolling valleys in Alberta. It also occurs in the mountains and large valleys of northwestern Wyoming and western Montana, east to the central Montana Rocky Mountain Front and mountain "island" ranges, west through Idaho into the Blue Mountains of Oregon, mountains in northeastern California, and central Washington.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, ND, NV, OR, SK, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.2.10:P, 10.1.4.18:P, 10.1.8.12:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G4 rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4095 *Arctostaphylos uva-ursi / Festuca* spp. - *Pseudoroegneria spicata* Steppe Alliance** [Kinnikinnick / Fescue species - Bluebunch Wheatgrass Steppe Alliance] []
  This central Rocky Mountain alliance is characterized by an open to dense, usually patchy dwarf-shrub layer dominated by

Arctostaphylos uva-ursi with a sparse to moderately dense cover of perennial graminoids dominated by *Festuca campestris, Festuca idahoensis*, or *Pseudoroegneria spicata*. It occurs in the subalpine and lower alpine zones mountains of northwestern Montana and southwestern Alberta.

- **A4096 *Dasiphora fruticosa / Festuca campestris - Festuca idahoensis* Shrub-steppe Alliance** [Shrubby-cinquefoil / Prairie Fescue - Idaho Fescue Shrub-steppe Alliance] []
  This small-patch alliance is characterized by an open to moderately dense short-shrub layer dominated by diagnostic species *Dasiphora fruticosa ssp. floribunda* and a moderate to dense herbaceous layer dominated by medium-tall perennial bunchgrasses *Festuca campestris* and *Festuca idahoensis*. It occurs infrequently in the central Rocky Mountains and the northwestern Great Plains.
- **A3986 *Festuca campestris - Festuca idahoensis* Mesic Grassland Alliance** [Rough Fescue - Idaho Fescue Mesic Grassland Alliance] []
  Vegetation of this mesic grassland alliance is characterized by herbaceous cover ranging from 60-100% codominated by diagnostic perennial bunchgrasses *Festuca campestris* and *Festuca idahoensis*. It occurs in the northwestern Great Plains west into the central Rocky Mountains, including the Blue Mountains of eastern Oregon and Washington. Some stands may extend up to montane and subalpine elevations.
- **A3988 *Festuca idahoensis - Pseudoroegneria spicata - Pascopyrum smithii* Mesic Grassland Alliance** [Idaho Fescue - Bluebunch Wheatgrass - Western Wheatgrass Mesic Grassland Alliance] []
  This mesic grassland association is characterized by an open to moderately dense herbaceous layer dominated by diagnostic perennial grass *Festuca idahoensis* or *Pseudoroegneria spicata* with mesic-site indicator species *Bromus marginatus, Elymus lanceolatus, Koeleria macrantha*, or *Pascopyrum smithii* and is found primarily east of the Continental Divide in foothills in northwestern Montana.
- **A3987 *Festuca idahoensis - Pseudoroegneria spicata - Poa secunda* Dry Grassland Alliance** [Idaho Fescue - Bluebunch Wheatgrass - Sandberg Bluegrass Dry Grassland Alliance] []
  This widespread dry grassland alliance is characterized by an open to moderately dense herbaceous layer dominated by diagnostic perennial bunchgrasses *Festuca idahoensis, Pseudoroegneria spicata*, and/or *Poa secunda* and occurs in the northwestern Great Plains, central Rocky Mountains and interior Pacific Northwest.
- **A3989 *Festuca idahoensis - Pseudoroegneria spicata* Palouse Grassland Alliance** [Idaho Fescue - Bluebunch Wheatgrass Palouse Grassland Alliance] []
  This alliance is characterized by *Pseudoroegneria spicata, Festuca idahoensis*, and/or *Hesperostipa comata* dominating the midgrass layer and occurs in remnants of the Palouse Prairie of southeastern Washington, Oregon and Idaho.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: E.W. Tisdale (1982)
IVC Description Author: M.S. Reid, L. Allen and K.A. Schulz
IVC Description Date: 2015-11-09
IVC Acknowledgments:

A4095 Kinnikinnick / Fescue species - Bluebunch Wheatgrass Steppe Alliance

[ ]

Arctostaphylos uva-ursi / Festuca spp. - *Pseudoroegneria spicata* Steppe Alliance

Kinnikinnick / Fescue - Bluebunch Wheatgrass Steppe

IVC Scientific Name: *Arctostaphylos uva-ursi / Festuca* spp. - *Pseudoroegneria spicata* Steppe Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The vegetation of this central Rocky Mountain alliance is characterized by an open to dense, usually patchy dwarf-shrub layer with sparse to moderately dense cover of perennial graminoids and diverse forb associates. *Arctostaphylos uva-ursi* cover is widely variable (5-75%, averaging 30%) and dominates or codominates the dwarf-shrub layer along with wind-dwarfed *Dasiphora fruticosa ssp. floribunda, Juniperus communis, Juniperus horizontalis*, or *Rosa woodsii* shrubs. *Festuca campestris, Festuca idahoensis*, or *Pseudoroegneria spicata* typically dominate or codominate the herbaceous layer with 25-35% cover combined. The forb component is highly diverse, though individual stands are not as diverse. Total forb cover is typically less than graminoids (<20%). The forbs with higher constancy or abundance include *Achillea millefolium, Agoseris glauca, Anemone multifida, Campanula rotundifolia, Galium boreale, Hedysarum sulphurescens*, and *Lupinus sericeus*. This central Rocky

Mountain alliance occurs in the mountains of northwestern Montana and southwestern Alberta. This alliance is a prominent small-patch or linear type found in the subalpine and lower alpine zones and may extend down into the montane zone on exposed ridges. Elevation ranges from 1340 to 2130 m (4400-7000 feet). It occurs predominantly on moderate to steep slopes with southerly exposures, though it has been found on all aspects. Substrates are predominantly limestones and siltstones that have weathered into thin, fine-textured, and well- to excessively drained soils. Adjacent vegetation is usually subalpine or alpine grasslands, or subalpine woodlands or krummholz composed of *Abies lasiocarpa* or *Pinus albicaulis*.

IVC Dynamics: Increased grazing pressure leads to a decline in *Pseudoroegneria* and associated *Festuca* spp. and allows low-growing forbs and *Carex* spp. to increase.

IVC Environment: This alliance occurs in the central Rocky Mountains and is well-documented from Glacier-Waterton International Peace Park. It is a prominent small-patch or linear type found in the subalpine and lower alpine zones and may extend down into the montane zone on exposed ridges. Elevation ranges from 1340 to 2130 m (4400-7000 feet). It occurs predominantly on moderate to steep slopes with southerly exposures, though it has been found on all aspects. Whether it occurs on lower or upper slopes, flat or convex topography, it is associated with positions that can be inferred to be wind-battered. It has been recorded exclusively from sedimentary substrates, predominantly limestones and siltstones. These have weathered into thin, fine-textured, and well- to excessively drained soils whose water regime is characterized as predominantly subxeric, ranging from xeric to submesic.

DISTRIBUTION

IVC Geographic Range: This central Rocky Mountain alliance occurs in mountains of northwestern Montana and southwestern Alberta and is well-documented from Glacier-Waterton International Peace Park.

IVC Nations: CA,US

IVC States/Provinces: AB, MT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005830 *Arctostaphylos uva-ursi / Festuca campestris - Festuca idahoensis* Dwarf-shrubland** [Kinnikinnick / Rough Fescue - Idaho Fescue Dwarf-shrubland] []
  G3G4 (2004-01-22) AB, MT
- **CEGL005831 *Arctostaphylos uva-ursi / Pseudoroegneria spicata* Dwarf-shrubland** [Kinnikinnick / Bluebunch Wheatgrass Dwarf-shrubland] []
  G2G3 (2004-01-22) AB, MT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M.S. Reid, S.V. Cooper, and G. Kittel (2004)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-03-14

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by M.S. Reid.

A4096 Shrubby-cinquefoil / Prairie Fescue - Idaho Fescue Shrub-steppe Alliance

[ ]

Dasiphora fruticosa / Festuca campestris - Festuca idahoensis Shrub-steppe Alliance

Shrubby-cinquefoil / Fescue Shrub-steppe

IVC Scientific Name: *Dasiphora fruticosa / Festuca campestris - Festuca idahoensis* Shrub-steppe Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation is characterized by an open to moderately dense short-shrub layer (10-45% cover) and a moderate to dense (40-100% cover) herbaceous layer with very high species diversity. The shrub layer is dominated by diagnostic species *Dasiphora fruticosa ssp. floribunda*. A moderate to dense (40-100% cover) graminoid layer is dominated by medium-tall perennial bunchgrasses *Festuca campestris* and *Festuca idahoensis*. Associated graminoids include *Agrostis scabra, Bouteloua gracilis, Carex geyeri, Carex obtusata, Danthonia intermedia, Danthonia parryi, Koeleria macrantha, Pseudoroegneria spicata*, and *Schizachyrium scoparium*. Forb species are typically diverse and include species common in both the foothill and montane zones and northwestern Great Plains. This small-patch alliance occurs infrequently in the central Rocky Mountains and the northwestern Great Plains. Stands occur between 1360-2600 m elevation. It usually occurs on level and gently sloping or rolling topography to steep slopes of all aspects. Soils are loamy and moderately deep derived from a variety of parent materials, including sedimentary rocks and granitics.

IVC Dynamics: *Dasiphora fruticosa ssp. floribunda* will increase in abundance with heavy grazing, and *Festuca campestris, Festuca idahoensis*, and *Pseudoroegneria spicata* will decrease.

IVC Environment: This alliance occurs infrequently in the central Rocky Mountains and the northwestern Great Plains where it is found on gently sloping or rolling topography to steep slopes (1-45%) at elevations from 1360-2600 m. Stands tend to occur on south-facing low and midslopes but can occur on all aspects, and on basin floors. They have been described from relatively mesic, gentle upland slopes with moderately deep soils derived from granitic parent materials in northwestern Montana, and on gently sloping to undulating alluvial benches along drainages in the mesic transition zone between riparian and dry upland areas in Wyoming and Idaho. However, these soils are deeper and derived from glacio-fluvial deposits of limestone, siltstone, sandstone or shale parent materials. Soil textures are sandy loam, loam or silty clay loam. Soils are moderately deep, moderately to well-drained with 25- to 46-cm (10- to 18-inch) rooting depth. Surface rock can be abundant, but little bare ground is exposed. Argillite and limestone rock and gravel are common in the soil profile. Litter may dominate the ground surface, ranging between 6-45%. Small rock, bare soil, and moss are consistently common in most occurrences.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the central Rocky Mountains and northwestern Great Plains from northern Wyoming and southern Idaho north into southwestern Alberta, and east into western North Dakota and southern Saskatchewan.

IVC Nations: CA,US

IVC States/Provinces: AB, ID, MT, ND, NV, SK, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001503** ***Dasiphora fruticosa / Festuca campestris*** **Shrub Grassland** [Shrubby-cinquefoil / Rough Fescue Shrub Grassland] [] G4 (1996-02-01) AB, MT, SK

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2014)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-03-14

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by M.S. Reid and G. Kittel.

A3986 Rough Fescue - Idaho Fescue Mesic Grassland Alliance

[ ]

Festuca campestris - Festuca idahoensis Mesic Grassland Alliance

Rough Fescue - Idaho Fescue Mesic Grassland

IVC Scientific Name: *Festuca campestris - Festuca idahoensis* Mesic Grassland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation of this mesic grassland alliance is characterized by herbaceous cover ranging from 60-100% dominated by diagnostic perennial bunchgrasses *Festuca campestris* with *Festuca idahoensis* often codominant. *Achnatherum richardsonii, Carex obtusata*, or *Geranium viscosissimum* may also codominate the herbaceous layer. Occasional shrubs can be present, are generally low in stature (<0.5 m) and cover (<10% total) and include *Artemisia frigida, Artemisia tridentata ssp. vaseyana, Gutierrezia sarothrae, Juniperus communis, Juniperus horizontalis, Rosa arkansana, Rosa woodsii*, and *Symphoricarpos albus*. *Arctostaphylos uva-ursi* or *Dasiphora fruticosa ssp. floribunda* are typically absent or have low cover (<5%). Other abundant graminoid species include *Carex filifolia, Danthonia intermedia*, and *Koeleria macrantha*, with *Bouteloua gracilis, Muhlenbergia cuspidata*, and *Hesperostipa comata* being more common on prairie sites. Forb species typically present include *Achillea millefolium, Agoseris glauca, Antennaria rosea, Eriogonum umbellatum, Galium boreale, Geum triflorum, Hedysarum sulphurescens, Heterotheca villosa, Liatris punctata, Lupinus sericeus, Oxytropis sericea, Packera cana, Penstemon confertus, Sedum lanceolatum*, and *Zigadenus elegans*. This alliance occurs in the northwestern Great Plains west into the central Rocky Mountains, including the Blue Mountains of eastern Oregon and Washington. Stands occur in glaciated landscapes, on prairies, foothills and mountain slopes. Elevations range from 500-2100 m, but are found only below 1500 m in Canada. Some stands may extend up to montane and subalpine elevations. It occurs on mesic sites on any aspect, becoming restricted to west- and southwest-facing slopes farther north. Slopes vary from flat to gentle toeslopes and lowslopes, generally less than 30%. Soils are loamy and moderately deep on a variety of soil parent materials.

IVC Dynamics: *Festuca campestris* is highly palatable throughout the grazing season. Summer overgrazing for 2-3 years can result in the loss of *Festuca campestris* in the stand (Hodgkinson and Young 1973). Although a light stocking rate for 32 years did not affect range condition, a modest increase in stocking rate led to a marked decline in range condition. The major change was a measurable reduction in basal area of *Festuca campestris* (Willms et al. 1985). Long-term heavy grazing on moister sites can result in a shift to a Kentucky bluegrass - timothy type (Willoughby 1997). Willms and Fraser (1992) found *Festuca campestris* to be highly susceptible to grazing during the growing season, and conclude that optimum management would include dormant-season grazing. Mueggler and Stewart (1980) also suggest that *Festuca campestris* is least susceptible to grazing damage in fall and winter. Primary increasers include *Artemisia frigida, Antennaria rosea, Cerastium arvense*, and *Heterotheca villosa*. *Festuca campestris* and *Festuca idahoensis* decrease in cover and vigor with grazing (Mueggler and Stewart 1980).

Festuca campestris is well-adapted to periodic burning. Burn intervals of 5-10 years have been recommended for *Festuca* maintenance. Two to three years are needed to recover from a burn, so short fire-return intervals impede *Festuca* re-establishment. Longer intervals result in excessive litter build-up that causes high tussock mortality. Growing-season burns reduce plant vigor and recovery takes longer. Floral development is initiated in the fall, so spring burning can result in a reduction in seed production (FEIS 1998). *Festuca idahoensis* is also highly palatable in most seasons, but can withstand occasional heavy grazing. It is "a fire-sensitive species that can be severely damaged by summer and fall fires," and may take many years to recover its pre-fire cover (FEIS 1998). The size of clumps affects fire sensitivity, with smaller ones being less sensitive due to lower fuel build-up. Late summer (August) burns cause more damage than fall (September) burns (FEIS 1998). *Pseudoroegneria spicata* shows an inconsistent reaction to grazing, increasing on some grazed sites while decreasing on others. It seems to recover more quickly from overgrazing than *Festuca campestris* (Mueggler and Stewart 1980). It tolerates dormant-period grazing well, but is sensitive to defoliation during the growing season. Light spring use or fall grazing can help retain plant vigor. Plants usually survive fire, but regrowth may be variable. It is particularly sensitive to defoliation in late spring (FEIS 1998).

IVC Environment: This mesic grassland alliance occurs in the northwestern Great Plains west into the central Rocky Mountains, including the Blue Mountains of eastern Oregon and Washington. Elevations range from 500-2100 m, but are found only below 1500 m in Canada. Climate is temperate, and mean annual precipitation ranges from 40-60 cm. Winters are cold and snowy. Summers are cool. Stands occur in glaciated landscapes, on prairies, foothills and mountain slopes. Sites are mesic, mostly flat to gentle toeslopes and lowslopes on any aspect, but may include steep slopes. In the northern extent it is restricted to warmer west- and southwest-facing slopes. Soils are loamy and moderately deep on a variety of soil parent materials (Mueggler and Stewart 1980). In Glacier National Park, soils are moderately well-drained sandy loams, silt loams or sandy clay loams with neutral pH. Parent material is coarse quartzite and argillite developed on morainal and glacio-fluvial landforms. Litter dominates the ground surface. Bare soil ranges from 5 to 70% cover, and rock and litter is generally less than 40% combined cover. Higher elevation grasslands typically occur in a mosaic with montane forests dominated by *Pinus contorta*.

DISTRIBUTION

IVC Geographic Range: This mesic grassland alliance occurs in the northwestern Great Plains and montane and foothill slopes in the central Rocky Mountains, including Montana, western Saskatchewan and southern Alberta, southwest to the Blue Mountains of eastern Oregon and Washington. A disjunct occurrence is reported for the Steens Mountains in southeastern Oregon. The alliance likely occurs in British Columbia, but has not yet been described from there.

IVC Nations: CA,US

IVC States/Provinces: AB, BC?, ID, MT, ND, OR, SK, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005869 *Festuca campestris - (Festuca idahoensis) - Achnatherum richardsonii* Grassland** [Rough Fescue - (Idaho Fescue) - Richardson's Needlegrass Grassland] []
  G2G3 (2009-07-17) ID?, MT, OR?, WA?
- **CEGL005870 *Festuca campestris - Festuca idahoensis - Geranium viscosissimum* Grassland** [Rough Fescue - Idaho Fescue - Sticky Purple Geranium Grassland] []
  G3? (2004-02-05) AB, MT, OR?, WA
- **CEGL001629 *Festuca campestris - Pseudoroegneria spicata* Grassland** [Rough Fescue - Bluebunch Wheatgrass Grassland] []
  G4 (1996-02-01) AB, MT, ND
- **CEGL005875 *Festuca campestris - Festuca idahoensis* Grassland** [Rough Fescue - Idaho Fescue Grassland] []
  G3 (2004-09-30) AB, ID, MT, OR, WA
- **CEGL001627 *Festuca campestris* Grassland** [Rough Fescue Grassland] []
  G3Q (1996-02-01) MT, SK

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2014)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-03-14
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by J. Drake.

A3988 Idaho Fescue - Bluebunch Wheatgrass - Western Wheatgrass Mesic Grassland Alliance

[ ]
Festuca idahoensis - Pseudoroegneria spicata - Pascopyrum smithii Mesic Grassland Alliance
Idaho Fescue - Wheatgrass Mesic Grassland

IVC Scientific Name: *Festuca idahoensis - Pseudoroegneria spicata - Pascopyrum smithii* Mesic Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is composed of mesic to subhygric, diverse grasslands characterized by a lush meadow dominated by diagnostic perennial grasses *Festuca idahoensis* and/or *Pseudoroegneria spicata*. Mesic indicator species *Bromus marginatus, Elymus lanceolatus, Koeleria macrantha*, or *Pascopyrum smithii* are present to codominant in the graminoid layer. The short shrubs *Symphoricarpos albus, Rosa nutkana*, or *Rosa woodsii* are frequently present and may form an open layer or scattered clumps, usually with less than a quarter of the bunchgrass cover. *Artemisia frigida* is common in eastern stands. Other grass associates include *Poa cusickii* and *Poa secunda*. The forb component has high species diversity and less cover than graminoids. Non-native grasses *Bromus briziformis, Phleum pratense*, and *Poa palustris* are important in some stands. The biological crust is very well-developed on undisturbed sites. This alliance found in the central Rocky Mountains from the Palouse region and Blue Mountains to the foothills east of the Continental Divide in northwestern and Montana and Alberta. Stands occur on gentle to steep slopes at 370 to 2015 m elevation from sites on the dissected basalt plateaus, canyon and mountain slopes of the lower Snake River drainage and on the eastern flanks of the Blue Mountains on relatively deep loessal soils that overlay basalt rock or colluvium. Stands range northeast to east of the Continental Divide on gentle slopes at elevations from 1200-1800 m, but may be found up to 2400 m on moderately deep, moderately well-drained, coarse-textured soils. Litter and small rock dominate the ground surface. Stands typically occur where moisture is available well into summer drought because of cool aspect or subsurface seepage.

IVC Dynamics: Fire has variable effects on bunch grasses *Pseudoroegneria spicata* and *Festuca idahoensis*. Plants usually survive burning, and growth is often stimulated, except when fire occurs in the driest month when the crowns will burn because of low moisture in the vegetation, and the meristems are damaged (Johnson and Simon 1987). Grazing impacts are concentrated on the gentler slopes accessible to livestock. *Pseudoroegneria spicata* shows an inconsistent reaction to grazing, increasing on some grazed sites while decreasing on others. It seems to recover more quickly from overgrazing than *Festuca campestris* (Mueggler and Stewart 1980). It tolerates dormant-period grazing well, but is sensitive to defoliation during the growing season. Light spring use or fall grazing can help retain plant vigor. It is particularly sensitive to defoliation in late spring (Comer et al. 1999). The exotic species *Bromus tectorum* occurs in many stands of the alliance and contributes significant cover on sites disturbed by livestock.

IVC Environment: This is a mesic to subhygric, diverse grassland found in the central Rocky Mountains from the Palouse region and Blue Mountains to the northeast in foothills on the east slope of the Continental Divide in northwestern and Montana and Alberta. Stands occur on gentle to steep, northwest- to northeast-facing slopes at 370 to 2015 m elevation from sites on the dissected basalt plateaus, biscuit-and-swale (mound) formations, and high- and low-elevation canyon and mountain slopes of the lower Snake River drainage and on the eastern flanks and in the rainshadow of the Blue Mountains on relatively deep loessal soils that overlay basalt rock or colluvium. (Daubenmire 1970). Stands range to east of the Continental Divide on gentle slopes at elevations from 1200-1800 m, but may be found up to 2400 m on moderately deep, moderately well-drained, coarse-textured soils developed on morainal or soils derived from sedimentary rock (Reid et al. 2004). Litter and small rock dominate the ground surface. Stands typically occur where moisture is available well into summer drought because of cool aspect or subsurface seepage.

DISTRIBUTION

IVC Geographic Range: This mesic grassland alliance is found in the central Rocky Mountains from the Palouse region and Blue Mountains in eastern Oregon, southwestern Washington, and Idaho to the foothills east of the Continental Divide in northwestern and Montana and Alberta.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, CA?, CO, ID, MT, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005861 *Bromus marginatus - Pseudoroegneria spicata* Grassland** [Mountain Brome - Bluebunch Wheatgrass Grassland] [] G2? (2004-02-02) AB
- **CEGL005653 *Pascopyrum smithii* Central Rocky Mountain Grassland** [Western Wheatgrass Central Rocky Mountain Grassland] [] Common mesic grassland of the central Rocky Mountains dominated by *Pascopyrum smithii*. GNR. AB, ID, MT, WY
- **CEGL001621 *Festuca idahoensis - Pascopyrum smithii* Grassland** [Idaho Fescue - Western Wheatgrass Grassland] [] G4 (1996-02-01) AB, MT, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-03-14

IVC Acknowledgments:

A3987 Idaho Fescue - Bluebunch Wheatgrass - Sandberg Bluegrass Dry Grassland Alliance

[ ]

Festuca idahoensis - Pseudoroegneria spicata - Poa secunda Dry Grassland Alliance

Idaho Fescue - Bluebunch Wheatgrass - Sandberg Bluegrass Dry Grassland

IVC Scientific Name: *Festuca idahoensis - Pseudoroegneria spicata - Poa secunda* Dry Grassland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation of this dry grassland alliance is characterized by an open to moderately dense herbaceous layer dominated by diagnostic perennial bunchgrasses *Festuca idahoensis, Pseudoroegneria spicata*, and/or *Poa secunda*. *Balsamorhiza sagittata, Balsamorhiza serrata, Carex filifolia, Eriogonum heracleoides, Hesperostipa comata, Hieracium cynoglossoides*, or *Lomatium cous* may codominate the herbaceous layer. Scattered shrubs may be present, are generally low in stature (<0.5 m) and cover (<5%) and include browsed *Amelanchier alnifolia, Artemisia frigida, Artemisia tridentata, Chrysothamnus viscidiflorus, Ericameria nauseosa, Gutierrezia sarothrae, Juniperus communis*, and *Juniperus horizontalis*. Other common graminoid species include *Achnatherum occidentale, Danthonia intermedia, Leymus cinereus*, and *Poa cusickii*. Forb species are typically diverse with low cover. This widespread dry grassland alliance occurs in the northwestern Great Plains, central Rocky Mountains and interior Pacific Northwest. Stands are found on relatively dry valley bottoms, stream terraces, rolling uplands, canyon benches and slopes, hills, ridges, plateaus and buttes, badlands, foothills, expansive park meadow openings in montane forests, and glacial outwash plains. Elevation ranges from 200-2500 m on any aspect, becoming restricted to west- and southwest-facing slopes farther north. Substrates are variable and range from shallow and lithic soils with a rocky surface of gravel, cobbles or scoria, to moderately deep soils with little rock.

IVC Dynamics: Fire has variable effects on *Pseudoroegneria spicata*. Plants usually survive burning, and growth is often stimulated, except when fire occurs in the driest month when the crowns will burn because of low moisture in the vegetation, and the meristems are damaged (Johnson and Simon 1987). Grazing impacts are concentrated on the gentler slopes accessible to livestock. *Pseudoroegneria spicata* shows an inconsistent reaction to grazing, increasing on some grazed sites while decreasing on others. It seems to recover more quickly from overgrazing than *Festuca campestris* (Mueggler and Stewart 1980). It tolerates dormant-period grazing well, but is sensitive to defoliation during the growing season. Light spring use or fall grazing can help retain plant vigor. It is particularly sensitive to defoliation in late spring (Comer et al. 1999). The exotic species *Bromus tectorum* occurs in many stands of the alliance and contributes significant cover on sites disturbed by livestock.

IVC Environment: This widespread western dry grassland alliance occurs in the northwestern Great Plains, foothills and montane zones in the central Rocky Mountains from northwestern Montana, extending north into Alberta, west across the interior Pacific Northwest to the foothills of the eastern Cascades, and south to the Grand Teton Mountains of northwestern Wyoming, and ranges in northern Utah, Nevada and northeastern California. It occurs on dry sites on any aspect from 200-2500 m elevation depending on region, becoming restricted to warmer southerly and westerly aspects at higher elevations and northern latitudes. Climate is temperate and mostly continental. Mean annual precipitation ranges from 33-60 cm. Season of precipitation varies geographically. In the Columbia Basin precipitation comes mainly in the winter as snow or rain. This moisture is stored in the soil profile and utilized throughout the typically dry summers. Stands in the Rocky Mountains and northwestern Great Plains may receive up to 75% of the annual precipitation during the growing season. Stands are found on valley bottoms, stream terraces, rolling uplands, canyon benches and slopes, hills, ridges, plateaus and buttes, badlands, foothills, expansive park meadow openings in montane forests, and glacial outwash plains. Sites may be xeric or mesic, on nearly level to steep slopes. The alliance occurs on all aspects, but often on the drier southern and western slopes. Substrates are also variable and range from shallow and lithic soils with a rocky surface of gravel, cobbles or scoria, to moderately deep soils with little rock. Soils are moderately to well-drained, sometimes calcareous, with pH of 6.8-7.7. Soil texture ranges from gravelly, sandy loams to clay. Parent material may include alluvium, colluvium, residuum, glacial deposits or loess derived from lava, basalt, granite, quartz diorite, calcareous sandstone, limestone, acid shale, bentonite, marlstone and other volcanic materials. Litter, moss and lichen are important ground cover in some stands.

DISTRIBUTION

IVC Geographic Range: This widespread dry grassland alliance occurs in the northwestern Great Plains and mountain and foothill slopes on both sides of the Continental Divide in the Central Rockies in northwestern Montana, extending north into the montane zone of Alberta, west into Idaho, and south to the Grand Teton Mountains of northwestern Wyoming. Stands also occur in the Okanogan Highlands of northeastern Washington and southern British Columbia and in the Columbia Basin of south-central Washington and north-central Oregon, extending west into the foothills of the eastern Cascades and east into foothills and canyon slopes of northeastern Oregon and western Idaho. It also occurs in northeastern California.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA, CO, ID, MT, NV, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008278 *Pseudoroegneria spicata - (Calamagrostis rubescens) / (Niphotrichum canescens)* Grassland** [Bluebunch Wheatgrass - (Pinegrass) / (Grey Rock Moss) Grassland] []
  Pseudoroegneria spicata-dominant balds and rocky slopes above lower treeline. GNR. BC?, WA
- **CEGL001677 *Pseudoroegneria spicata - Poa secunda* Grassland** [Bluebunch Wheatgrass - Sandberg Bluegrass Grassland] []
  G4? (1996-02-01) BC?, CO, ID, MT, NV, OR, UT, WA, WY
- **CEGL001624 *Festuca idahoensis - Pseudoroegneria spicata* Grassland** [Idaho Fescue - Bluebunch Wheatgrass Grassland] []
  G4 (1996-02-01) AB, CA, ID, MT, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A3989 Idaho Fescue - Bluebunch Wheatgrass Palouse Grassland Alliance

[ ]
Festuca idahoensis - Pseudoroegneria spicata Palouse Grassland Alliance
Idaho Fescue - Bluebunch Wheatgrass Palouse Grassland

IVC Scientific Name: *Festuca idahoensis - Pseudoroegneria spicata* Palouse Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is characterized by medium-tall bunchgrasses *Pseudoroegneria spicata, Festuca idahoensis*, and/or *Hesperostipa comata* dominating the midgrass layer. Some stands have a short bunchgrass layer of *Poa secunda*. Broad-leaved herbs typically contribute little to the composition of individual sites but may include *Achillea millefolium var. occidentalis, Eriogonum heracleoides*, and *Lomatium* sp. Scattered *Ericameria* spp. shrubs can be present to abundant especially on disturbed sites. Annual grasses and forbs are common and can be diverse. In disturbed sites *Bromus tectorum* and *Plantago patagonica* are common. A diverse ground moss and lichen layer can cover much of the space between vascular plants, although it can be displaced with ground disturbance. This alliance occurs in remnants of the Palouse Prairie of southeastern Washington, Oregon and Idaho. Stands occur on ridgetops or on flat to concave surfaces on the middle or upper third of the slope between 1580-1935 m elevation. Slopes range from flat to 110%, and stands can be found on all aspects. This is an open to closed vegetation type with most of its total cover found in only the medium-tall bunchgrass lifeform.

IVC Dynamics: These grasslands are dominated by relatively deep-rooted grasses that use soil moisture below 0.5 m during the typically dry summers. The coarse-textured soils allow for rapid infiltration and storage of winter and summer precipitation (Kleiner 1968, Daubenmire 1970, Kleiner and Harper 1977, Thilenius et al. 1995). Fire has variable effects on *Pseudoroegneria spicata*. Plants usually survive burning, and growth is often stimulated, except when fire occurs in the driest month when the crowns will burn because of low moisture in the vegetation, and the meristems are damaged (Johnson and Simon 1987). However, burning generally kills or severely damages *Hesperostipa comata* plants. After fire, regeneration of this non-rhizomatous bunchgrass is through seed and may take many years to reach prefire densities (FEIS 1998).

Grazing impacts are concentrated on the gentler slopes accessible to livestock. *Pseudoroegneria spicata* shows an inconsistent reaction to grazing, increasing on some grazed sites while decreasing on others. It seems to recover more quickly from overgrazing than *Festuca campestris* (Mueggler and Stewart 1980). It tolerates dormant-period grazing well, but is sensitive to defoliation during the growing season. Light spring use or fall grazing can help retain plant vigor. It is particularly sensitive to defoliation in late spring (Comer et al. 1999).

The exotic species *Bromus tectorum, Draba verna, Lactuca serriola*, and *Tragopogon dubius* occur in many stands of the alliance and contribute significant cover on sites disturbed by livestock(Daubenmire 1970). The cool-season annual grass *Bromus tectorum* can be an effective competitor for winter soil moisture because it can germinate in the fall, overwinter, then begin regrowing in the early spring before it is warm enough for many perennial grasses, completing its lifecycle and depleting soil moisture before the dry summer weather begins. This annual species also produces abundant fine fuels that carry fire well and increase the frequency of fires (FEIS 1998).

IVC Environment: This alliance is restricted to remnants of the Palouse Prairie of southeastern Washington, Oregon and Idaho. The region is shrub-steppe, in the rainshadow of the Cascade Range, and too dry to support forest vegetation. The climate is characterized by moderately cold winters and warm to hot summers. Precipitation occurs primarily in the winter as rain and occasional snow. Elevations range from roughly 335-900 m (1100-2950 feet), and the slopes range from gentle to moderate. Stands occur on ridgetops or on flat to concave surfaces on the middle or upper third of the slope between 1580-1935 m elevation. Slopes range from flat to 110%, and stands can be found on all aspects. This is an open to closed vegetation type with most of its total cover found in only the medium-tall bunchgrass lifeform. In the Columbia Basin of southeastern Washington, it is primarily found in the *Pseudoroegneria - Poa* and *Pseudoroegneria - Festuca* zones of Daubenmire (1970). It occurs on sandy or gravelly soils, in some cases derived from strongly weathered volcanic ash. They are deep, coarse-textured and have low fertility. Additionally, sands and gravels have low moisture-holding capacity.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in remnant stands in the Palouse Prairie of southeastern Washington, Oregon and Idaho. Much of the original extent has been converted to wheat fields.
IVC Nations: CA,US
IVC States/Provinces: BC?, ID, MT, NV, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL001704 *Hesperostipa comata - Poa secunda* Grassland** [Needle-and-Thread - Sandberg Bluegrass Grassland] []
  G1 (2000-12-17) BC?, ID, MT, NV, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: R.F. Daubenmire (1992)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-03-14
IVC Acknowledgments:

G305 Central Rocky Mountain-North Pacific High Montane Mesic Shrubland

[ ]

IVC Colloquial Name: Central Rocky Mountain-North Pacific High Montane Mesic Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This shrubland group is found within the zone of continuous forest in the upper montane and subalpine zones of the northern Rocky Mountains, from Wyoming north and west into British Columbia and Alberta. It is composed of a diverse mix of deciduous shrubs. Soils tend to be moist, but will typically dry out in late spring or summer. Stands are typically initiated by fires and will persist on sites for long periods because of repeated burns and changes in the presence of volatile oils in the soil which impedes tree regeneration. It also occurs as smaller patches of shrubland on dry sites that are marginal for tree growth and that have typically also experienced fire. Sites often are ridgetops and upper to middle mountain slopes and more commonly on sunny southern aspects. Vegetation is mostly deciduous broadleaf shrubs, sometimes mixed with shrub-statured trees or sparse evergreen needleleaf trees and *Populus tremuloides*. Common species include *Acer glabrum, Menziesia ferruginea, Ribes lacustre, Rubus parviflorus, Spiraea betulifolia, Spiraea splendens, Vaccinium cespitosum, Vaccinium myrtillus, Vaccinium scoparium*, and *Vaccinium membranaceum*, occurring alone or in any combination. *Juniperus communis* shrublands are found at high elevations in the eastern Cascades and are tentatively included here. Important graminoids and forbs include *Xerophyllum tenax, Luzula glabrata var. hitchcockii, Chamerion angustifolium*, and *Pteridium aquilinum*, reflecting the mesic nature of many of these shrublands.

IVC Dynamics: Stands are typically initiated by fires and will persist on sites for long periods because of repeated burns and changes in the presence of volatile oils in the soil which impedes tree regeneration. It also occurs as smaller patches of shrubland on dry sites that are marginal for tree growth and that have typically also experienced fire.

IVC Environment: Cold, wet winters with plentiful snow are typical, along with wind desiccation in the subalpine-alpine transition. Soils tend to be moist, but will typically dry out in late spring or summer. Stands are typically initiated by fires and will persist on sites for long periods because of repeated burns and changes in the presence of volatile oils in the soil which impedes tree regeneration. These shrublands also occur as smaller patches of shrubland on dry sites that are marginal for tree growth and that have typically also experienced fire. Sites often are ridgetops and upper to middle mountain slopes and more commonly on sunny southern aspects.

DISTRIBUTION

IVC Geographic Range: This group occurs in the mountains throughout the Northern Rockies, from Wyoming north and west into British Columbia and Alberta. It also occurs in the East Cascades, but how far south into the Sierra Nevada is as yet unclear.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA, CO, ID, MT, NV, OR, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.15.16:P, 7.1.7.2:P, 7.1.8.1:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3968 *Abies lasiocarpa - Populus tremuloides / Acer glabrum* Central Rocky Mountain Avalanche Chute Shrubland Alliance** [Subalpine Fir - Quaking Aspen / Rocky Mountain Maple Central Rocky Mountain Avalanche Chute Shrubland Alliance] []
  This shrubland alliance is composed of a moderately dense to dense, diverse mix of deciduous shrubs and broken and stunted trees such as *Abies lasiocarpa, Acer glabrum, Alnus viridis ssp. sinuata, Alnus incana, Amelanchier alnifolia, Populus tremuloides, Ribes lacustre, Rubus parviflorus, Sorbus scopulina*, and on drier sites *Pseudotsuga menziesii*. It is found within avalanche chutes at a broad range of elevations within the zone of continuous forest in the upper montane and subalpine zones of the central Rocky Mountains.
- **A4387 *Arctostaphylos (nevadensis, uva-ursi)* Dwarf-shrubland & Montane Bald Alliance** [Manzanita - Bearberry Dwarf-shrubland & Montane Bald Alliance] []
- **A4388 *Juniperus communis - Paxistima myrsinites* Dwarf-shrubland Alliance** [Common Juniper - Oregon Boxleaf Dwarf-shrubland Alliance] []
- **A3970 *Menziesia ferruginea - Spiraea betulifolia* Montane-Subalpine Shrubland Alliance** [Fool's-huckleberry - Shinyleaf Meadowsweet Montane-Subalpine Shrubland Alliance] []
  This shrubland alliance is characterized by a moderately dense shrub layer dominated by *Menziesia ferruginea* and/or *Spiraea betulifolia* and is found in the montane and subalpine zones of the central Rocky Mountains in northwestern Montana and Alberta.
- **A3969 *Vaccinium membranaceum - Vaccinium myrtillus - Vaccinium scoparium* Montane-Subalpine Shrubland Alliance** [Thinleaf Huckleberry - Whortleberry - Grouse Whortleberry Montane-Subalpine Shrubland Alliance] []
  This dwarf-shrubland alliance is dominated by *Vaccinium cespitosum, Vaccinium membranaceum, Vaccinium myrtillus*, and/or *Vaccinium scoparium*. It is found within the upper montane, subalpine and lower alpine zones of the Rocky Mountains, from northern Colorado and Wyoming north and west into British Columbia and Alberta.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M.S. Reid, in Faber-Langendoen et al. (2011)

IVC Description Author: M.S. Reid and K.A. Schulz

IVC Description Date: 2015-05-20

IVC Acknowledgments:

A3968 Subalpine Fir - Quaking Aspen / Rocky Mountain Maple Central Rocky Mountain Avalanche Chute Shrubland Alliance

[ ]

Abies lasiocarpa - Populus tremuloides / Acer glabrum Central Rocky Mountain Avalanche Chute Shrubland Alliance

Central Rocky Mountain Subalpine Fir - Quaking Aspen Avalanche Chute Shrubland

IVC Scientific Name: *Abies lasiocarpa - Populus tremuloides / Acer glabrum* Central Rocky Mountain Avalanche Chute Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Stands of this shrubland alliance are composed of a moderately dense to dense, diverse mix of deciduous shrubs and broken and stunted trees. This canopy may be codominated by *Abies lasiocarpa, Acer glabrum, Alnus viridis ssp. sinuata, Alnus incana, Amelanchier alnifolia, Populus tremuloides, Ribes lacustre, Rubus parviflorus, Sorbus scopulina*, and on drier sites *Pseudotsuga menziesii*. Where avalanches occur annually or more often, conifers are rare and brushy deciduous trees and shrubs are common. Where avalanches are less frequent, stands dominated by conifers less than 4 m tall develop. The ground layer is composed of graminoids and forbs. The forb component is often very diverse, and mesic forbs prevail. *Chamerion angustifolium* was present in all sampled plots, a good indicator of periodic disturbance that characterizes this alliance. Other common to abundant species include *Angelica arguta, Artemisia ludoviciana, Calamagrostis canadensis, Calamagrostis rubescens, Carex geyeri, Elymus glaucus, Erythronium grandiflorum, Galium triflorum, Heracleum maximum, Osmorhiza occidentalis, Pteridium aquilinum, Solidago canadensis, Thalictrum occidentale, Valeriana sitchensis*, and *Veratrum viride*. This shrubland alliance is found within avalanche chutes at a broad range of elevations within the zone of continuous forest in the upper montane and subalpine zones of the central Rocky Mountains, from Wyoming north and west into British Columbia and Alberta. Stands are located in avalanche tracks and runout zones and can occur on any aspect, but are more common on southeast- to southwest-facing slopes where unstable snowpack conditions frequently occur. Sites are often mesic because avalanche paths are often in stream gullies. Substrate is variable depending on parent materials, but is typically shallow and rocky. Adjacent vegetation may include subalpine forests dominated by *Abies lasiocarpa, Picea engelmannii*, or *Pseudotsuga menziesii*, and subalpine meadows.

IVC Dynamics: Disturbance by avalanches prevents tall forests from growing on these sites. Flexible-stemmed deciduous trees and shrubs are more tolerant of this snow movement than conifers. Where avalanches are frequent, stands develop that are dominated by dwarfed/broken conifers (less than 4 m tall). Where avalanches occur annually or more often, only brushy deciduous trees and shrubs are present (Butler 1979).

IVC Environment: This shrubland alliance is found within avalanche chutes at a broad range of elevations within the zone of continuous forest in the upper montane and subalpine zones of the central Rocky Mountains. Elevations range from 950-2396 m (3100-7860 feet). Climate is temperate with extremely cold winters and cool summers. Mean annual precipitation ranges from 50-70 cm and occurs mostly as snow. Stands are located in avalanche tracks and runout zones. Slopes range from 15-60%. These communities can occur on any aspect, but are more common where unstable snowpack conditions frequently occur, such as southeast aspects where snow cornices develop because of prevailing northwesterly winds, and south- to southwest-facing slopes because of suncrust formation (Butler 1979). Sites are often mesic because avalanche paths are often in stream gullies. Substrate is variable depending on parent materials, but is typically shallow and rocky. Soils are rapidly to well-drained loamy sands, sandy loams, or silt loams, strongly acidic to neutral, and characterized as Orthic and Cumulic Regosols developed on fluvial and colluvial landforms. Soils tend to be dark, weakly developed soils on colluvial and glacio-fluvial landforms with high gravel and rock content. Litter dominates the ground surface with 40-85% cover. Frequent avalanches maintain the shrubby structure of this deciduous shrubland. Adjacent vegetation may include subalpine forests dominated by *Abies lasiocarpa, Picea engelmannii*, or *Pseudotsuga menziesii*, and subalpine meadows.

DISTRIBUTION

IVC Geographic Range: This alliance occurs within avalanche chutes at a broad range of elevations within the zone of continuous forest in the montane and subalpine zones of the central Rocky Mountains from Wyoming north and west into Alberta and British Columbia.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA, CO, MT, NV, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005886 *Populus tremuloides / Amelanchier alnifolia* Avalanche Chute Shrubland** [Quaking Aspen / Saskatoon Serviceberry Avalanche Chute Shrubland] []
  G3? (2004-01-20) AB, MT, WY
- **CEGL008266 *Populus tremuloides - Paxistima myrsinites* Talus Shrubland** [Quaking Aspen - Oregon Boxleaf Talus Shrubland] []
  Low to middle elevation talus dominated by shrub-form *Populus tremuloides*. GNR. BC?, OR?, WA
- **CEGL008285 *Symphoricarpos albus - Holodiscus discolor* Avalanche Chute Shrubland** [Common Snowberry - Oceanspray Avalanche Chute Shrubland] []
  Mid-elevation avalanche chute runouts and debris aprons dominated by *Symphoricarpos albus* GNR. BC?, OR?, WA
- **CEGL001127 *Rubus parviflorus / Chamerion angustifolium - Heracleum maximum* Shrubland** [Thimbleberry / Fireweed - Common Cow-parsnip Shrubland] []
  G4 (1996-02-01) AB?, MT, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A4387 Manzanita - Bearberry Dwarf-shrubland & Montane Bald Alliance

[ ]
Arctostaphylos (nevadensis, *uva-ursi*) Dwarf-shrubland & Montane Bald Alliance
[ ]

IVC Scientific Name: *Arctostaphylos (nevadensis*, *uva-ursi*) Dwarf-shrubland & Montane Bald Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of vegetated montane balds of the East Cascades dominated by mat-forming *Arctostaphylos nevadensis* or, less frequently, *A. uva-ursi. Calamagrostis rubescens, Pseudoroegneria spicata*, and *Paxistima myrsinites* are characteristic associates. These communities occur within a matrix of mixed *Pinus ponderosa-Pseudotsuga menziesii* forests and woodlands.
IVC Dynamics: Rocky substrates result in limited tree cover and allow these dwarf-shrubland communities to persist in a forested landscape.
IVC Environment: One association is documented. Within that type, stands occur at low- to upper-montane elevations (500-1800m) on rocky balds of various slopes (13-38°) and generally southwest-facing aspects (209° mean).

DISTRIBUTION

IVC Geographic Range: This shrubland alliance has been documented eastern North Cascades and may occur in the Okanogan Mountains, as well. It may also be present in British Columbia.
IVC Nations: CA?,US
IVC States/Provinces: BC?, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008249 *Arctostaphylos (nevadensis, uva-ursi) - Paxistima myrsinites / Pseudoroegneria spicata* Dwarf-shrubland** [(Pinemat Manzanita, Bearberry) - Oregon Boxleaf / Bluebunch Wheatgrass Dwarf-shrubland] []
  Montane balds with mats of *Arctostaphylos nevadensis* with prominent *Paxistima myrsinites* and/or *Pseudoroegneria spicata*. GNR. BC?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author: T. Ramm-Granberg
IVC Description Date:
IVC Acknowledgments: R. C. Crawford, Eric Nielsen, Catharine Copass, Rachel Brunner, Matt Lee, and the field crews of the National Park Service North Coast and Cascades Network Vegetation Mapping Project.

A4388 Common Juniper - Oregon Boxleaf Dwarf-shrubland Alliance

[ ]
Juniperus communis - Paxistima myrsinites Dwarf-shrubland Alliance
[ ]

IVC Scientific Name: *Juniperus communis - Paxistima myrsinites* Dwarf-shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of montane to subalpine dwarf-shrublands dominated by *Juniperus communis* and/or *Paxistima myrsinites. Phlox diffusa* is almost always present to dominant.
IVC Dynamics: These shrublands occur on steep, well-drained sites that receive abundant direct radiation--perhaps contributing to summer drought that may slow establishment of subalpine trees. Some sites also occur on rocky substrates that limit tree establishment. Sites may also have evidence of past disturbance, such as old blowdown or fire scars.
IVC Environment: This alliance occurs at low-montane to subalpine elevations on rocky outcrops, ridgelines, and steep slopes that receive abundant direct radiation.

DISTRIBUTION

IVC Geographic Range: This shrubland alliance has been documented throughout the Olympic and Cascade Mountains of Washington and likely occurs in British Columbia and Oregon, as well.
IVC Nations: CA?,US
IVC States/Provinces: BC?, OR?, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008261 *Juniperus communis - Phlox diffusa* Dwarf-shrubland** [Common Juniper - Spreading Phlox Dwarf-shrubland] []
  Juniperus communis-dominated dwarf-shrublands of rocky sites from mid-montane to subalpine elevations with prominent *Phlox diffusa*. GNR. BC?, OR?, WA
- **CEGL008277 *Paxistima myrsinites / Phlox diffusa* Dwarf-shrubland** [Oregon Boxleaf / Spreading Phlox Dwarf-shrubland] []
  Dry openings within upper montane to subalpine forests dominated by *Paxistima myrsinites* and *Phlox diffusa* and a diverse array of other herbs. GNR. BC?, OR?, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author: T. Ramm-Granberg
IVC Description Date:
IVC Acknowledgments: R. C. Crawford, Eric Nielsen, Catharine Copass, Rachel Brunner, Matt Lee, and the field crews of the National Park Service North Coast and Cascades Network Vegetation Mapping Project.

A3970 Fool's-huckleberry - Shinyleaf Meadowsweet Montane-Subalpine Shrubland Alliance

[ ]
Menziesia ferruginea - Spiraea betulifolia Montane-Subalpine Shrubland Alliance
Montane-Subalpine Fool's-huckleberry - Shinyleaf Meadowsweet Shrubland

IVC Scientific Name: *Menziesia ferruginea - Spiraea betulifolia* Montane-Subalpine Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Vegetation is dominated by *Menziesia ferruginea* and/or *Spiraea betulifolia*. Other shrubs of high constancy include *Vaccinium membranaceum, Lonicera utahensis*, and *Sorbus scopulina*. Other tall shrubs that may be present include *Acer glabrum, Amelanchier alnifolia, Juniperus communis, Ribes lacustre, Rubus parviflorus*, and *Vaccinium myrtillus*. *Xerophyllum tenax* and tree seedlings often dominate the field layer. This shrubland alliance is found within the zone of continuous forest in the upper montane and subalpine zones of the central Rocky Mountains in northwestern Montana and Alberta. Stands occur as smaller patches of shrubland on dry, rocky, often unstable or bedrock sites that are marginal for tree growth or on sites where stand-replacing fire has permitted early-seral shrublands that persist for long periods because of repeated burns and changes in the presence of volatile oils in the soil which impedes tree regeneration.
IVC Dynamics:
IVC Environment: This shrubland alliance is found in the montane and subalpine zones of the central Rocky Mountains in northwestern Montana and Alberta. The elevation ranges between 1770 and 1973 m (5805-6472 feet). Climate is temperate with extremely cold winters and cool summers. Mean annual precipitation ranges from 50-70 cm and occurs mostly as snow. Stands of this shrubland alliance are found on mid to lower portions, including toeslopes, of moderate to steep slopes and bedrock outcrops on all aspects. Substrates are derived from siltstone and glacio-fluvial and colluvial deposits, including talus. The soil tends to be rapidly to well-drained sandy or clay loam that contains an abundance of gravel and rock. Ground surface cover is variable, but tends towards very rocky or bedrock outcrops, and significant portions of bare soil. There is moderate cover of litter and duff in most stands, as well as moderate bryophyte cover in some stands. Stands occur as smaller patches of shrubland on dry, rocky, often unstable or bedrock sites that are marginal for tree growth or on sites where stand-replacing fire has permitted early-seral shrublands that persist for long periods because of repeated burns and changes in the presence of volatile oils in the soil which impedes tree regeneration.

DISTRIBUTION

IVC Geographic Range: This shrubland alliance occurs in the upper montane and subalpine zones of the central Rocky Mountains in northwestern Montana and Alberta.
IVC Nations: CA,US
IVC States/Provinces: AB, ID?, MT, WA?, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005835 *Spiraea betulifolia* Shrubland** [Shinyleaf Meadowsweet Shrubland] []
  G3? (2004-01-28) AB?, MT, WY
- **CEGL005888 *Menziesia ferruginea / Xerophyllum tenax* Shrubland** [Rusty Menziesia / Common Beargrass Shrubland] []
  G3G4 (2004-01-20) AB, ID?, MT, WA?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A3969 Thinleaf Huckleberry - Whortleberry - Grouse Whortleberry Montane-Subalpine Shrubland Alliance

[ ]

Vaccinium membranaceum - Vaccinium myrtillus - Vaccinium scoparium Montane-Subalpine Shrubland Alliance

Montane-Subalpine Huckleberry - Whortleberry Shrubland

IVC Scientific Name: *Vaccinium membranaceum - Vaccinium myrtillus - Vaccinium scoparium* Montane-Subalpine Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This shrubland alliance is characterized by a moderate to dense, often patchy layer of dwarf-shrubs. Total vegetation cover ranges from 30 to 70% and is dominated by *Vaccinium cespitosum, Vaccinium membranaceum, Vaccinium myrtillus*, and/or *Vaccinium scoparium*. Multiple *Vaccinium* may be present, but typically one species is dominant. Other shrubs of high constancy and low cover include *Paxistima myrsinites, Spiraea betulifolia*, and *Sorbus scopulina*; *Rubus parviflorus* is present at lower elevations. *Xerophyllum tenax* is restricted to and often dominates the herbaceous layer in northern stands. Herbaceous species reflect the subalpine/lower alpine character of the alliance and vary greatly across its range, with few species in common among Colorado, Wyoming, and Montana/Alberta stands. Some wetland species may be present because of late snowmelt and mesic soil conditions. This dwarf-shrub alliance occurs near treeline in the mountains of northern Colorado and northwestern Wyoming. It has also been reported from the Ruby Mountains of northeastern Nevada, Glacier National Park in Montana and Waterton Lakes National Park and Banff National Park in Alberta, Canada. Stands are found on gentle to steep-gradient slopes on all aspects. Elevations range from 3220 to 3690 m elevation in its southern extent and 1600 to 2280 m elevation in the northern extent. Stands occur as patches in subalpine forests and lower alpine just above treeline in areas where snow accumulates in the winter and melts relatively late in the summer. The soils are poorly developed, may have high organic matter content, developed from a variety of parent materials such as argillites, mudstone and sandstone of colluvial or glacial deposition, and contain more than 20% rock in the upper profile. Soil textures are variable. Stands occur as smaller patches of shrubland on dry, rocky, often unstable sites that are marginal for tree growth or on sites where stand-replacing fire has permitted early-seral shrublands that persist for long periods because of repeated burns and changes in the presence of volatile oils in the soil which impedes tree regeneration.

IVC Dynamics:

IVC Environment: This dwarf-shrub alliance occurs near treeline in the mountains of northern Colorado and northwestern Wyoming. It has also been reported from the Ruby Mountains of northeastern Nevada, Glacier National Park in Montana and Waterton Lakes National Park and Banff National Park in Alberta, Canada. Elevations range from 3220 to 3690 m elevation in its southern extent and 1600 to 2280 m elevation in the northern extent. The climate regime is continental, with long, cold winters and short summers with frequent afternoon thunderstorms. Strong westerly winds are common in the winter and spring and distribute snow on the leeward side of the mountains. Large areas of late-lying snowpatches are located on the eastern slope (Komarkova 1976). Stands are found on gentle to steep-gradient slopes on all aspects in the southern extent. They occur as patches in the subalpine forests and lower alpine just above treeline in areas where snow accumulates in the winter and melts relatively late in the summer. The soils are poorly developed, may have high organic matter content, and are classified as Inceptisols (Cryumbrepts or Cryochrepts). The soil profile has A and B horizons; the B horizon is moderately thick. The average surface pH is 5.0, indicating leached soils. Stands in the northern extent occur on moderate to steep and usually warmer southerly exposures (southeasterly to southwesterly), but northerly aspects have been noted as well. It is mostly found on mid- to upper-slope positions as well as slope shoulders and ridges. Soils have developed from argillites, mudstone and sandstone of colluvial or glacial deposition, contain more than 20% rock in the upper profile, and are rapidly drained loams and loamy sands (Reid et al. 2004, Hop et al. 2007). Stands occur as smaller patches of shrubland on dry, rocky, often unstable sites that are marginal for tree growth or on sites where stand-replacing fire has permitted early-seral shrublands that persist for long periods because of repeated burns and changes in the presence of volatile oils in the soil which impedes tree regeneration.

DISTRIBUTION

IVC Geographic Range: This dwarf-shrub alliance occurs near treeline in the Rocky Mountains of northern Colorado and northwestern Wyoming. It has also been reported from the Ruby Mountains of northeastern Nevada, and the Central Rocky Mountains in Glacier National Park in Montana and Waterton Lakes National Park and Banff National Park in Alberta, Canada.

IVC Nations: CA,US

IVC States/Provinces: AB, BC?, CO, ID?, MT, NV, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005891** ***Vaccinium membranaceum / Xerophyllum tenax*** **Shrubland** [Thinleaf Huckleberry / Common Beargrass Shrubland] []
  G3? (2004-01-21) AB, ID?, MT, WA
- **CEGL005879** ***Vaccinium (myrtillus, scoparium) / Luzula glabrata*** **Dwarf-shrubland** [(Whortleberry, Grouse Whortleberry) / Smooth Woodrush Dwarf-shrubland] []
  G2G3 (2004-01-14) AB, MT
- **CEGL008284** ***Vaccinium membranaceum*** **- (*Sorbus sitchensis*) / (*Calamagrostis rubescens*) Shrubland** [Thinleaf Huckleberry - (Western Mountain-Ash) / (Pinegrass) Shrubland] []
  Upper montane shrublands dominated by *Vaccinium membranaceum*. GNR. BC?, ID?, MT?, OR?, WA
- **CEGL008283** ***Vaccinium (deliciosum, scoparium) / Festuca viridula*** **Dwarf-shrubland** [(Cascade Bilberry, Grouse Whortleberry) / Greenleaf Fescue Dwarf-shrubland] []
  Fire-associated subalpine shrublands dominated by *Vaccinium deliciosum* and/or *V. scoparium* and an herbaceous layer of *Festuca viridula*. GNR. BC?, OR?, WA
- **CEGL008280** ***Sorbus sitchensis* / *Vaccinium deliciosum*** **- (*Phyllodoce empetriformis*) Shrubland** [Western Mountain-Ash / Cascade Bilberry - (Pink Mountain-Heath) Shrubland] []
  Sorbus sitchensis codominates above shorter *Vaccinium deliciosum* (and usually *Phyllodoce empetriformis*) in a shrubland that is transitional between lower elevation tall shrublands and high-elevation heathlands. GNR. BC?, OR?, WA
- **CEGL001140** ***Vaccinium (cespitosum, scoparium)*** **Dwarf-shrubland** [(Dwarf Bilberry, Grouse Whortleberry) Dwarf-shrubland] []
  G4 (1994-02-23) AB, CO, NV, WY
- **CEGL008281** ***Spiraea splendens* / *Carex spectabilis*** **- (*Polygonum bistortoides*) Shrubland** [Rose Meadowsweet / Showy Sedge - (American Bistort) Shrubland] []
  Small-patch shrublands dominated by *Spiraea splendens*, with a mesic herbaceous understory GNR. BC?, OR?, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-03-14

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by M. Damm.

M168 Rocky Mountain-Vancouverian Subalpine-High Montane Mesic Meadow

Prairies mésiques subalpines et de haute montagne des Rocheuses et de la région de Vancouver

IVC Colloquial Name: Rocky Mountain-Vancouverian Subalpine-High Montane Mesic Meadow

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This herbaceous macrogroup is widespread in the Rocky Mountains cordillera from New Mexico and Colorado north into Canada, and west to high plateaus and mountains in the Colorado Plateau, higher mountain ranges of Nevada, and the Sierra Nevada into the eastern Cascades. It also occurs in the "island ranges" of central Montana. Vegetation is composed of an open to dense perennial graminoid layer that is generally less than 1 m tall. Characteristic grassland species include *Danthonia parryi, Danthonia intermedia, Festuca arizonica, Festuca thurberi*, and *Muhlenbergia montana* in montane and subalpine grasslands in the southern Rocky Mountains. Associated graminoid species include *Blepharoneuron tricholepis, Bouteloua gracilis, Festuca idahoensis, Hesperostipa comata, Muhlenbergia filiculmis*, and *Pseudoroegneria spicata*. Forb associates may be diverse and composed of relatively dry forbs such as *Castilleja* spp., *Erigeron simplex, Eriogonum umbellatum, Hymenoxys richardsonii, Penstemon secundiflorus, Potentilla hippiana*, and *Solidago multiradiata*. Mesic meadows are typically composed of a wide diversity of genera and contribute more to overall herbaceous cover than graminoids. Important forbs include *Achillea millefolium, Allium schoenoprasum, Angelica* spp., *Athyrium filix-femina, Camassia quamash, Campanula rotundifolia, Chamerion angustifolium, Erigeron speciosus, Eucephalus* spp., *Geum macrophyllum, Hackelia* spp., *Heracleum maximum, Ligusticum* spp., *Lupinus latifolius, Mertensia* spp., *Osmorhiza occidentalis, Pteridium aquilinum, Senecio hydrophiloides, Senecio serra, Senecio triangularis, Solidago canadensis, Symphyotrichum* spp., *Thalictrum occidentale, Valeriana* spp., *Veratrum viride*, and *Zigadenus elegans*. Forb diversity can be quite high and intergrades with grasses in adjacent grassland stands. At montane elevations, graminoids form a minor component and are usually taxa with relatively broad and soft blades such as *Bromus carinatus, Bromus sitchensis, Carex hoodii, Carex microptera, Carex raynoldsii, Deschampsia cespitosa*, and *Elymus glaucus*. Broadleaf deciduous shrubs such as *Dasiphora fruticosa ssp. floribunda* and *Symphoricarpos* spp. are often present, but do not dominate. Other locally abundant forbs include *Hydrophyllum fendleri, Phacelia hastata, Phlox diffusa, Saussurea americana*, and *Xerophyllum tenax*. Burrowing mammals can increase the forb diversity. Stands occupy a wide variety of environments where finely-textured soils, snow deposition, rocky substrates, or windswept dry conditions limit tree establishment. The grasslands occur on flat to rolling plains, in inter-montane parks and on dry sideslopes, especially with south and west aspects. Mesic meadow stands occur in swales that lose their snow cover relatively late in the season. Southern Rocky Mountain stands range from 2200 to 3000 m elevation extending up to 3350 m on warm aspects. Central Rocky Mountain stands typically occur above 2000 m in elevation in the southern extent and above 600 m in the north. These upland communities occur on gentle to moderate-gradient slopes and relatively moist habitats. At montane elevations, this macrogroup occurs within *Pinus-Pseudotsuga* or mixed conifer-dominated forests. At subalpine elevations, these meadows are found below treeline, usually within *Abies lasiocarpa-Picea*-dominated forests.

IVC Geographic Range: This macrogroup is widespread in the Rocky Mountains cordillera from New Mexico and Colorado north into Alberta and British Columbia, and west to high plateaus and mountains in the Colorado Plateau, higher mountain ranges of Nevada, Sierra Nevada into the eastern Cascades. It also occurs in the "island ranges" of central Montana.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, NM, NV, OR, SD, TX, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G271 Rocky Mountain-North Pacific Subalpine-Montane Mesic Grassland & Meadow []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2014)

IVC Description Author: K.A. Schulz and M. Jennings

IVC Description Date: 2014-10-15

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by M.E. Hall, M.S. Reid and T. Luna.

G271 Rocky Mountain-North Pacific Subalpine-Montane Mesic Grassland & Meadow

[ ]

IVC Colloquial Name: Rocky Mountain-North Pacific Subalpine-Montane Mesic Grassland & Meadow
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This Rocky Mountain, northern Vancouverian and Sierran group is restricted to sites from lower montane to subalpine where finely textured soils, snow deposition, rocky substrates, or windswept dry conditions limit tree establishment. Many occurrences are small-patch in spatial character, and are often found in mosaics with woodlands, more dense shrublands, or just below alpine communities. These are typically lush meadows dominated by a diversity of tall forbs, with grasses intermingled in many of them. The vegetation is typically forb-rich, with forbs often contributing more to overall herbaceous cover than graminoids. However, some stands are composed of dense grasslands, these often being taxa with relatively broad and soft blades, such as *Elymus trachycaulus, Festuca viridula*, and *Phleum alpinum*, but where the moist habitat promotes a rich forb component. Important taxa includes *Achillea millefolium, Balsamorhiza sagittata, Rudbeckia occidentalis, Thalictrum occidentale, Valeriana sitchensis, Xerophyllum tenax*, and numerous species of Asteraceae, *Campanula, Erigeron, Ligusticum, Lomatium, Lupinus, Mertensia, Phlox, Penstemon, Solidago*, and *Wyethia*. Important graminoids include *Deschampsia cespitosa, Koeleria macrantha, Luzula glabrata*, perennial *Bromus* spp., and a number of *Carex* species. In the Cascades, this group includes *Festuca viridula* meadows. *Dasiphora fruticosa ssp. floribunda* and *Symphoricarpos* spp. are occasional but not abundant. In the Sierra Nevada *Calamagrostis breweri, Carex filifolia, Carex straminiformis, Juncus drummondii, Oreostemma alpigenum, Solidago canadensis*, and *Trisetum spicatum* may dominate stands with diagnostics forbs *Oreostemma alpigenum*, and *Solidago canadensis*. Dwarf-shrubs such as *Vaccinium cespitosum* may have significant cover. Burrowing mammals can increase the forb diversity. This group is typically found above 2000 m in elevation in the southern part of its range and above 600 m in the northern part. These upland communities occur on gentle to moderate-gradient slopes and relatively moist habitats. The soils are typically seasonally moist to saturated in the spring but, if so, will dry out later in the growing season. These sites are not as wet as those found in Vancouverian-Rocky Mountain Subalpine-Alpine Snowbed, Wet Meadow & Dwarf-Shrubland Group (G520) and Vancouverian-Rocky Mountain Montane Wet Meadow & Marsh Group (G521), although some species are certainly shared with wet meadows, such as *Deschampsia*.

IVC Dynamics:

IVC Environment: In the Rocky Mountains, these meadows occupy a wide variety of environments, including moderate to steep slopes and glacio-fluvial flats and swales that lose their snow cover relatively late in the season. Generally the group is restricted to sites from lower montane to subalpine where finely textured soils, snow deposition, rocky substrates, or windswept dry conditions limit tree establishment. Many occurrences are small-patch in spatial character, and are often found in mosaics with woodlands, more dense shrublands, or just below alpine communities. This group is typically found above 2000 m to 3700 m in elevation in the southern part of its range and above 600 m in the northern extent. These upland communities occur on gentle to moderate-gradient slopes and relatively moist habitats. The soils are typically seasonally moist to saturated in the spring but, if so, will dry out later in the growing season. At montane elevations, this group occurs within *Pinus-Pseudotsuga* or mixed conifer-dominated forests. At subalpine elevations, these meadows are found below treeline, usually within *Abies lasiocarpa-Picea* species-dominated forests.

Climate: Approximately two-thirds of the region's precipitation occurs in just half the year (October from March), with the remaining third occurring in late spring to early summer. Generally, the east slopes of the Cascades and Sierra Nevada ranges east to the northern Rocky Mountains of Montana and Wyoming receive greater than 100 cm of precipitation annually.

Soil/substrate/hydrology: Soils are typically seasonally moist to saturated during spring and early summer after snowmelt, but will dry out later in the growing season. At montane elevations, soils are usually clays or silt loams with an A horizon greater than 10 cm. Some sites may have inclusions of hydric soils in low, depressional areas within this group. At subalpine elevations, soils are derived from a variety of parent materials, and can be acidic or calcareous. The A horizon is typically less than 10 cm, and soils are usually rocky or gravelly with good aeration and drainage, but with a well-developed organic layer. A third setting includes talus or scree slopes, or colluvial fields of rocks and small boulders, where subsurface moisture is provided by melting snow throughout much of the growing season. Soils are developed from colluvium and more recently alluvium are often derived from limestone, sandstone, shale parent materials (Gregory 1983, Youngblood et al. 1985a), or weathered volcanic extrusives such as basalt, pumice and ash or loess deposits. Soil texture is variable and ranges from coarser-textured sandy loams to finer-textured silt loams, clay or clay loams with an average pH of 6.4 (Gregory 1983). Surface rock averages 46%, but varies from 1-90%. Bare ground cover is usually less than 15%.

DISTRIBUTION

IVC Geographic Range: This group is very widespread in the Rocky Mountains cordillera from New Mexico (where it is uncommon) and Colorado north into Canada, and west into the eastern Cascades and Sierra Nevada. It also occurs in the mountain ranges of Nevada, northern Utah and Wyoming, and has been observed on the Snake River plain, as well as the "island ranges" of central Montana.

IVC Nations: CA,US
IVC States/Provinces: AB, BC, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.11.78:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 7.1.7.2:P, 7.1.8.1:P, 9.3.1.42:P, 9.3.3.43:P, 9.4.3.26:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.1.14:P, 11.1.1a.6:P, 11.1.1b.85:P, 11.1.2.7:P, 11.1.3.8:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G4 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1257 *Festuca viridula - Carex hoodii - Lupinus* spp. Subalpine Mesic Meadow Alliance** [Greenleaf Fescue - Hood's Sedge - Lupine species Subalpine Mesic Meadow Alliance] []
  This high-elevation grassland alliance is dominated or codominated by diagnostic species *Festuca viridula*, which may form dense, continuous stands in pristine situations. It occurs in cold, dry sites throughout the Pacific Northwest extending east to the central Rocky Mountains in northern Idaho and Wyoming.
- **A3948 *Valeriana sitchensis - Luzula glabrata var. hitchcockii - Xerophyllum tenax* Subalpine Mesic Meadow Alliance** [Sitka Valerian - Hitchcock's Smooth Woodrush - Common Beargrass Subalpine Mesic Meadow Alliance] []
  This alliance is characterized by a moderately dense and diverse herbaceous layer with one or more of several diagnostic species present and often abundant such as *Carex geyeri, Carex spectabilis, Chamerion angustifolium, Erythronium grandiflorum, Ligusticum grayi, Luzula glabrata var. hitchcockii, Sanguisorba officinalis, Valeriana sitchensis, Veratrum viride*, and *Xerophyllum tenax*. It is found in subalpine meadows in the central Rocky Mountains and extends west into the Olympic Mountains and Cascade Range.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: T.N. Shiflet (1994)
IVC Description Author: M.S. Reid, T. Luna, K.A. Schulz
IVC Description Date: 2016-09-29
IVC Acknowledgments:

A1257 Greenleaf Fescue - Hood's Sedge - Lupine species Subalpine Mesic Meadow Alliance

[ ]
Festuca viridula - Carex hoodii - Lupinus spp. Subalpine Mesic Meadow Alliance
Subalpine Greenleaf Fescue Mesic Meadow

IVC Scientific Name: *Festuca viridula - Carex hoodii - Lupinus* spp. Subalpine Mesic Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Vegetation of this high-elevation grassland alliance is dominated or codominated by *Festuca viridula* with *Carex hoodii, Eucephalus ledophyllus, Festuca idahoensis, Lupinus argenteus var. laxiflorus*, or *Lupinus latifolius*. These diagnostic species form dense, continuous stands in pristine situations. Dwarf-shrub and subshrub species include *Paxistima myrsinites* and *Phlox diffusa*. Adjacent vegetation is often subalpine forests of *Tsuga mertensiana* or *Abies lasiocarpa*, and at wetter sites, *Carex* spp. meadows or *Phyllodoce - Cassiope* shrublands are typical. This alliance occurs in cold, dry sites throughout the Pacific Northwest extending east to the central Rocky Mountains in northern Idaho. Stands occur from 1370 m in the northern Cascade Range and Olympic Mountains to 1586-1769 m in northern Idaho to over 2400 m in the mountains of northeastern Oregon. They are typically associated with south-facing or exposed slopes where snow cover is blown or melted off relatively early. Soils are

usually well-drained and vary in texture from coarse colluvium on steep slopes to fine-textured loams in low-gradient subalpine meadows.

IVC Dynamics: These mesic grasslands are associated with sites where soils are too droughty for forest growth. Daubenmire and Daubenmire (1968) noted that these communities tended to occur near the summits of south-facing mountains, where snow was blown off by southerly winds, resulting in severe soil drought in summer. Most of these communities were severely grazed in the early part of the 20th century allowing increases in forbs, needlegrass (*Hesperostipa* spp., *Achnatherum* spp.), and bare ground in these communities. Most stands are now considered disclimax associations which are in various stages of recovery (Johnson and Simon 1987).

IVC Environment: This high-elevation grassland alliance occurs in cold, dry sites throughout the Pacific Northwest extending east to the central Rocky Mountains in northern Idaho. Elevations range from 1370 m in the northern Cascade Range and Olympic Mountains and 1586-1769 m in northern Idaho to over 2400 m in the mountains of northeastern Oregon. This alliance is typically associated with rainshadow areas of the higher mountains and may extend into lower alpine zones. Stands are typically associated with moderate (10-30%) south-facing or exposed slopes, plateaus or ridgetops where snow cover is blown or melted off relatively early. However, west of the Cascades some stands occur on moist sites along ridgetops, seepy sideslopes and interforest meadows. Summer lightning is common, and lightning fires may also serve to prevent tree or shrub encroachment. Soils are generally well-drained, fairly shallow (76 cm) and stony and vary in texture from coarse colluvium on steep slopes to fine-textured loams in low-gradient subalpine meadows. Parent materials are usually weathered volcanic extrusives such as basalt, pumice and ash or loess deposits.

DISTRIBUTION

IVC Geographic Range: These high-altitude mesic grasslands occur in cold, dry sites throughout the Pacific Northwest extending east to the central Rocky Mountains in northern Idaho, near the border with Canada, in Kaniksu National Forest in the Selkirk Mountains.

IVC Nations: CA?,US

IVC States/Provinces: BC?, CA?, ID, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008250 *Danthonia intermedia* - *Potentilla flabellifolia* - (*Festuca viridula*) Meadow** [Timber Oatgrass - High Mountain Cinquefoil - (Greenleaf Fescue) Meadow] []
  Flat, mesic meadows dominated by *Danthonia intermedia* and *Potentilla flabellifolia*. GNR. BC?, OR?, WA
- **CEGL008235 *Festuca viridula* - (*Phlox diffusa* - *Arenaria capillaris*) Grassland** [Greenleaf Fescue - (Spreading Phlox - Slender Mountain Sandwort) Grassland] []
  Dry, rocky *Festuca viridula* meadows, similar to *Festuca roemeri* - (*Phlox diffusa* - *Arenaria capellaris*) Grassland [Proposed] from the Olympic Mountains. GNR. BC?, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K. Schulz, in Faber-Langendoen et al. (2014)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-03-14

IVC Acknowledgments: We acknowledge D. Sarr for writing the original alliance description.

A3948 Sitka Valerian - Hitchcock's Smooth Woodrush - Common Beargrass Subalpine Mesic Meadow Alliance

[ ]

Valeriana sitchensis - Luzula glabrata var. hitchcockii - Xerophyllum tenax Subalpine Mesic Meadow Alliance

Subalpine Sitka Valerian - Smooth Woodrush - Beargrass Mesic Meadow

IVC Scientific Name: *Valeriana sitchensis - Luzula glabrata var. hitchcockii - Xerophyllum tenax* Subalpine Mesic Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation is characterized by a moderately dense herbaceous layer with one or more of several diagnostic species present and often abundant, including *Carex geyeri, Carex spectabilis, Chamerion angustifolium, Erythronium grandiflorum, Ligusticum grayi, Luzula glabrata var. hitchcockii, Sanguisorba officinalis, Valeriana sitchensis, Veratrum viride*, and *Xerophyllum tenax*. The herbaceous layer has a fairly diverse flora that averages of 30 species per stand. Associated species include *Arnica latifolia, Athyrium filix-femina, Carex nigricans, Castilleja parviflora, Claytonia cordifolia, Elymus glaucus, Epilobium anagallidifolium, Erigeron peregrinus, Festuca viridula, Lupinus arcticus ssp. subalpinus, Oxyria digyna, Polygonum bistortoides, Potentilla flabellifolia, Pulsatilla occidentalis, Senecio triangularis*, and *Thalictrum occidentale* that are often present with low cover. This alliance is found in subalpine and lower alpine meadows in the central Rocky Mountains and extends west into the Olympic Mountains and Cascade Range. This small-patch alliance occurs from 1350 to 2300 m (5800-7550 feet) elevation. Stands occur on gentle to steep slopes having predominantly southerly exposures. It is a component of a complexly patterned environment representing those positions that accumulate a deep snowload and retain it long into the growing season assuring ample soil moisture well into August. Soils are moderately well- to poorly drained.

IVC Dynamics:

IVC Environment: This alliance is found in subalpine meadows in the central Rocky Mountains and extends west into the Cascade Range and Olympic Mountains. This is a small-patch alliance found at lower alpine and mid to upper subalpine zones from 1770 to 2300 m (5800-7550 feet) elevation throughout much of its range and down to 1350 m in the Olympic Mountains on east- to northeast-facing, moderate-gradient slopes that are generally too dry for tree establishment. In the Central Rockies stands occur on gentle to steep slopes having predominantly southerly exposures. It is a component of a complexly patterned environment representing those positions that accumulate a deep snowload and retain it long into the growing season. It generally occupies gently rolling terrain, particularly depressions within, and extends to gentle slopes and even steep slopes if conditions are conducive to snow accumulation and retention. It often occurs as narrow patches between tree-dominated atolls at the highest elevations of tree development. Other stands are found on gully slopes where streambeds are deeply incised in colluvium, resulting in unstable surfaces. In winter these gullies can fill with snow, which persists long into the growing season, assuring ample soil moisture well into August. Though the vegetation pattern can be regular, these sites are most often heterogeneous with patches of vegetation interspersed with bare gravel, scattered talus, as well as exposed bedrock. Because of persistent sheet erosion, soil development is restricted to the clumps or patches of grass and sedge. Parent materials include predominantly calcareous and noncalcareous fine-textured sedimentary rock. Soils are moderately well- to poorly drained. The great majority of the ground surface is covered with litter from the abundant vegetation.

DISTRIBUTION

IVC Geographic Range: This alliance is found in subalpine meadows in the central Rocky Mountains in Alberta, Idaho, Montana, and northwestern Wyoming and extends west into the Cascade Range and Olympic Mountains in Oregon, Washington and British Columbia.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, ID, MT, OR, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001998 *Valeriana sitchensis - Veratrum viride* Meadow** [Sitka Valerian - Green False Hellebore Meadow] []
  G4 (1996-02-01) AB, BC, MT, OR, WA
- **CEGL005873 *Luzula glabrata - Erythronium grandiflorum* Meadow** [Smooth Woodrush / Yellow Avalanche-lily Meadow] []
  GNR. AB?, MT
- **CEGL005859 *Xerophyllum tenax* Meadow** [Common Beargrass Meadow] []
  GNR. AB, MT, WA?
- **CEGL005864 *Carex geyeri* Meadow** [Geyer's Sedge Meadow] []
  G4? (2004-02-03) AB?, ID, MT, WY

- **CEGL005856 *Chamerion angustifolium* Rocky Mountain Meadow** [Fireweed Rocky Mountain Meadow] []
  G4G5 (2004-04-15) AB, ID?, MT, WA?, WY?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-03-14
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by M.S. Reid and M. Damm.

M050 Southern Vancouverian Lowland Grassland & Shrubland

Prairies et arbustaies des basses terres de la région de Vancouver Sud

IVC Colloquial Name: Southern Vancouverian Lowland Grassland & Shrubland
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup contains the vegetation of grasslands with some dwarf-shrubs. Dominant grasses include *Festuca rubra, Festuca idahoensis ssp. roemeri*, or *Danthonia californica*. Dwarf-shrub species may include *Arctostaphylos uva-ursi, Arctostaphylos columbiana, Arctostaphylos nevadensis, Baccharis pilularis, Gaultheria shallon, Juniperus communis, Lupinus* spp., *Rubus* spp., *Rosa nutkana, Symphoricarpos albus*, and *Vaccinium ovatum*. It occurs along the Pacific Coast on terraces and ridgeline balds in the Coast Ranges, the Klamath Mountains and at low elevations on the lee side of the coastal mountains in the northern part of the range, from Vancouver Island down the coast to San Francisco. Fires, both lightning-ignited and those ignited by Native Americans, undoubtedly affected these sites. Because of this fire history, the extent of this macrogroup has declined locally through tree invasion, as areas formerly maintained as herbaceous by burning have filled in with trees.

IVC Geographic Range: This macrogroup is found from Vancouver Island, British Columbia, down the coast to central California. It occurs at mid to low elevations on the lee side of the Vancouver Island Ranges, in the Coast Ranges, Klamath Mountains, and at low elevations on the lee side of the coastal mountains in the central part of the range. Small patches have been documented as far south as Santa Barbara and San Luis Obispo counties, California.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G488 Southern Vancouverian Shrub & Herbaceous Bald, Bluff & Prairie []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J.F. Franklin and C.T. Dyrness (1973)

IVC Description Author: G. Kittel and D. Meidinger

IVC Description Date: 2014-10-15

IVC Acknowledgments: With acknowledgments for work from C. Chappell and J. Christy.

G488 Southern Vancouverian Shrub & Herbaceous Bald, Bluff & Prairie

[ ]

IVC Colloquial Name: Southern Vancouverian Shrub & Herbaceous Bald, Bluff & Prairie
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This herbaceous to shrub-herbaceous group is found from Vancouver Island down the Pacific coast to San Francisco. The vegetation is grassland with some dwarf-shrubs which can occur as small patches but are usually in a matrix with the herbaceous vegetation. Bunchgrasses often dominate and include *Calamagrostis nutkaensis, Festuca rubra, Festuca idahoensis ssp. roemeri*, or *Danthonia californica*. Dwarf-shrub species imbedded in the herbaceous cover often include *Arctostaphylos uva-ursi, Arctostaphylos columbiana, Arctostaphylos nevadensis, Gaultheria shallon, Juniperus communis, Rubus spectabilis*, and *Vaccinium ovatum*. Occasionally scattered stunted trees, such as *Picea sitchensis, Pseudotsuga menziesii*, or *Quercus garryana*, may be present. It occurs along the coast on steep coastal terraces, headlands and bluffs, level ridgeline balds, and flat interior (leeward) meadows. The group includes many areas that are inland and do not have coastal exposure. Due to shallow soils, steep slopes, sunny aspect, and/or upper slope position, these sites are dry and marginal for tree establishment and growth except in favorable microsites. Fires, both lightning-ignited and those ignited by Native Americans, undoubtedly at least occasionally burn all these sites. Because of this fire history, the extent of this group has declined locally through tree invasion

and growth, as areas formerly maintained as herbaceous by burning have filled in with trees. It occurs in the Coast Ranges, the Klamath Mountains and at low elevations on the lee side of the coastal mountains in the northern part of the range.

IVC Dynamics: Fires, both lightning-ignited and those ignited by Native Americans, undoubtedly at least occasionally burn all these sites. Lower elevation sites in the Georgia Basin, Puget Trough, and Willamette Valley probably were burned somewhat more frequently and, in some cases, intentionally. Because of this fire history, the extent of this group has declined locally through tree invasion and growth, as areas formerly maintained as herbaceous by burning have filled in with trees. In recent centuries, these were fire-dominated systems, and there is a known history of Native American use of fire in these areas. While still present, annual grasses and forbs are not as prevalent in these grasslands as elsewhere in California. With fire suppression, *Baccharis pilularis* and other shrub components of north coastal scrub often invade and can replace these grasslands with scrub-dominated systems.

IVC Environment: This group consists of mostly herbaceous-dominated areas located primarily on shallow soils and windy sites where wind and salt spray combine to limit tree growth, as well as dry well-drained bluffs that are not exposed to coastal influences directly. Steep slopes on coastal bluffs, headlands, or small islands are typical, though sometimes this group can be found on relatively level tops of headlands or islands. The group also includes flat meadows found on the lee side of the coastal mountains. Due to shallow soils, steep slopes, sunny aspect, and/or upper slope position, these sites are dry and marginal for tree establishment and growth except in favorable microsites. Rock outcrops are a typical small-scale feature within balds and are considered part of this group. The climate is relatively dry to wet (50.8 cm to perhaps 254 cm [20-100 inches] annual precipitation), always with a distinct dry summer season when these sites usually become droughty enough to limit tree growth and establishment. The relative prevalence of grasslands versus shrublands increases to the south. Soils can be shallow to bedrock or of glacial or marine sediment origin. Seeps can be found in some balds that dry out by summer.

DISTRIBUTION

IVC Geographic Range: This herbaceous to shrub-herbaceous group is found from Vancouver Island down the coast to San Francisco. It occurs along the coast on coastal terraces and ridgeline balds in the Coast Ranges, Klamath Mountains, and at low elevations on the lee side of the coastal mountains in the northern part of the range. Small patches have been documented as far south as Santa Barbara and San Luis Obispo counties.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.11.78:P, 7.1.7.2:P, 7.1.8.1:P, 7.1.9.3:P, 11.1.1a.6:P

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G2 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline moderate to high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4386 *Arctostaphylos columbiana* Shrubland Alliance** [Hairy Manzanita Shrubland Alliance] []
- **A4385 *Arctostaphylos uva-ursi* Dwarf-shrubland & Bald Alliance** [Bearberry Dwarf-shrubland & Bald Alliance] []
- **A4210 *Festuca idahoensis ssp. roemeri - Danthonia californica* Interior Prairie, Bald & Bluff Grassland Alliance** [Roemer's Fescue - California Oatgrass Interior Prairie, Bald & Bluff Grassland Alliance] []
- **A3739 *Festuca rubra - Calamagrostis nutkaensis* Exposed Coastal Headland Grassland Alliance** [Red Fescue - Pacific Reedgrass Exposed Coastal Headland Grassland Alliance] []
  Stands have a sparse to dense herbaceous layer dominated by perennial grass species, especially *Calamagrostis nutkaensis* and *Festuca rubra*. This grassland alliance is found along the Pacific Northwest coast, from central northern California to the Puget Sound region of Washington and east into the Willamette Valley.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J.F. Franklin and C.T. Dyrness (1973)

IVC Description Author: G. Kittel

IVC Description Date: 2015-11-09
IVC Acknowledgments:

A4386 Hairy Manzanita Shrubland Alliance

[ ]
Arctostaphylos columbiana Shrubland Alliance
[ ]

IVC Scientific Name: *Arctostaphylos columbiana* Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of low- to mid-montane balds vegetated with relatively tall (>50 cm) shrublands dominated by *Arctostaphylos columbiana*. Stands occur within a matrix of dry conifer woodlands.
IVC Dynamics: Stands are usually small-sized patches near the edge of balds, where they form a linear ecotone.
IVC Environment: [Adapted from Chappell 2006a] One association documented. These sites appear to be slightly dry to moderately dry portions of balds. Stands occur on steep slopes (32° mean), with typically southeast-facing aspects (237° mean). Topographic position is usually upper slope, with mid-slope and ridgetop also represented. Slope shape is mostly convex, though occasionally straight. Soil texture is mostly sandy loam (one plot loam), with a major component of coarse fragments (usually gravel) in all but one plot. Soil depth appears to be somewhat shallow (maximum recorded depth was 20 cm). Small rock outcrops are present in about half of plots. Surficial geology is usually basalt, but volcaniclastic and sedimentary rocks are also represented. Plots with GPS coordinates ranged from 650 to 900 m elevation, but the association is also documented down to as low as 370 m.

DISTRIBUTION

IVC Geographic Range: [Adapted from Chappell 2006a] This shrubland alliance is found in the northern and eastern Olympic Mountains, the southwestern Washington Cascades, and rarely in the northern Puget Trough (western Whatcom County). It may also occur elsewhere in the western Cascades, in the Georgia Basin of British Columbia, and in northwestern Oregon.
IVC Nations: CA?,US
IVC States/Provinces: BC?, OR?, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL008247 *Arctostaphylos columbiana* Shrubland** [Hairy Manzanita Shrubland] []
  Shrubland balds dominated by *Arctostaphylos columbiana*. GNR. BC?, OR?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author: T. Ramm-Granberg
IVC Description Date:
IVC Acknowledgments: R. C. Crawford, Eric Nielsen, Catharine Copass, Rachel Brunner, Matt Lee, and the field crews of the National Park Service North Coast and Cascades Network Vegetation Mapping Project.

A4385 Bearberry Dwarf-shrubland & Bald Alliance

[ ]
Arctostaphylos uva-ursi Dwarf-shrubland & Bald Alliance

[ ]

IVC Scientific Name: *Arctostaphylos uva-ursi* Dwarf-shrubland & Bald Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance consists of low- to mid-elevation balds of the northeastern Olympic Mountains, North Cascades, and occasionally in the Puget Trough. These balds have high nonvascular cover and *Arctostaphylos uva-ursi* is present to dominant.

IVC Dynamics: The amount of vascular vegetation in these bald communities varies with the degree of fracturing in the bedrock and the amount of soil development.

IVC Environment: Stands occur at lowland to mid-montane elevations (50 to 1200m) on primarily south and southwest-facing aspects (205° mean) of flat to extremely steep slopes (6-42° mean). Substrates are diagnostically bedrock or occasionally glacial outwash.

DISTRIBUTION

IVC Geographic Range: [Adapted from Chappell 2006a] This shrubland alliance is found in the northern and eastern Olympic Mountains, the North Cascades, and sporadically in the Puget Trough of Washington. It has been observed in Clallam, Jefferson, Mason, Skagit, Whatcom, Pierce, Thurston, and Kitsap (atop Green Mountain) counties. It may also occur in British Columbia and/or Oregon. In Pierce and Thurston counties, it is known in the context of prairies, not balds.

IVC Nations: CA?,US

IVC States/Provinces: BC?, OR?, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008242** ***Arctostaphylos uva-ursi - Fragaria virginiana - (Festuca idahoensis ssp. roemeri)*** **Dwarf-shrubland** [Bearberry - Virginia Strawberry - (Roemer's Fescue) Dwarf-shrubland] []
  Low- to mid-elevation balds and occasionally prairies dominated by Arctostaphylos uva-ursi. GNR. BC?, OR?, WA
- **CEGL008244** ***Niphotrichum canescens - (Penstemon davidsonii)*** **Nonvascular Rock Vegetation** [Grey Rock Moss - (Davidson's Penstemon) Nonvascular Rock Vegetation] []
  Low- to mid-elevation balds dominated by *Racomitrium* spp. and other nonvascular species, with *Penstemon davidsonii* always present to prominent. GNR. BC?, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Ramm-Granberg et al. (2021)

IVC Description Author: T. Ramm-Granberg

IVC Description Date:

IVC Acknowledgments: R. C. Crawford, Eric Nielsen, Catharine Copass, Rachel Brunner, Matt Lee, and the field crews of the National Park Service North Coast and Cascades Network Vegetation Mapping Project.

A4210 Roemer's Fescue - California Oatgrass Interior Prairie, Bald & Bluff Grassland Alliance

[ ]

Festuca idahoensis ssp. roemeri - Danthonia californica Interior Prairie, Bald & Bluff Grassland Alliance

Roemer's Fescue - California Oatgrass Interior Prairie, Bald & Bluff Grassland

IVC Scientific Name: *Festuca idahoensis ssp. roemeri - Danthonia californica* Interior Prairie, Bald & Bluff Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: BC?, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003347** ***Festuca rubra - (Camassia leichtlinii, Grindelia stricta var. stricta)*** **Grassland** [Red Fescue - (Large Camas, Oregon Gumweed) Grassland] []
  G1 (2000-11-16) BC?, WA
- **CEGL008243** ***Danthonia intermedia - Niphotrichum canescens*** **Grassland** [Timber Oatgrass - Grey Rock Moss Grassland] []
  Danthonia intermedia dominates open vascular vegetation on low-elevation balds with high cover of *Racomitrium* spp. GNR. BC?, WA
- **CEGL008251** ***Koeleria macrantha - (Agrostis pallens - Niphotrichum canescens)*** **Grassland** [Prairie Junegrass - (Seashore Bentgrass - Grey Rock Moss) Grassland] []
  Open grassland vegetation dominated by *Koeleria macrantha*, often with high nonvascular cover, on low- to mid-elevation balds of the Cascades. GNR. BC?, OR?, WA
- **CEGL003349** ***Festuca idahoensis ssp. roemeri - Cerastium arvense - Koeleria macrantha*** **Grassland** [Roemer's Fescue - Field Chickweed - Prairie Junegrass Grassland] []
  G1 (2000-11-15) BC?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al.
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3739 Red Fescue - Pacific Reedgrass Exposed Coastal Headland Grassland Alliance

[ ]
Festuca rubra - Calamagrostis nutkaensis Exposed Coastal Headland Grassland Alliance
Exposed Coastal Headland Red Fescue - Pacific Reedgrass Grassland

IVC Scientific Name: *Festuca rubra - Calamagrostis nutkaensis* Exposed Coastal Headland Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This grassland alliance often occurs as small patches in a mosaic of grassland, shrubland and forest communities. Canopy coverage ranges from open to moderately dense to dense. Stands have a sparse to dense herbaceous layer dominated by perennial grass species, especially *Calamagrostis nutkaensis* and *Festuca rubra*, but also *Agrostis pallens, Danthonia californica, Elymus glaucus, Festuca idahoensis ssp. roemeri*, and/or *Koeleria macrantha*. Low shrubs may be abundant, such as *Empetrum nigrum, Gaultheria shallon, Lomatium martindalei, Mahonia aquifolium, Rubus ursinus*, and *Vaccinium ovatum*. A variety of other grasses and forbs are commonly present with the forb component frequently rich. This grassland alliance is found along the Pacific Northwest coast, from central northern California to the Puget Sound region of Washington and east into the Willamette Valley. The climate is strongly hypermaritime, with persistent onshore (westerly) winds, high annual

precipitation, and moderate temperatures. This vegetation occupies coastal headlands, often on extreme sites with moderate to steep slopes of southerly aspects, ocean bluffs, open grassy balds (non-forested grassy areas), tops of low hills, on crests of ridgelines, on the shoulders of foothills, and less often in valley bottoms and lower alluvial slopes. Elevation ranges from sea level to 1550 m (0-5100 feet). Aspect varies but is generally south or southwest.

IVC Dynamics: Stands of this alliance become dominated by introduced and exotic species under severe impacts from livestock grazing. Common species of this type include the grasses *Agrostis gigantea, Aira praecox, Bromus hordeaceus, Holcus lanatus*, and *Poa pratensis* and the forbs *Cirsium* spp., *Senecio jacobaea*, and *Trifolium repens*. Fires were probably important in the past in limiting invasion of these grasslands by coniferous tree species. Fire suppression over the past 80 years may have resulted in successional changes from grasslands to shrublands and forests. In the absence of heavy grazing, once established on a favorably moist site, *Calamagrostis nutkaensis* develops a thick litter layer that generally excludes other plant species from establishing (Ripley 1983).

IVC Environment: This grassland alliance is found along the Pacific Northwest coast, from central northern California to the Puget Sound region of Washington. The climate is strongly hypermaritime, with persistent onshore (westerly) winds, high annual precipitation, and moderate temperatures. Summer months typically are relatively dry. This vegetation occupies coastal headlands often on extreme sites with moderate to steep slopes of southerly aspects, ocean bluffs, open grassy balds (non-forested grassy areas), tops of low hills, and on crests of ridgelines or the shoulders of foothills. Elevation ranges from sea level to 1550 m (0-5100 feet). Aspect varies but is generally south or southwest. Balds are usually the consequence of a rock outcrop combined with a hot and dry exposure that is unable to support tree growth. The soils are thin, shallow and often rocky. They may be loamy, gravelly or sandy. Sites are often on very steep slopes. These headlands are composed of bedrock of conglomerates (Washington) and basalts (Oregon). The soils are derived from colluvium or sand, and are usually shallow, well-drained, and have a significant component of gravels. Some communities included in this alliance also occur on valley bottoms or lower alluvial slopes. These stands require seasonally or permanently saturated soils with a shallow water table within the cool, moist band found within 10 km of the coast. Soils are moderately deep (120 cm), with a high organic component (23%) and a thick litter layer (8 cm). Soil texture is loam with a pH of 6. Stands form a mosaic with forest and scrub in the coastal prairies and generally occur on moderate slopes (24% slope) with southern aspects. Persistent strong winds, salt spray, and the shallow soils are important factors in the maintenance of these grasslands.

DISTRIBUTION

IVC Geographic Range: These grasslands occur on the coastal headlands of the California, Oregon and Washington coasts, on the San Juan Islands in Puget Sound (Washington), Willamette Valley and the Columbia River Gorge in the vicinity of its mouth. It has also been reported to occur as patches within the coastal prairies.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Kagan and G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-03-14

IVC Acknowledgments:

M172 Northern Vancouverian Lowland-Montane Grassland & Shrubland

Prairies et arbustaies montagnardes et des basses terres de la région de Vancouver Nord

IVC Colloquial Name: Northern Vancouverian Lowland-Montane Grassland & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup consists of low to tall shrublands, meadows, and mosaics of the two in the Pacific Northwest region. Shrublands dominate and characteristic species include *Alnus viridis, Rubus spectabilis, Salix alaxensis, Salix barclayi, Salix glauca, Sambucus racemosa, Spiraea stevenii*, and *Vaccinium ovalifolium*. Meadows and grassland vegetation also occur and may be dominated by forbs, graminoids, or ferns. Dominant species include *Athyrium filix-femina, Calamagrostis canadensis, Chamerion angustifolium, Heracleum maximum, Veratrum viride*, and *Valeriana sitchensis*. Shrublands occur on flat to steep slopes at low to mid elevations (1-1000 m) in valleys, hills and mountains of the Aleutians; in southeastern Alaska and British Columbia they occur on mountain sideslopes from sea level to treeline where slopes are steep enough to produce frequent snowslides preventing forest development. Herbaceous stands include a wide variety meadows and grasslands that occur on all slopes and aspects with a mesic moisture regime, including windswept coastal headlands, coastal bluffs, old beach ridges, hillside slopes, stabilized talus, alluvial fans, rolling hills, alluvial slopes, below subalpine shrublands, ravine sideslopes and avalanche tracks. The macrogroup includes areas that are a mosaic of meadows with alder patches.

IVC Geographic Range: This macrogroup occurs on the Alaska Peninsula and Kodiak Island, south and east throughout the maritime regions of Alaska and British Columbia. It diminishes moving west, and is absent by Dutch Harbor in the Aleutians.

IVC Nations: CA,US

IVC States/Provinces: AK, BC

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G354 Vancouverian Alder - Salmonberry - Willow Shrubland []**
- **G355 Northern Vancouverian Grassland & Meadow []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel and D. Meidinger

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G354 Vancouverian Alder - Salmonberry - Willow Shrubland

[ ]

IVC Colloquial Name: Vancouverian Alder - Salmonberry - Willow Shrubland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This is a shrubland group, ranging from low elevations in the Aleutian Islands to subalpine or low alpine in some portions of southeastern Alaska. Dominant and characteristic shrub species include *Alnus viridis, Rubus spectabilis, Salix alaxensis, Salix barclayi, Salix glauca*, and *Vaccinium ovalifolium*. Other shrubs may include *Sambucus racemosa, Spiraea stevenii*, and *Oplopanax horridus*. Total low- and tall-shrub canopy cover is generally greater than 25%. Sites codominated by tall willows typically occur along streams and at the upper limits of alder growth. The most common herbaceous species include *Calamagrostis canadensis* and *Chamerion angustifolium*, but there are many others. This group occurs on flat to steep slopes (0-50°) at low to mid elevations (1-1000 m) in valleys, hills and mountains of the Aleutians; in southeastern Alaska it occurs on mountain sideslopes from sea level to treeline where slopes are steep enough to produce frequent snowslides preventing forest development. It is also found throughout the maritime region of Alaska and British Columbia, near treeline. Soils are typically mesic, well-drained, shallow, and stony, can be ash-covered, and underlain by colluvium, glacial drift or till or residuum.

Precipitation is abundant, and these shrublands are mesic to wet. Tree seedlings and saplings may be abundant on some slopes but do not emerge as an overstory due to frequent disturbance.

IVC Dynamics: Alder can often dominate new ash deposits on the Alaska Peninsula. It is also affected by insects and diseases. It tolerates frequent disturbance from snowslides.

IVC Environment: It occurs on flat to steep slopes (0-50°) at low to mid elevations (1-1000 m) in valleys, hills and mountains of the Aleutians; in southeastern Alaska it occurs on mountain sideslopes from sea level to treeline where slopes are steep enough to produce frequent snowslides preventing forest development. It is also found just above treeline and below the alpine throughout the maritime region of Alaska. Soils are typically mesic, well-drained, shallow, and stony, can be ash-covered, and underlain by colluvium, glacial drift or till or residuum.

DISTRIBUTION

IVC Geographic Range: This group occurs on the Alaska Peninsula and Kodiak Island, south and east throughout the maritime regions of Alaska and British Columbia. It diminishes moving west, and is absent by Dutch Harbor in the Aleutians.

IVC Nations: CA,US

IVC States/Provinces: AK, BC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3940 *Salix alaxensis - Salix barclayi - Salix bebbiana* Upland Willow Thicket Shrubland Alliance** [Feltleaf Willow - Barclay's Willow - Bebb's Willow Upland Willow Thicket Shrubland Alliance] []
  This alliance consists of stands dominated by *Salix alaxensis, Salix barclayi, Salix bebbiana*, and other shrubs on upland slopes from low to mid elevations on the Aleutian Islands and maritime regions of mainland Alaska and British Columba.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al.

IVC Description Author: M.S. Reid and G. Kittel

IVC Description Date: 2015-11-09

IVC Acknowledgments:

A3940 Feltleaf Willow - Barclay's Willow - Bebb's Willow Upland Willow Thicket Shrubland Alliance

[ ]

Salix alaxensis - Salix barclayi - Salix bebbiana Upland Willow Thicket Shrubland Alliance

Southern Alaskan Upland Tall Willow Thicket Shrubland

IVC Scientific Name: *Salix alaxensis - Salix barclayi - Salix bebbiana* Upland Willow Thicket Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Stands are dominated by *Salix alaxensis, Salix barclayi, Salix bebbiana*, and others. If alder is present, it is less than 25% of the willow cover. It occurs on flat to steep slopes (0-50°) at low to mid elevations (1-1000 m) in valleys, hills and mountains of the Aleutian Islands; in southeastern Alaska, it occurs on mountain sideslopes from sea level to treeline where slopes are steep enough to produce frequent snowslides preventing forest development. It also is found just above treeline and below the alpine throughout the maritime region of Alaska and British Columbia. Soils are typically mesic, well-drained, shallow, and stony, can

be ash-covered, and underlain by colluvium, glacial drift, till or residuum. Precipitation is abundant, and these shrublands are mesic to wet. Total low- and tall-shrub cover is generally greater than 25%.

IVC Dynamics: Some stands occur on slopes that are steep enough to produce frequent snowslides preventing forest development.

IVC Environment: It occurs on flat to steep slopes (0-50°) at low to mid elevations (1-1000 m) in valleys, hills and mountains of the Aleutians; in southeastern Alaska, it occurs on mountain sideslopes from sea level to treeline where slopes are steep enough to produce frequent snowslides preventing forest development. It also is found just above treeline and below the alpine throughout the maritime region of Alaska and British Columbia. Soils are typically mesic, well-drained, shallow, and stony, can be ash-covered, and underlain by colluvium, glacial drift, till or residuum. Precipitation is abundant, and these shrublands are mesic to wet.

DISTRIBUTION

IVC Geographic Range: This alliance is found in southern Alaska, the Alaska peninsula, Kodiak Island and the Aleutian Islands. It also is found just above treeline and below the alpine throughout the maritime region of Alaska and British Columbia.

IVC Nations: CA,US

IVC States/Provinces: AK, BC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-01-08

IVC Acknowledgments:

G355 Northern Vancouverian Grassland & Meadow

[ ]

IVC Colloquial Name: Northern Vancouverian Grassland & Meadow

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This is an herbaceous group that includes a wide variety of balds, meadows and grasslands. Vegetation may be dominated by forbs, graminoids, or ferns. The most common dominant species are *Calamagrostis canadensis* and *Chamerion angustifolium*. One or more of the following species can also be dominant: *Veratrum viride, Athyrium filix-femina*, or *Heracleum maximum*, or a combination of any of these. Other common forb species may include *Achillea millefolium var. borealis, Aconitum delphiniifolium, Angelica lucida, Antennaria dioica, Arnica unalaschcensis, Cardamine oligosperma var. kamtschatica, Castilleja unalaschcensis, Claytonia sibirica, Chrysanthemum arcticum ssp. arcticum, Dryopteris expansa, Geum calthifolium, Lupinus nootkatensis, Nephrophyllidium crista-galli, Polemonium acutiflorum, Ranunculus occidentalis, Sanguisorba canadensis, Senecio triangularis, Solidago canadensis var. lepida*, and *Valeriana capitata*. Graminoids include *Agrostis exarata, Agrostis scabra, Carex macrochaeta, Deschampsia beringensis*, and *Festuca rubra*. The low subshrub *Empetrum nigrum* may also be common. Stands occur on all slopes and aspects with a mesic moisture regime, including windswept coastal headlands, coastal bluffs, old beach ridges, hillside slopes, stabilized talus, alluvial fans, rolling hills, alluvial slopes, below subalpine shrublands, and ravine sideslopes. The group includes areas that form a mosaic of meadows with alder patches. Soils are typically mesic, well-drained, and underlain by colluvium, alluvium, glacial till or residuum.

IVC Dynamics:

IVC Environment: Stands occur on moisture-receiving sites on all slopes and aspects, such as windswept coastal headlands, coastal bluffs, old beach ridges, hillside slopes, stabilized talus, alluvial fans, rolling hills, alluvial slopes, below subalpine shrublands, and ravine sideslopes.

DISTRIBUTION

IVC Geographic Range: This group occurs on the Alaska Peninsula, Aleutian Islands and Kodiak Island, and extends south along the coastal maritime region through southeastern Alaska. The exact southern boundary has yet to be determined. This group may occur in British Columbia and grade into Southern Vancouverian Shrub & Herbaceous Bald, Bluff & Prairie Group (G488).

IVC Nations: CA?,US

IVC States/Provinces: AK, BC?

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3946 *Athyrium filix-femina - Chamerion angustifolium - Calamagrostis canadensis* Meadow Alliance** [Common Ladyfern - Fireweed - Bluejoint Meadow Alliance] []
  This alliance includes mesic herbaceous meadows codominated by a mix of *Athyrium filix-femina, Chamerion angustifolium ssp. angustifolium*, and/or *Calamagrostis canadensis*. It occurs as balds and meadows on slopes with a mesic moisture regime, including windswept coastal headlands, coastal bluffs, old beach ridges, hillside slopes, stabilized talus, alluvial fans, rolling hills, alluvial slopes, below subalpine shrublands, and ravine sideslopes in Alaska and possibly British Columbia.
- **A3947 *Lupinus nootkatensis - Castilleja unalaschcensis* Meadow Alliance** [Nootka Lupine - Alaska Indian-paintbrush Meadow Alliance] []
  This is a mesic meadow alliance of mixed forbs dominated by any number of species, most often stands with *Lupinus nootkatensis* and *Castilleja unalaschcensis* but also with *Achillea millefolium, Senecio triangularis, Streptopus amplexifolius*, and other mesic forb species. Grasses and ferns may also be present. It occurs in Alaska and possibly British Columbia as balds and meadows on slopes with a mesic moisture regime, including windswept coastal headlands, coastal bluffs, old beach ridges, hillside slopes, stabilized talus, alluvial fans, rolling hills, alluvial slopes, below subalpine shrublands, and ravine sideslopes.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2011)

IVC Description Author: G. Kittel

IVC Description Date: 2015-05-20

IVC Acknowledgments:

A3946 Common Ladyfern - Fireweed - Bluejoint Meadow Alliance

[ ]

Athyrium filix-femina - Chamerion angustifolium - Calamagrostis canadensis Meadow Alliance

Common Ladyfern - Fireweed - Bluejoint Meadow

IVC Scientific Name: *Athyrium filix-femina - Chamerion angustifolium - Calamagrostis canadensis* Meadow Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes mesic herbaceous meadows codominated by a mix of *Athyrium filix-femina, Chamerion angustifolium ssp. angustifolium*, and *Calamagrostis canadensis*. This herbaceous alliance is found on the Alaska peninsula,

Aleutian Islands and Kodiak Island, and extends south along the coastal maritime region to southeastern Alaska, and may also occur in British Columbia. It occurs as balds and meadows on slopes with a mesic moisture regime, including windswept coastal headlands, coastal bluffs, old beach ridges, hillside slopes, stabilized talus, alluvial fans, rolling hills, alluvial slopes, below subalpine shrublands, and ravine sideslopes. Soils are typically mesic, well-drained, and underlain by colluvium, alluvium, glacial till or residuum.

IVC Dynamics:

IVC Environment: This herbaceous alliance occurs as balds and meadows on slopes with a mesic moisture regime, including windswept coastal headlands, coastal bluffs, old beach ridges, hillside slopes, stabilized talus, alluvial fans, rolling hills, alluvial slopes, below subalpine shrublands, and ravine sideslopes. Soils are typically mesic, well-drained, and underlain by colluvium, alluvium, glacial till or residuum.

DISTRIBUTION

IVC Geographic Range: This alliance is found on the Alaska peninsula, Aleutian Islands and Kodiak Island, and extends south along the coastal maritime region to southeastern Alaska. It may also occur in British Columbia.

IVC Nations: CA?,US

IVC States/Provinces: AK, BC?

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A3947 Nootka Lupine - Alaska Indian-paintbrush Meadow Alliance

[ ]

Lupinus nootkatensis - Castilleja unalaschcensis Meadow Alliance

Nootka Lupine - Alaska Indian-paintbrush Meadow

IVC Scientific Name: *Lupinus nootkatensis - Castilleja unalaschcensis* Meadow Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This is a mesic meadow alliance of mixed forbs dominated by any number of species, most often stands with *Lupinus nootkatensis* and *Castilleja unalaschcensis* but also with *Achillea millefolium, Senecio triangularis, Streptopus amplexifolius*, and other mesic forb species. Grasses and ferns may also be present. It is found on the Alaska peninsula, Aleutian Islands and Kodiak Island, and extends south along the coastal maritime region to southeastern Alaska. It may also occur in British Columbia. This is an herbaceous alliance that occurs as balds and meadows on slopes with a mesic moisture regime, including windswept coastal headlands, coastal bluffs, old beach ridges, hillside slopes, stabilized talus, alluvial fans, rolling hills, alluvial slopes, below subalpine shrublands, and ravine sideslopes. Soils are typically mesic, well-drained, and underlain by colluvium, alluvium, glacial till or residuum.

IVC Dynamics:

IVC Environment: This is an herbaceous alliance that occurs as balds and meadows on slopes with a mesic moisture regime, including windswept coastal headlands, coastal bluffs, old beach ridges, hillside slopes, stabilized talus, alluvial fans, rolling hills, alluvial slopes, below subalpine shrublands, and ravine sideslopes. Soils are typically mesic, well-drained, and underlain by colluvium, alluvium, glacial till or residuum.

DISTRIBUTION

IVC Geographic Range: This alliance is found on the Alaska peninsula, Aleutian Islands and Kodiak Island, and extends south along the coastal maritime region to southeastern Alaska. It may also occur in British Columbia.
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

M493 Western North American Ruderal Grassland & Shrubland

[ ]

IVC Colloquial Name: Western North American Ruderal Grassland & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This ruderal macrogroup occurs in temperate areas throughout the western North America and is composed of disturbed upland grasslands, meadows and shrublands dominated by non-native and generalist native species. It is abundant in waste areas and disturbed land in temperate areas throughout the western U.S. and southwestern Canada, including coastal areas, often as abandoned pastures, roadside margins or other weedy places. Sites are not mowed or otherwise maintained. Generally, these are areas that have been extremely disturbed by heavy equipment, such as old plowed fields, townsites, abandoned millsites, or livestock holding areas and other "waste" places that are now covered in invasive shrub or herbaceous species not native to western North America. Vegetation of the macrogroup can be a monoculture of a single non-native species, or a mix of several non-native forbs and graminoids, often associated with generalist native species. Graminoids include *Agrostis gigantea, Agrostis stolonifera, Bromus inermis, Dactylis glomerata, Elymus repens*, and *Poa pratensis* (which may have been purposefully seeded for forage or to prevent soil erosion). Numerous other non-native herbaceous species may be present to dominant, including *Agrostis capillaris, Anthoxanthum odoratum, Bromus hordeaceus*, and *Holcus lanatus*. Native grasses and forbs may be present with low cover, or sometime abundant if they are generalists or ruderal species. Invasive non-native shrublands are less common, but some may be dominated by *Alhagi maurorum, Cytisus striatus, Cytisus scoparius*, or *Rubus armeniacus*.

IVC Geographic Range: This ruderal grassland and shrubland macrogroup occurs in disturbed areas throughout temperate western North America (Rockies and westward in the U.S. and Canada).

IVC Nations: CA,US

IVC States/Provinces: BC, CA, CO, ID, KS, MT, ND, NE, NV, OR, SD, SK, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G624 Western North American Interior Ruderal Grassland & Shrubland []**
- **G648 Southern Vancouverian Lowland Ruderal Grassland & Shrubland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2014)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G624 Western North American Interior Ruderal Grassland & Shrubland

[ ]

IVC Colloquial Name: Western North American Interior Ruderal Grassland & Shrubland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This montane, mesic to subhygric herbaceous group has low overall species diversity due to the dominance of *Elymus repens*, an exotic rhizomatous grass. *Elymus repens* is a highly invasive species in mesic areas and tends to exclude other species once established. Overall herbaceous cover ranges from 25-85% with *Elymus repens* clearly dominating with 5-80% cover. This group occurs in western Colorado, northwestern Montana, and southern Idaho. Sites include disturbed valley bottoms, alluvial flats, fans and lower valley wall sites between 1450 and 2300 m in elevation.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: CA, CO, ID, KS, MT, ND, NE, NV, SD, SK, UT, WY
IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2011-09-30)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3254 *Agropyron cristatum - Bromus inermis - Poa pratensis* Ruderal Grassland Alliance** [Crested Wheatgrass - Smooth Brome - Kentucky Bluegrass Ruderal Grassland Alliance] []
  This alliance occurs in disturbed dry to mesic grasslands and meadows found in lowland, montane and subalpine elevations (sea level to 3600 m) throughout the western U.S. and Canada. Vegetation can be a monoculture of a single non-native graminoid species, or a mix of several non-native forbs and graminoids. Graminoids include *Agropyron cristatum* and *Bromus inermis* (which has been purposefully seeded to prevent soil erosion), as well as many introduced forage species, especially in more mesic montane uplands such as *Alopecurus pratensis, Dactylis glomerata, Phleum pratense, Poa pratensis*, and *Psathyrostachys juncea*. Highly invasive and wind- and animal-distributed non-native forb species include *Sisymbrium altissimum, Descurainia sophia*, and *Lappula occidentalis*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2011)
IVC Description Author: G. Kittel
IVC Description Date: 2016-11-23
IVC Acknowledgments:

A3254 Crested Wheatgrass - Smooth Brome - Kentucky Bluegrass Ruderal Grassland Alliance

[ ]
Agropyron cristatum - Bromus inermis - Poa pratensis Ruderal Grassland Alliance
Western Ruderal Perennial Grassland

IVC Scientific Name: *Agropyron cristatum - Bromus inermis - Poa pratensis* Ruderal Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance occurs in disturbed dry to mesic grasslands and meadows found in lowland, montane and subalpine elevations (sea level to 3600 m) throughout the western U.S. and Canada. Vegetation can be a monoculture of a single non-native graminoid species, or a mix of several non-native forbs and graminoids. Graminoids include *Agropyron cristatum* and *Bromus inermis* (which has been purposefully seeded to prevent soil erosion), as well as many introduced forage species, especially in more mesic montane uplands, such as *Alopecurus pratensis, Dactylis glomerata, Phleum pratense, Poa pratensis*, and *Psathyrostachys juncea*. Highly invasive and wind- and animal-distributed non-native forb species include *Sisymbrium altissimum, Descurainia sophia*, and *Lappula occidentalis*.
IVC Dynamics:
IVC Environment: This alliance occurs in disturbed dry to mesic grasslands and meadows found in lowland, montane and subalpine elevations (sea level to 3600 m) throughout the western U.S. and Canada.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in lowland, montane and subalpine elevations (sea level to 3600 m) throughout the western U.S. and Canada.
IVC Nations: CA,US

IVC States/Provinces: CO, ID, KS, MT, ND, NE, NV, SD, SK, UT, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2013-09-27)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005266 *Agropyron cristatum - (Pascopyrum smithii, Hesperostipa comata)* Ruderal Grassland** [Crested Wheatgrass - (Western Wheatgrass, Needle-and-Thread) Ruderal Grassland] []
  GNA (1999-06-17) CO, MT, ND, NV, SD, SK, UT, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2013-09-27
IVC Acknowledgments:

G648 Southern Vancouverian Lowland Ruderal Grassland & Shrubland

[ ]

IVC Colloquial Name: Southern Vancouverian Lowland Ruderal Grassland & Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group is dominated by non-native species, such as introduced and invasive shrubs *Cytisus scoparius, Rubus armeniacus, Ulex europaeus*, and the introduced grasses *Agrostis capillaris, Anthoxanthum odoratum, Bromus hordeaceus, Holcus lanatus*, and/or *Poa pratensis*. It is abundant in waste areas and disturbed land throughout Pacific coastal areas either as abandoned pastures, roadside margins or other weedy places, below approximately 1500 m (5000 feet) in elevation. Sites are not mowed or otherwise maintained. Generally, these are areas that have been heavily disturbed by heavy equipment, such as old plowed fields, townsites, and abandoned millsites, livestock holding areas, and other once heavily used places that have been left as "waste" places.
IVC Dynamics: This group is generally a product of disturbance or abandonment of human or livestock activity, and once established is a quite permanent part of the landscape.
IVC Environment: This group is widespread throughout the coastal areas of the Pacific Northwest, but has been intensively studied in the Puget Sound specifically. Stands occur on soils that have been disturbed in the past from plowing, grazing or animal holding areas such as old corrals or rabbit warrens. Soils are mostly shallow and textures range from gravel, sand, sandy loam to loam. These areas are mostly flat or on low slopes and are usually well-drained. Hydrology ranges from very dry south-facing slopes to somewhat mesic north-facing protected sites. This group does not include sand dunes.

DISTRIBUTION

IVC Geographic Range: This group occurs in the Pacific Northwest in disturbed sites and waste areas along the coast from California to Washington and possibly elsewhere.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions: 6.2.7.4:P, 6.2.11.78:P, 7.1.7.2:P, 7.1.8.1:P, 7.1.9.3:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2012-05-22)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2063 *Anthoxanthum odoratum - Holcus lanatus* Ruderal Coastal Grassland Alliance** [Sweet Vernal Grass - Common Velvetgrass Ruderal Coastal Grassland Alliance] []
  This Pacific Northwest coastal grassland alliance is dominated by non-native perennial, invasive species such as *Anthoxanthum odoratum* and *Holcus lanatus*.
- **A2062 *Cytisus scoparius - Ulex europaeus* Coastal Ruderal Scrub Alliance** [Scotch Broom - Common Gorse Coastal Ruderal Scrub Alliance] []
  This shrubland alliance is found in areas along the northern Pacific Coast. Stands have shrub layers dominated by invasive non-native shrubs species *Cytisus scoparius* and *Ulex europaeus*, along with *Lupinus arboreus*, which is native to central California.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2012)
IVC Description Author: G. Kittel
IVC Description Date: 2015-05-20
IVC Acknowledgments:

A2063 Sweet Vernal Grass - Common Velvetgrass Ruderal Coastal Grassland Alliance

[ ]
Anthoxanthum odoratum - Holcus lanatus Ruderal Coastal Grassland Alliance
Pacific Northwest Ruderal Coastal Grassland

IVC Scientific Name: *Anthoxanthum odoratum - Holcus lanatus* Ruderal Coastal Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This Pacific Northwest coastal grassland alliance is dominated by non-native perennial, invasive species such as *Anthoxanthum odoratum* and *Holcus lanatus*. It is abundant in waste areas and on disturbed land throughout coastal areas either as abandoned pastures, roadside margins or other weedy places. Sites are not mowed or otherwise maintained.

IVC Dynamics: Stands of *Holcus lanatus* and *Anthoxanthum odoratum* are similar to those of *Agrostis stolonifera* and *Schedonorus arundinaceus*; however, the latter species occur in wetter and more brackish sites of managed wetlands (Pickart 2006). Both *Holcus lanatus* and *Anthoxanthum odoratum* occur along coastal terraces and moist pastures in central and northern California. Both plants particularly invade stands of the *Calamagrostis nutkaensis, Carex obnupta, Danthonia californica, Deschampsia cespitosa*, and *Hordeum brachyantherum* alliances (Heady et al. 1977, Keeler-Wolf et al. 2004, CNPS 2005, Ford and Hayes 2007).

Holcus lanatus is a recent invader, now dominating many coastal prairies of California. It has a high capacity for rapid vegetative growth in open areas, but it has a disadvantage against taller natives that create shaded conditions (Grime 1979). Stands of *Calamagrostis nutkaensis* and *Festuca rubra* are less resistant to *Holcus lanatus* invasion. Their canopy height inhibits light and reduces the ability of *Holcus lanatus* seedlings and flowering culms to invade dense stands; however, stands of *Bromus carinatus* are resistant because higher light is available (Thomsen and D'Antonio 2007). In addition, disturbed areas and *Nassella pulchra* stands are at risk for invasion because *Holcus lanatus* rapidly invade open sites with greater shoot biomass production (Thomsen et al. 2006).

Holcus lanatus stands contain species of conservation value, especially perennial grasses. *Holcus lanatus* is able to use summer moisture inputs from fog, which appears to alleviate water stress and thereby extend its growing season, increasing its persistence. Its invasion threatens the remnant patches of coastal prairie, which have been resistant to invasion by non-native annuals (Corbin et al. 2005). Cattle and elk grazing may be effective in reducing the abundance and spread of *Holcus lanatus* (Elliott and Wehausen 1974, Foin and Hektner 1986, Hayes and Holl 2003, Johnson and Cushman 2007). Without fire, grazing, or other forms of clearing, native shrubs such as *Baccharis pilularis, Frangula californica*, and *Rubus ursinus* and trees such as *Pinus muricata* and *Pseudotsuga menziesii* establish in these grasslands.

IVC Environment: This coastal Pacific Northwest grassland occurs in waste areas and on disturbed land throughout the coastal areas either as abandoned pastures, roadside margins, or other weedy places. It is not associated with sand dunes. Sites are not mowed or otherwise maintained.

DISTRIBUTION

IVC Geographic Range: This grassland alliance occurs in the Pacific Northwest in disturbed sites and waste areas along the coast from California to Washington and possibly elsewhere.
IVC Nations: CA?,US
IVC States/Provinces: BC?, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2012-05-22)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Kagan and G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A2062 Scotch Broom - Common Gorse Coastal Ruderal Scrub Alliance

[ ]
Cytisus scoparius - Ulex europaeus Coastal Ruderal Scrub Alliance
Ruderal Coastal Dune Broom - Gorse Scrub

IVC Scientific Name: *Cytisus scoparius - Ulex europaeus* Coastal Ruderal Scrub Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This shrubland alliance is found in areas along the northern Pacific Coast. Stands have shrub layers dominated by invasive non-native shrubs species *Cytisus scoparius* and *Ulex europaeus*, along with *Lupinus arboreus*, which is native to central California, but introduced and invasive in northern California, central Oregon and farther north. This semi-natural vegetation often occurs in dune systems stabilized by the introduction of non-native beachgrasses *Ammophila arenaria* and *Ammophila breviligulata*, then invaded by introduced invasive shrubs. These areas can be dense shrublands totally composed of one or more of these species, or they can be more open grassland - shrubland mosaics.
IVC Dynamics:
IVC Environment: This shrubland alliance is found in areas along the northern Pacific Coast and California Central Valley on sand dunes, roadsides, disturbed places, eroding slopes, riverbanks, disturbed grasslands, shrublands, forest openings.

DISTRIBUTION

IVC Geographic Range: This alliance is currently known from California north to British Columbia, Canada.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2012-05-22)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003045 *Cytisus scoparius* Ruderal Shrubland** [Scotch Broom Ruderal Shrubland] []
  GNA (1997-12-01) BC, CA, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Kagan and G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

2.B.3. Boreal Grassland & Shrubland

Boreal Grassland & Shrubland is dominated by mesomorphic perennial grasses, forbs and shrubs, and is found in the northern mid-latitude (boreal) regions of North America and Eurasia, between 55° and 70°N, with extended cold winters and short mild summers.

Macrogroups in Canada:

- **M055 North American Boreal Shrubland & Grassland []**
  This macrogroup encompasses dry to mesic shrublands, herbaceous meadows, scrub and grasslands occurring on well- to imperfectly drained, upland soils, and inland dunes of boreal, boreal-transition, and subarctic regions of North America.

M055 North American Boreal Shrubland & Grassland

[ ]

IVC Colloquial Name: North American Boreal Shrubland & Grassland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: Vegetation of this boreal type mostly occurs on sites where ecological drivers such as extreme cold, snow, wind, or insolation result in vegetation atypical of the prevailing boreal forest. The vegetation can also develop post-fire and persist due to difficult conditions for tree regeneration. Shrubs predominate in most communities and include *Juniperus communis* and *Juniperus horizontalis* on warm-aspect grassy slopes, alvar or dunes, *Betula nana* and/or *Betula glandulosa* at high elevations and in cold valleys, *Alnus viridis ssp. sinuata, Salix glauca*, or *Salix pulchra* on avalanche tracks or local areas of high snowpack, and *Kalmia angustifolia* or *Empetrum* spp. heath. Grasses and herbs of dry sites include *Arctostaphylos uva-ursi, Artemisia frigida, Bromus inermis var. pumpellianus, Calamagrostis purpurascens, Carex obtusata, Carex richardsonii, Chamerion latifolium, Elymus trachycaulus ssp. trachycaulus, Festuca altaica, Festuca saximontana, Koeleria macrantha, Leymus mollis*, and *Saxifraga tricuspidata*, among others. Herbs and grasses of moist sites include *Calamagrostis canadensis, Carex bigelowii, Chamerion angustifolium, Equisetum arvense, Geranium erianthum, Heracleum maximum, Polemonium acutiflorum, Rubus arcticus*, and *Sanguisorba canadensis*. These moist-site herbs can also occur in meadows in areas of high snow cover.

IVC Geographic Range: This type is known to occur in boreal regions of Alaska and western Canada, including Yukon Territory, Northwest Territories, British Columbia, Alberta and Saskatchewan. It extends into the low Arctic in some areas. It also occurs in Quebec and Newfoundland, perhaps more through anthropogenic effects. It is likely that small patches of this vegetation occur throughout the boreal of North America and some vegetation extends into Arctic regions on specific site conditions.

IVC Nations: CA,US

IVC States/Provinces: AB, AK, BC, LB, MB, NF, NT, ON?, QC, SK, YT

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G862 Atlantic Boreal Scrub & Grassland []**
- **G818 Eastern Boreal Shrubland & Grassland []**
- **G357 Western Boreal Mesic Alder - Willow Shrubland []**
- **G358 Western Boreal Mesic Grassland & Meadow []**
- **G356 Western Boreal Mesic Birch - Willow Low Shrubland []**
- **G359 Western Boreal Dry Shrubland & Grassland []**
- **G374 Western Boreal Dune Shrubland & Grassland []**
- **G659 Western Boreal Alvar []**
- **G848 Alaskan-Yukon Boreal Montane Alder - Willow Shrubland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2016)

IVC Description Author: D. Meidinger and G. Kittel

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G862 Atlantic Boreal Scrub & Grassland

[ ]

IVC Colloquial Name: Atlantic Boreal Scrub & Grassland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: LB, NF
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G818 Eastern Boreal Shrubland & Grassland

[ ]

IVC Colloquial Name: Eastern Boreal Shrubland & Grassland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al.

IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G357 Western Boreal Mesic Alder - Willow Shrubland

[ ]

IVC Colloquial Name: Western Boreal Mesic Alder - Willow Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This common shrubland group occurs throughout the boreal region of Alaska and extends north into the low arctic region. Stands are dominated by the deciduous shrub species *Alnus viridis ssp. fruticosa* or *Salix pulchra* or a combination of the two. Willows such as *Salix glauca, Salix richardsonii, Salix barclayi*, or *Salix commutata* may be codominant but have low constancy within the group. Other shrub associates include *Vaccinium uliginosum, Empetrum nigrum, Betula nana* or *Betula glandulosa, Vaccinium vitis-idaea*, and *Ledum palustre ssp. decumbens*. Understory herbaceous species include *Calamagrostis canadensis, Equisetum arvense, Rubus arcticus, Chamerion angustifolium ssp. angustifolium*, and *Sanguisorba canadensis*. This group occurs at low to mid elevations in broad valleys, on mountain sideslopes, and in avalanche zones. Soils develop on hillslope colluvium, glacial deposits, or residual substrates.

IVC Dynamics: *Alnus viridis ssp. fruticosa* has a growth form that tolerates avalanche disturbance and can maintain dominance on frequently disturbed sites. Frequent snow slides prevent tree seedlings and saplings from reaching the upper canopy. On sites with a less frequent avalanche cycle, trees may gain temporary dominance in the overstory. Alder-dominated stands may be extending further into the alpine in recent decades. Alder will resprout following fire, but the effects of fire on this type are not well known. The fire-return interval is likely long, possibly 500 to 1000 years. Early-season fire prior to green-up would be more likely to spread than late-season fire. Alder is also affected by insects and diseases.

IVC Environment: This group occurs at low to mid elevations in broad valleys, on mountain sideslopes and in avalanche zones. Upper avalanche slopes typically have a slope angle of at least 70% with less steep lower slopes and run-out zones. Soils are shallow and stony, underlain by colluvium, glacial till, and residuum.

DISTRIBUTION

IVC Geographic Range: This group is common, occurring throughout the boreal region of Alaska and extending north to the low arctic in the Brooks Range foothills. To the south this group is replaced by Vancouverian Alder - Salmonberry - Willow Shrubland Group (G354), which is widespread in the temperate region and extends in to the sub-boreal region of Alaska.

IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4277 *Alnus viridis ssp. crispa - Alnus incana ssp. tenuifolia / Equisetum arvense* Central Mesic Floodplain Shrubland Alliance** [Mountain Alder - Thinleaf Alder / Equisetum arvense Central Mesic Floodplain Shrubland Alliance] []
- **A4276 *Alnus viridis ssp. crispa - Salix bebbiana / Calamagrostis canadensis* Central Mesic Shrubland Alliance** [Mountain Alder - Bebb's Willow / Bluejoint Central Mesic Shrubland Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:

IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program
IVC Description Author: T. Boucher and L. Flagstad
IVC Description Date: 2016-01-19
IVC Acknowledgments: Keith Boggs, Mark Hall

A4277 Mountain Alder - Thinleaf Alder / Equisetum arvense Central Mesic Floodplain Shrubland Alliance

[ ]
Alnus viridis ssp. crispa - Alnus incana ssp. tenuifolia / Equisetum arvense Central Mesic Floodplain Shrubland Alliance
Central Alaskan-Yukon Floodplain Mesic Alder - Willow Shrubland

IVC Scientific Name: *Alnus viridis ssp. crispa - Alnus incana ssp. tenuifolia / Equisetum arvense* Central Mesic Floodplain Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4276 Mountain Alder - Bebb's Willow / Bluejoint Central Mesic Shrubland Alliance

[ ]
Alnus viridis ssp. crispa - Salix bebbiana / Calamagrostis canadensis Central Mesic Shrubland Alliance
Central Alaskan-Yukon Mesic Alder - Willow Shrubland

IVC Scientific Name: *Alnus viridis ssp. crispa - Salix bebbiana / Calamagrostis canadensis* Central Mesic Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G358 Western Boreal Mesic Grassland & Meadow

[ ]

IVC Colloquial Name: Western Boreal Mesic Grassland & Meadow
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group occurs throughout the arctic, boreal and boreal transition regions of Alaska, and extends south and east into western Canada on hill and mountain slopes, upper drainages, and lowlands including drained lake basins. Stands may be either graminoid-dominated, forb-dominated, fern-dominated or mixed. Species include *Calamagrostis canadensis, Carex bigelowii, Carex microchaeta ssp. nesophila* (dominant sedge in higher elevations), *Alopecurus magellanicus, Artemisia arctica, Polygonum bistorta, Valeriana capitata, Pedicularis* spp., *Polemonium acutiflorum, Salix rotundifolia, Salix reticulata, Heracleum maximum, Thalictrum* spp., *Veratrum viride, Angelica lucida, Athyrium filix-femina, Dryopteris expansa*, and *Equisetum arvense*.
IVC Dynamics: Expert review suggests that this group is stable and rarely experiences fire.
IVC Environment: This group occurs on hill and mountain slopes, upper drainages, and lowlands including drained lake basins. Soils are typically fine-textured mineral and may be poorly-drained (on flats) to well-drained (on sideslopes). In the boreal transition region, mesic *Calamagrostis canadensis* meadows often occur near treeline interspersed with subalpine tall shrub. Its elevational limit is just above the limit of tall shrubs (within 100 m). This group appears to be less common north of the Alaska Range. Mesic meadows also occur as seral stages in drained lakebeds, or after disturbance such as fire or logging.

DISTRIBUTION

IVC Geographic Range: This group occurs throughout the arctic, boreal and boreal transition regions of Alaska, and extends south and east into western Canada.
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, ON?, QC?, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4280 *Calamagrostis canadensis - Chamerion angustifolium* Boreal Mesic Meadow Alliance** [Bluejoint - Fireweed Boreal Mesic Meadow Alliance] []
- **A4248 *Calamagrostis canadensis* - Mixed Forb-Graminoid Meadow Alliance** [Bluejoint - Mixed Forb-Graminoid Meadow Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program
IVC Description Author: M.E. Hall
IVC Description Date: 2011-10-07
IVC Acknowledgments:

A4280 Bluejoint - Fireweed Boreal Mesic Meadow Alliance

[ ]
Calamagrostis canadensis - Chamerion angustifolium Boreal Mesic Meadow Alliance
Western Boreal Bluejoint - Fireweed Meadow Alliance

IVC Scientific Name: *Calamagrostis canadensis - Chamerion angustifolium* Boreal Mesic Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4248 Bluejoint - Mixed Forb-Graminoid Meadow Alliance

[ ]

Calamagrostis canadensis - Mixed Forb-Graminoid Meadow Alliance

Western Boreal Bluejoint - Mixed Forb-Graminoid Meadow

IVC Scientific Name: *Calamagrostis canadensis* - Mixed Forb-Graminoid Meadow Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: AB, AK, BC, MB, ON?, QC?, SK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005287 *Calamagrostis canadensis* Boreal Meadow** [Bluejoint Boreal Meadow] []
  G4 (2000-04-26) AB, AK, BC, SK, YT
- **CEGL005290 *Deschampsia cespitosa* Boreal Meadow** [Tufted Hairgrass Boreal Meadow] []
  GNR. AB, AK, BC, SK?
- **CEGL002558 *Chamerion angustifolium* Meadow** [Fireweed Meadow] []
  GNR. AK, MB, ON?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2020)

IVC Description Author:

IVC Description Date:

IVC Acknowledgments:

G356 Western Boreal Mesic Birch - Willow Low Shrubland

[ ]

IVC Colloquial Name: Western Boreal Mesic Birch - Willow Low Shrubland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This shrubland group occurs on mesic, mid- to upper-slope sites throughout the boreal and subboreal regions of Alaska and is often matrix-forming above coniferous treeline. *Betula glandulosa* dominates in the boreal with dominance transitioning to *Betula nana* in the subboreal region of southwest Alaska. *Vaccinium uliginosum* and *Ledum palustre ssp. decumbens* both have high constancy and canopy cover and may occasionally be canopy dominants. Other common shrubs include *Salix pulchra* and *Salix glauca*. Dwarf-shrubs, including *Vaccinium vitis-idaea* and *Empetrum nigrum*, may be common below the low-shrub layer. Herbaceous species are sparse and may include *Calamagrostis canadensis, Carex bigelowii, Rubus chamaemorus*, and *Chamerion angustifolium ssp. angustifolium*. Feathermosses such as *Hylocomium splendens* and *Pleurozium schreberi*, lichens in

the genus *Cladonia*, and *Sphagnum* species are common in the ground layer. Wetland sites with organic soils are not included in this group.

IVC Dynamics: This group represents a topo-edaphic climax in some areas; in other cases it may be seral to shrub-tussock over long time periods. There is little information available regarding the fire history of shrub communities in Alaska. After fire, shrubs readily resprout from underground propagules if they have not been burned, and a shrub community may re-establish within five years. After severe fires that burn both the organic layer and propagules, herbaceous species that establish by seed may dominate the site for more than five years. Burned spruce woodlands near treeline may be converted to low shrub after fire (Pegau 1972), which may slowly regenerate a spruce overstory. Adjacent vegetation influences the fire frequency. If the adjacent vegetation is flammable, then low-shrub types will have a more frequent fire return. Without adjacent flammable vegetation, fire-return intervals are likely to exceed 100 years. The fire-return interval is longer in the boreal transition region than in boreal Alaska.

IVC Environment: This group occurs on mesic to moist slopes and terraces often in the subalpine. Soils are mineral with a well-decomposed organic layer 5-30 cm thick.

DISTRIBUTION

IVC Geographic Range: This group occurs in the boreal and subboreal transition regions of Alaska from low elevations to above treeline.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4274 *Betula nana - Salix pulchra - Ledum palustre ssp. decumbens* Low Shrubland Alliance** [Dwarf Birch - Tealeaf Willow - Marsh Labrador-tea Low Shrubland Alliance] []
- **A4275 *Salix pulchra / Calamagrostis canadensis* Low Shrubland Alliance** [Tealeaf Willow / Bluejoint Low Shrubland Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program

IVC Description Author: T.V. Boucher

IVC Description Date: 2016-01-19

IVC Acknowledgments: Mark Hall, Lindsey Flagstad

A4274 Dwarf Birch - Tealeaf Willow - Marsh Labrador-tea Low Shrubland Alliance

[ ]

Betula nana - Salix pulchra - Ledum palustre ssp. decumbens Low Shrubland Alliance

Alaskan-Yukon Boreal Mesic Low Birch - Willow Shrubland

IVC Scientific Name: *Betula nana - Salix pulchra - Ledum palustre ssp. decumbens* Low Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4275 Tealeaf Willow / Bluejoint Low Shrubland Alliance

[ ]
Salix pulchra / Calamagrostis canadensis Low Shrubland Alliance
Alaskan-Yukon Boreal Mesic Low Willow Shrubland

IVC Scientific Name: *Salix pulchra / Calamagrostis canadensis* Low Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:

IVC Description Date:
IVC Acknowledgments:

G359 Western Boreal Dry Shrubland & Grassland

[ ]

IVC Colloquial Name: Western Boreal Dry Shrubland & Grassland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This grassland, shrubland and shrub-steppe group occurs throughout the boreal and boreal transition regions of Alaska and western Canada including Yukon Territory, British Columbia, Alberta and probably Saskatchewan. Soils are well-drained to excessively-drained and permafrost is absent. Physiognomy is variable and may be dominated by shrubs, grasses or both. Common shrubs may include *Juniperus communis, Juniperus horizontalis, Arctostaphylos uva-ursi, Shepherdia canadensis, Dasiphora fruticosa ssp. floribunda, Vaccinium vitis-idaea*, or *Rosa acicularis*. More mesic dips or swales might have *Symphoricarpos occidentalis, Amelanchier alnifolia, Prunus* spp., or *Elaeagnus commutata*. Common herbaceous species may include *Carex* spp., *Koeleria macrantha, Hesperostipa comata, Hesperostipa spartea, Festuca altaica, Festuca rubra, Calamagrostis purpurascens, Leymus innovatus*, and *Hesperostipa curtiseta*.
IVC Dynamics:
IVC Environment: This grassland, shrubland and shrub-steppe group occurs throughout the boreal and boreal transition regions of Alaska and western Canada including Yukon Territory, British Columbia, Alberta and probably Saskatchewan. Soils are well-drained to excessively-drained and permafrost is absent.

DISTRIBUTION

IVC Geographic Range: This grassland, shrubland and shrub-steppe group occurs throughout the boreal and boreal transition regions of Alaska and western Canada including Yukon Territory, British Columbia, Alberta and probably Saskatchewan.
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4269 *Artemisia frigida - Calamagrostis purpurascens* Dry Shrub Grassland Alliance** [Prairie Sagewort - Purple Reedgrass Dry Shrub Grassland Alliance] []
- **A4273 *Betula nana* Dry Montane Shrubland Alliance** [Dwarf Birch Dry Montane Shrubland Alliance] []
- **A4272 *Dryas drummondii* Dry Montane Riverine Dwarf-shrubland Alliance** [Drummond's Mountain-avens Dry Montane Riverine Dwarf-shrubland Alliance] []
- **A4270 *Elaeagnus commutata - Shepherdia canadensis* Dry Shrubland Alliance** [Silverberry - Russet Buffaloberry Dry Shrubland Alliance] []
- **A4271 *Elymus trachycaulus ssp. subsecundus - Festuca brachyphylla* Dry Riverine Grassland Alliance** [Slender Wheatgrass - Alpine Fescue Dry Riverine Grassland Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program
IVC Description Author: M.E. Hall

IVC Description Date: 2011-10-07
IVC Acknowledgments:

A4269 Prairie Sagewort - Purple Reedgrass Dry Shrub Grassland Alliance

[ ]
Artemisia frigida - Calamagrostis purpurascens Dry Shrub Grassland Alliance
Alaskan-Yukon Boreal Sagebrush Steppe Bluff

IVC Scientific Name: *Artemisia frigida - Calamagrostis purpurascens* Dry Shrub Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4273 Dwarf Birch Dry Montane Shrubland Alliance

[ ]
Betula nana Dry Montane Shrubland Alliance
Alaskan-Yukon Boreal Montane Low Birch Shrubland

IVC Scientific Name: *Betula nana* Dry Montane Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4272 Drummond's Mountain-avens Dry Montane Riverine Dwarf-shrubland Alliance

[ ]
Dryas drummondii Dry Montane Riverine Dwarf-shrubland Alliance
Alaskan-Yukon Boreal Montane Dryas Riverine Dwarf-shrubland

IVC Scientific Name: *Dryas drummondii* Dry Montane Riverine Dwarf-shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4270 Silverberry - Russet Buffaloberry Dry Shrubland Alliance

[ ]

Elaeagnus commutata - Shepherdia canadensis Dry Shrubland Alliance

Alaskan-Yukon Boreal Silverberry - Buffaloberry Dry Shrubland

IVC Scientific Name: *Elaeagnus commutata - Shepherdia canadensis* Dry Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4271 Slender Wheatgrass - Alpine Fescue Dry Riverine Grassland Alliance

[ ]

Elymus trachycaulus ssp. subsecundus - Festuca brachyphylla Dry Riverine Grassland Alliance

Alaskan-Yukon Boreal Dry Riverine Grassland

IVC Scientific Name: *Elymus trachycaulus ssp. subsecundus - Festuca brachyphylla* Dry Riverine Grassland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G374 Western Boreal Dune Shrubland & Grassland

[ ]

IVC Colloquial Name: Western Boreal Dune Shrubland & Grassland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group represents sparse to open cover of shrub and herbaceous vegetation developing on active, inland dunes in arctic and boreal Alaska and Canada. Characteristic species are the willow shrubs *Salix glauca* and *Salix alaxensis*, the graminoids *Festuca rubra, Koeleria asiatica, Juncus arcticus, Leymus mollis, Bromus inermis var. pumpellianus*, and the forbs *Artemisia campestris ssp. borealis* and *Packera hyperborealis*. Dunes may be derived from Pleistocene-era sandsheets or more recent fluvial deposits. Patch size may be small to large. The main disturbance process, which both creates and maintains dune systems, is the erosion, transport and deposition of sand by wind.
IVC Dynamics: The main disturbance process, which both creates and maintains dune systems is the erosion, transport and deposition of sand by wind. The frequency of this disturbance maintains an early successional state with little development of soil or vegetation. To a lesser, more localized extent animals may also disturb dunes. Grazing, trampling or burrowing by caribou (*Rangifer tarandus*) or Arctic ground squirrel (*Urocitellus parryii*) may disturb vegetation, thereby promoting erosion and blowouts. Where present, permafrost stabilizes dune sediments and snow cover may retard erosion and retain moisture. Stable dunes vegetated by forest and tundra can revert to activity following fire.
IVC Environment: This group develops on active dunes derived from ancient sandsheets or more recent fluvial deposits. Patch size may be small to large. The larger dune systems such as the Kobuk and Nogahabara Dunes in western Alaska, the Carcross Dunes in southern Yukon, and the Lake Athabasca Dunes in northern Saskatchewan have developed on exposed areas of massive sandsheets, which formed across Western North America under the climatic conditions of the late Pleistocene. Dunes not associated with these sandsheets may develop along lake and river bluffs, drained lake basins, and ancient moraines. River-associated dunes occur outside of the floodplain and are not subjected to flooding. Landforms common to all inland dune systems, regardless of genesis, include transverse and longitudinal dunes, desert pavements, blowouts, and interdune slacks. Dunes are comprised of dry to mesic sand deposits with sediment becoming more fine and moist in the slacks. While permafrost is present in the Arctic, permafrost features rarely develop due to low interstitial ice volumes.

DISTRIBUTION

IVC Geographic Range: This group occurs in western Canada and throughout arctic and boreal Alaska, from the Bristol Bay lowlands in southwestern Alaska to the coastal plain on the Arctic Ocean.
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC?, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4293 *Calamagrostis purpurascens - Oxytropis kobukensis* Boreal Dune Grassland Alliance** [Purple Reedgrass - Kobuk Locoweed Boreal Dune Grassland Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program
IVC Description Author: L. Flagstad
IVC Description Date: 2016-01-19
IVC Acknowledgments: Mark Hall

A4293 Purple Reedgrass - Kobuk Locoweed Boreal Dune Grassland Alliance

[ ]
Calamagrostis purpurascens - Oxytropis kobukensis Boreal Dune Grassland Alliance
Alaskan-Yukon Boreal Dry Dune Grassland

IVC Scientific Name: *Calamagrostis purpurascens - Oxytropis kobukensis* Boreal Dune Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G659 Western Boreal Alvar

[ ]

IVC Colloquial Name: Western Boreal Alvar
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces: YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: P.M. Catling (2009)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G848 Alaskan-Yukon Boreal Montane Alder - Willow Shrubland

[ ]

IVC Colloquial Name: Alaskan-Yukon Boreal Montane Alder - Willow Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4281 *Alnus viridis ssp. crispa* Central Montane Shrubland Alliance** [Mountain Alder Central Montane Shrubland Alliance] []
- **A4282 *Salix alaxensis - Salix brachycarpa* Southern Montane Shrubland Alliance** [Feltleaf Willow - Short-fruit Willow Southern Montane Shrubland Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4281 Mountain Alder Central Montane Shrubland Alliance

[ ]
Alnus viridis ssp. crispa Central Montane Shrubland Alliance
Alaskan-Yukon Central Boreal Montane Alder - Willow Shrubland

IVC Scientific Name: *Alnus viridis ssp. crispa* Central Montane Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4282 Feltleaf Willow - Short-fruit Willow Southern Montane Shrubland Alliance

[ ]

Salix alaxensis - Salix brachycarpa Southern Montane Shrubland Alliance

Alaskan-Yukon Southern Boreal Montane Alder - Willow Shrubland

IVC Scientific Name: *Salix alaxensis - Salix brachycarpa* Southern Montane Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

2.B.4. Temperate to Polar Scrub & Herb Coastal Vegetation

Temperate to Polar Scrub & Herb Coastal Vegetation is found in temperate to polar coastal habitats, including beaches, bluffs and dunes, where wind and water are major drivers of the vegetation, across the mid to polar latitudes from 23° to 60-70°N and S latitude, dominated by prostrate perennials on the beach and foredune, and graminoids and scrub on backdunes and bluffs.

Macrogroups in Canada:

- **M060 Eastern North American Coastal Beach & Rocky Shore [Végétation dunaire et de rivage rocheux des côtes de l'est de l'Amérique du Nord]**
  This macrogroup encompasses sparse annual vegetation occurring on the irregularly flooded tidal zone of coastal beaches of the Atlantic and Gulf of Mexico coasts of North America.
- **M057 Eastern North American Coastal Dune, Grassland & Rocky Headland [Herbaçaies dunaires des côtes de l'est de l'Amérique du Nord]**
  This coastal grassland, shrubland and open vegetation type is found on well-drained to excessively drained sands on dunes and shorelines around the Great Lakes and Atlantic and Gulf coasts, as well as on rocky headlands in the North Atlantic.
- **M059 Pacific Coastal Beach & Dune [Végétation des plages et des dunes de la côte du Pacifique]**
  Coastal beach and active dunes along the temperate Pacific coast of North America.
- **M058 Pacific Coastal Cliff & Bluff [Végétation des falaises et des escarpements de la côte du Pacifique]**
  This macrogroup occurs on sea cliffs, scree slopes and rocky coastlines exposed to salt spray and ocean wave action. It occurs from the coast of the Aleutian Islands, south through California and possibly into Mexico.
- **M511 North Pacific Coastal Ruderal Grassland & Shrubland []**
  This macrogroup includes coastal sand dunes dominated by non-native beachgrasses *Ammophila arenaria, Ammophila breviligulata*, forbs and succulents such as *Cakile edentula, Cakile maritima, Carpobrotus* spp., *Mesembryanthemum* spp., and/or introduced shrubs such as *Lupinus arboreus*. It occurs along the coast of California north into British Columbia.
- **M402 North American Arctic Coastal Shore [Végétation des rivages côtiers des zones arctique et boréale de l'Amérique du Nord]**
  This type is found on North American Arctic coastline beaches, beach dunes, stabilized sand or cobble deposits, on sea cliffs, rocky headlands, and cobble beaches. Vegetation consists of mostly grasslands, dwarf-shrublands, stunted trees, and other herbaceous species. Some of the common dominant species include *Leymus mollis, Honckenya peploides*, and/or *Lupinus nootkatensis*.

M060 Eastern North American Coastal Beach & Rocky Shore

Végétation dunaire et de rivage rocheux des côtes de l'est de l'Amérique du Nord

IVC Colloquial Name: Eastern North American Coastal Beach & Rocky Shore

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: The coastal beach vegetation of this macrogroup is variable, depending on the amount of exposure to wave and wind action, but on average vegetation cover is sparse and no species can be considered dominant. Characteristic annual or biennial species more-or-less restricted to beach habitats include *Cakile edentula ssp. edentula, Honckenya peploides*, or *Sesuvium portulacastrum*. This macrogroup includes annual-dominated sandy, gravel, or cobble surfaces of upper ocean beaches fronting the ocean or on the sheltered beaches of barrier islands. The tidal regime is characterized by irregular tidal flooding, within the reach of storm tides and extreme lunar tides.

IVC Geographic Range: This vegetation ranges from the Canadian Maritime Provinces south to the Gulf coast of Florida and possibly Mississippi.

IVC Nations: CA,MX,US

IVC States/Provinces: AL, CT, DE, FL, GA, IL, IN, LA, LB, MA, MB, MD, ME, MI, MN, MS, NB?, NC, NF, NH, NJ, NS, NY, OH, ON, PA, PE, QC, RI, SC, SK, TAM, TX, VA, VT, WI

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G660 North Atlantic Coastal Beach []**
- **G793 Great Lakes Coastal Rocky Shore []**
- **G764 Great Lakes Sand Beach []**
- **G342 Eastern North American Inland Strand & Rocky Shore []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J.W. Harshberger (1900); H.S. Conard (1935)

IVC Description Author: L. Sneddon

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G660 North Atlantic Coastal Beach

[ ]

IVC Colloquial Name: North Atlantic Coastal Beach

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group covers mostly non-forested, sparsely to moderately vegetated boulder, cobble, and gravel shores, above the normal high-tide line along the immediate Atlantic coast, from northern North Carolina to the Canadian Maritimes. On the mainland, it is often a narrow zone between the high-tide line and the upland forest; this zone becomes wider with increasing maritime influence, e.g., on some islands. The substrate is sand flats and beaches, or sandy with broken rock, ranging from cobbles to gravels, sometimes with a shallow soil layer. Tree growth is prevented by extreme exposure to wind, salt spray, and fog. Cover is patchy herbs with an occasional shrub. On cobble beaches, where storm waves create an unstable substrate, vascular plant cover is low, with typical species including *Cakile edentula ssp. edentula, Calystegia sepium, Chamaesyce polygonifolia, Chenopodium album, Elymus repens, Galeopsis bifida, Honckenya peploides ssp. diffusa, Lathyrus japonicus, Raphanus raphanistrum, Rumex crispus, Salsola kali, Sisymbrium altissimum, Solanum dulcamara*, and *Solidago sempervirens*. *Mertensia maritima* is an infrequent but diagnostic species of cobble beaches. Open rocky shore habitats are characterized by sparse (<25%) cover of salt-tolerant herbs such as *Argentina egedii ssp. groenlandica, Atriplex prostrata, Glaux maritima,*

Limonium carolinianum, Puccinellia maritima, Salicornia depressa, Spergularia salina, and *Suaeda maritima*. Detritus washed in by the tides may be prominent. In Atlantic Canada, an unusual treed cobble beach can occur.

IVC Dynamics: This group is influenced by irregular tidal flooding, wave action, and storm tides. Its position between the regularly flooded, unvegetated beach, and the base of dunes or upland shores is not fixed. Intense storms often disturb or completely remove the habitat, but the easily dispersed annual plants comprising this group re-establish on newly formed habitat where the new wrack line develops.

IVC Environment: This group occurs on Atlantic beaches above the limit of mean high tide, but is inundated by wave action during spring tides and storm tides. It occurs on ocean-fronting beaches of barrier islands, and the mainland coast, as well as on the more protected beaches of bay beaches. The substrate is sand, cobble, gravel, or a mixture of these.

DISTRIBUTION

IVC Geographic Range: This group is found along the immediate Atlantic coast, from northern North Carolina to the Canadian Maritimes.

IVC Nations: CA,US

IVC States/Provinces: CT, DE, LB, MA, MD, ME, NB?, NC, NF, NH, NJ, NS, NY, PE, QC?, RI, VA

IVC Omernik Ecoregions: 8.1.7.59:C, 8.1.8.82:C, 8.5.1.63:C, 8.5.4.84:C

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low to moderate, and threats moderate. Effects of sea level rise and recreation need further review.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3639 *Cakile edentula ssp. edentula* Atlantic Beach Alliance** [American Searocket Atlantic Beach Alliance] []
  This alliance includes annual-dominated sandy, gravel, or cobble beach of upper ocean beaches of the northeastern U.S. and Canadian Maritime Provinces, within the reach of storm tides and extreme lunar tides. Vegetative cover is variable, depending on the amount of exposure to wave and wind action, but on average is sparse; no species can be considered dominant. Annual or biennial species more-or-less restricted to beach habitats are characteristic of this alliance, including *Cakile edentula ssp. edentula*.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: L.A. Sneddon, in Faber-Langendoen et al. (2012)

IVC Description Author: L.A. Sneddon

IVC Description Date: 2015-05-05

IVC Acknowledgments:

A3639 American Searocket Atlantic Beach Alliance

[ ]

Cakile edentula ssp. edentula Atlantic Beach Alliance

Atlantic Upper Beach

IVC Scientific Name: *Cakile edentula ssp. edentula* Atlantic Beach Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes annual-dominated sandy, gravel, or cobble beach of upper ocean beaches of the northeastern U.S. and Canadian Maritime Provinces, within the reach of storm tides and extreme lunar tides. Vegetative cover is variable,

depending on the amount of exposure to wave and wind action, but on average is sparse; no species can be considered dominant. Annual or biennial species more-or-less restricted to beach habitats are characteristic of this alliance, including *Ammophila breviligulata, Cakile edentula ssp. edentula*, as well as *Salsola kali ssp. kali, Chamaesyce polygonifolia, Honckenya peploides, Cenchrus tribuloides, Amaranthus retroflexus, Chenopodium album, Erechtites hieraciifolius, Atriplex cristata*, and *Triplasis purpurea*. In Maine and the Maritime Provinces, *Suaeda maritima, Mertensia maritima, Glaux maritima, Honckenya peploides, Carex silicea*, and *Elymus repens* may be more typical associates.

IVC Dynamics: This vegetation is extremely dynamic, inhabiting the upper reach of Atlantic coastal beaches where storm tides and neap tides deposit wrack. It is removed by extreme wave action, and can establish in newly deposited sandy beaches following storms.

IVC Environment: Annual-dominated sand flats on island end flats and upper ocean beaches, within the reach of storm tides and extreme lunar tides. This vegetation can occur at the base of dunes, and usually has substantial algal wrack.

DISTRIBUTION

IVC Geographic Range: This alliance occurs from northern North Carolina along the immediate coastline to and including the Maritime Provinces of Canada.

IVC Nations: CA,US

IVC States/Provinces: CT, DE, LB?, MA, MD, ME, NB?, NC, NF?, NH, NJ, NS?, NY, PE?, QC?, RI, VA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006106 *Cakile edentula ssp. edentula - Mertensia maritima* Sparse Beach Vegetation** [American Searocket - Oysterleaf Sparse Beach Vegetation] []
  GNR. LB?, ME, NB?, NF?, NS?, PE?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: H.S. Conard (1935)

IVC Description Author: L. Sneddon

IVC Description Date: 2014-12-18

IVC Acknowledgments:

G793 Great Lakes Coastal Rocky Shore

[ ]

IVC Colloquial Name: Great Lakes Coastal Rocky Shore

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is found in the northern Great Lakes with examples on Lake Champlain and Lake Winnipeg. Sites have sparse cover by vascular species, generally less than 10% with pockets of higher cover. Common herbaceous species include *Campanula rotundifolia, Danthonia spicata, Deschampsia cespitosa, Sibbaldiopsis tridentata*, and *Trichophorum cespitosum*. Characteristic shrubs and trees include *Betula papyrifera, Dasiphora fruticosa ssp. floribunda, Juniperus communis, Picea glauca, Populus balsamifera, Physocarpus opulifolius*, and *Thuja occidentalis*. The substrate can be limestone, dolostone, sandstone, metamorphic, or volcanic gravel, cobble, or bedrock. Soil is essentially absent except where it collects in cracks or depressions. Sites can be flat to moderately sloping.

IVC Dynamics: The general lack of soil in stands of this group results in rapid drying of most of the surface area but small depressions or areas near the wave splash zone can be wet much longer. Ice-scour and high waves can damage or remove vegetation.

IVC Environment: This group occurs on gravel, cobble, or exposed bedrock. These can be sandstone, dolostone, limestone, metamorphic, or volcanic. Dolostone and limestone are essentially limited to where the Niagaran Escarpment is exposed in a

broad arc from the Door Peninsula in Wisconsin, through Michigan on the northern shores of Lake Michigan and Lake Huron, and Manitoulin Island and the Bruce Peninsula in Ontario. Non-calcareous examples of this group are more widespread. Soil is limited to bedrock cracks, shallow depressions, or other areas where it can accumulate and be protected from being carried away by precipitation, wave action, and ice-scour. The zone closest to the water can be nearly devoid of vegetation due to increased effects of ice-scour and waves. Sites are flat to moderately sloping and can have small "cliffs" a few meters high within them.

DISTRIBUTION

IVC Geographic Range: This group can be found along the shoreline of Lake Ontario, Lake Huron, Lake Michigan, and Lake Superior, though it is especially common along the margins of Lake Superior, northern Lake Michigan, and northern Lake Huron and Georgian Bay. It is also found on the shores of Lake Champlain and Lake Winnipeg.

IVC Nations: CA,US

IVC States/Provinces: MB, MI, MN, NY, OH, ON, QC, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low to moderate, and threats moderate.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3694 *Clinopodium arkansanum - Campanula rotundifolia* Limestone Lakeshore Alliance** [Limestone Calamint - Bluebell Bellflower Limestone Lakeshore Alliance] []
  This alliance is characterized by sparse vegetation of shores of the Great Lakes. The substrate chemistry has high base status and ranges from bedrock to gravel. Characteristic species include *Clinopodium arkansanum, Campanula rotundifolia*, and *Juncus arcticus ssp. littoralis*; *Populus balsamifera* is occasionally present.
- **A3695 *Deschampsia cespitosa - Campanula rotundifolia* Lakeshore Alliance** [Tufted Hairgrass - Bluebell Bellflower Lakeshore Alliance] []
  This alliance is characterized by sparsely vegetated, or sometimes unvegetated, lakeshores composed of noncalcareous bedrock, cobble, or gravel. Vegetation is sparse and patchy, and includes scattered shrubs and trees. Characteristic subshrubs, forbs and graminoids include *Sibbaldiopsis tridentata, Campanula rotundifolia, Danthonia spicata*, and *Deschampsia cespitosa*. Characteristic shrubs and trees include *Juniperus communis, Picea glauca, Betula papyrifera*, and *Physocarpus opulifolius*.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2014)

IVC Description Author: J. Drake

IVC Description Date: 2015-05-04

IVC Acknowledgments:

A3694 Limestone Calamint - Bluebell Bellflower Limestone Lakeshore Alliance

[ ]

Clinopodium arkansanum - Campanula rotundifolia Limestone Lakeshore Alliance

Great Lakes Limestone Rocky Shore

IVC Scientific Name: *Clinopodium arkansanum - Campanula rotundifolia* Limestone Lakeshore Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is characterized by sparse vegetation of shores of the Great Lakes. The substrate chemistry has high base status and ranges from bedrock to gravel. Characteristic species include *Clinopodium arkansanum, Campanula rotundifolia*, and *Juncus arcticus ssp. littoralis*; *Populus balsamifera* is occasionally present.

IVC Dynamics: Wave action and ice-scour structure the vegetation closest to the water, preventing long-term establishment of woody species and forbs, which are confined to cracks in the bedrock.

IVC Environment: The substrate is limestone bedrock or cobble with high base status.

DISTRIBUTION

IVC Geographic Range: This alliance occurs on the Great Lakes.

IVC Nations: CA,US

IVC States/Provinces: MI, OH, ON, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002506** ***Dasiphora fruticosa / Clinopodium arkansanum - Argentina anserina - Primula mistassinica*** **Lakeshore Sparse Vegetation** [Shrubby-cinquefoil / Limestone Calamint - Silverweed Cinquefoil - Mistassini Primrose Lakeshore Sparse Vegetation] []
  G3 (2002-10-24) MI, OH, ON, VT, WI
- **CEGL005169 Limestone Cobble - Gravel Great Lakes Shore Sparse Vegetation** [Limestone Cobble - Gravel Great Lakes Shore Sparse Vegetation] []
  G2G3 (2002-10-24) MI, ON, VT, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M.A. Kost et al. (2007)

IVC Description Author: L.A. Sneddon

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A3695 Tufted Hairgrass - Bluebell Bellflower Lakeshore Alliance

[ ]

Deschampsia cespitosa - Campanula rotundifolia Lakeshore Alliance

Great Lakes Non-calcareous Rocky Shore

IVC Scientific Name: *Deschampsia cespitosa - Campanula rotundifolia* Lakeshore Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is characterized by sparsely vegetated, or sometimes unvegetated, lakeshores composed of noncalcareous bedrock, cobble, or gravel. Vegetation is sparse and patchy, and includes scattered shrubs and trees. Characteristic subshrubs, forbs and graminoids include *Sibbaldiopsis tridentata, Campanula rotundifolia, Danthonia spicata*, and *Deschampsia cespitosa*. Characteristic shrubs and trees include *Juniperus communis, Picea glauca, Betula papyrifera*, and *Physocarpus opulifolius*.

IVC Dynamics: Wave action and ice-scour prevent soil development.

IVC Environment: Acidic bedrock of lakeshores, including sandstone, granite, and others.

DISTRIBUTION

IVC Geographic Range: This alliance occurs on the shores of the Great Lakes in the U.S. and Canada.
IVC Nations: CA,US
IVC States/Provinces: MB, MI, MN, ON, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005215 Basalt - Conglomerate Bedrock Great Lakes Shore Sparse Vegetation** [Basalt - Conglomerate Bedrock Great Lakes Shore Sparse Vegetation] []
  G4G5 (1997-12-01) MI, MN, ON
- **CEGL005250 Basalt - Diabase Cobble - Gravel Great Lakes Shore Sparse Vegetation** [Basalt - Diabase Cobble - Gravel Great Lakes Shore Sparse Vegetation] []
  G4G5 (2000-04-07) MI, MN, ON?
- **CEGL005216 Granite - Metamorphic Bedrock Great Lakes Shore Sparse Vegetation** [Granite - Metamorphic Bedrock Great Lakes Shore Sparse Vegetation] []
  GNR. MI, ON
- **CEGL002507 Sandstone Bedrock Great Lakes Shore Sparse Vegetation** [Sandstone Bedrock Great Lakes Shore Sparse Vegetation] []
  G3G4 (2002-10-24) MI, ON, WI
- **CEGL002508 Non-alkaline Cobble - Gravel Great Lakes Shore Sparse Vegetation** [Non-alkaline Cobble - Gravel Great Lakes Shore Sparse Vegetation] []
  G2G3 (2002-10-24) MI, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.A. Kost et al. (2007)
IVC Description Author: L.A. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G764 Great Lakes Sand Beach

[ ]

IVC Colloquial Name: Great Lakes Sand Beach
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group is found along the shores of the Great Lakes, particularly along Lake Michigan. It is found on sandy substrates with little or no soil development within a few meters elevation of the water. The sandy substrate is not stabilized by significant vegetation and is easily moved. Stands of this group are subject to frequent disturbance by wind, waves, and ice-scour. Stands are typically narrow and linear but may extend for miles along the lakeshore. Vegetation is absent to sparse; that which is present is short and dominated by herbaceous species. *Cakile edentula* is the most common species. *Chamaesyce polygonifolia, Juncus arcticus ssp. littoralis, Lathyrus japonicus*, and *Argentina anserina* can be found, as well. *Ammophila breviligulata* may be present where dunes are associated with the beach.
IVC Dynamics: Stands are subject to frequent disturbance by wind, waves (with storm surges), and ice-scour. This leads to erosion or deposition of the sandy substrate by wind or water. The disturbances keep the beaches nearly free of vegetation.
IVC Environment: This type is found on sandy substrates with little or no soil development within a few meters elevation of the water. It rarely extends more than 30-50 m from the water. The sandy substrate is not stabilized by significant vegetation and is

easily moved. Stands are subject to frequent disturbance by wind, waves, and ice-scour. In areas with abundant sand, such as Lake Michigan, this group can be found on long stretches of the shoreline, sometimes next to more vegetated dunes. In areas with less sand, this group is limited to protected bays or near river mouths where sand can accumulate.

DISTRIBUTION

IVC Geographic Range: This group is found in along the margins of the Great Lakes from western Lake Superior to Lake Erie and possibly into Lake Ontario. It is most common along Lake Michigan and widely scattered or absent in other areas, such as the Minnesota shore and northern Lake Superior. In Minnesota it is largely confined to Minnesota Point in the estuary of the St. Louis River.

IVC Nations: CA,US

IVC States/Provinces: IL, IN, MB, ME, MI, MN, NY, OH, ON, PA, SK, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate to high from development manipulation of beaches for recreation.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4008 *Cakile edentula* Great Lakes Beach Alliance** [American Searocket Great Lakes Beach Alliance] []
  This alliance describes sparsely vegetated sandy shores of the Great Lakes. *Cakile edentula var. lacustris* is characteristic; other associates include *Chamaesyce polygonifolia, Xanthium strumarium*, and *Argentina anserina*.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake

IVC Description Date: 2015-05-05

IVC Acknowledgments:

A4008 American Searocket Great Lakes Beach Alliance

[ ]

Cakile edentula Great Lakes Beach Alliance

Great Lakes Sand Beach

IVC Scientific Name: *Cakile edentula* Great Lakes Beach Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance describes sparsely vegetated sandy shores of the Great Lakes. *Cakile edentula var. lacustris* is characteristic; other associates include *Chamaesyce polygonifolia, Juncus arcticus ssp. littoralis, Lathyrus japonicus, Xanthium strumarium*, and *Argentina anserina*. This vegetation occurs on sandy beaches of the Great Lakes where wave action causes active sand movement, preventing most plants from becoming established.

IVC Dynamics: This vegetation is subjected to wave and wind action and near-constant sand movement.

IVC Environment: This vegetation occurs on sandy beaches of the Great Lakes where wave action causes active sand movement, preventing most plants from becoming established.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from Minnesota east to New York and Pennsylvania, north into Manitoba and Ontario.
IVC Nations: CA,US
IVC States/Provinces: IL, IN, MB, ME, MI, MN, NY, OH, ON, PA, SK, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005162 *Cakile edentula* Great Lakes Shore Sparse Vegetation** [American Searocket Great Lakes Shore Sparse Vegetation] [] G3? (1998-06-22) IL, IN, MI, MN, NY, OH, ON, PA, VT, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G342 Eastern North American Inland Strand & Rocky Shore

[ ]

IVC Colloquial Name: Eastern North American Inland Strand & Rocky Shore
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This heterogeneous group encompasses primarily upland vegetation along lakeshores or rivershores in the upper midwestern United States and Canada, exclusive of the Great Lakes. Some areas may be briefly inundated during high water periods. The substrate is gravelly, cobbly, or consolidated rock. Soils are shallow or confined to crevices. Substrate is igneous and metamorphic bedrock, cobble, or gravel. These shores may be narrow zones of shrubs and/or sparse vegetation on rocky or gravelly shores. Little rangewide information from this group is available. Zonation in vegetation may be evident as a result of differential degree of overwash by waves or ice-scour. Shrubs may include *Alnus* spp., *Chamaedaphne calyculata, Myrica gale*, and *Spiraea alba*. Forbs and graminoids include *Agrostis* spp., *Campanula rotundifolia, Danthonia spicata, Iris versicolor, Lysimachia terrestris*, and *Sibbaldiopsis tridentata*.
IVC Dynamics: Wave action and ice-scour are important factors maintaining the open condition of vegetation, especially close to the water. These effects diminish with increasing distance from the shore. Water level fluctuation can change the width and placement of zones from year to year.
IVC Environment: *Climate:* Climate is north-temperate; the adjacent waterbodies freeze during the winter. *Soil/substrate/hydrology:* Some areas may be briefly inundated during high water periods. The substrate is gravelly, cobbly, or consolidated rock. Soils are shallow or confined to crevices. Substrate is igneous and metamorphic bedrock, cobble, or gravel.

DISTRIBUTION

IVC Geographic Range: This group occurs across the upper midwestern United States to northern Minnesota, and adjacent Canada and occasionally southwards.
IVC Nations: CA,US
IVC States/Provinces: IN?, MB, ME, MI, MN, NY, ON, PA, QC, RI, SK, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component

association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4109 Inland Lake Non-alkaline Rocky Shore Alliance** [Inland Lake Non-alkaline Rocky Shore Alliance] []
  This alliance is characterized by sparsely vegetated, or sometimes unvegetated, inland lakeshores, excluding the Great Lakes, comprising noncalcareous bedrock, cobble, or gravel.
- **A1862 Inland Lake Strand Beach Alliance** [Inland Lake Strand Beach Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L. Sneddon, after Minnesota DNR (2010a)
IVC Description Author: S.C. Gawler and L.A. Sneddon
IVC Description Date: 2015-05-06
IVC Acknowledgments:

A4109 Inland Lake Non-alkaline Rocky Shore Alliance

[ ]
Inland Lake Non-alkaline Rocky Shore Alliance
Inland Lake Non-alkaline Rocky Shore

IVC Scientific Name: Inland Lake Non-alkaline Rocky Shore Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This igneous - metamorphic inland bedrock or gravel lakeshore alliance is found on small lakes on the Canadian shield in the upper Great Lakes region of the United States and Canada, and perhaps more widely in Canada. Stands are exposed bedrock along lakeshores. Substrate may be either granite/metamorphic or basalt/conglomerate. Vegetation is sparse, but little information is available to further characterize this type.
IVC Dynamics:
IVC Environment: This alliance occurs on the shores of small inland lakes on noncalcareous bedrock or gravel.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the midwestern U.S. and Canada.
IVC Nations: CA,US
IVC States/Provinces: MB, MI, MN, NY, ON, QC, SK, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002301 Igneous - Metamorphic Bedrock Inland Lake Shore Sparse Vegetation** [Igneous - Metamorphic Bedrock Inland Lake Shore Sparse Vegetation] []
  G4G5 (2000-04-07) MB, MN, ON

- **CEGL002303 Igneous - Metamorphic Cobble - Gravel Inland Lake Shore Sparse Vegetation** [Igneous - Metamorphic Cobble - Gravel Inland Lake Shore Sparse Vegetation] []
  G4G5 (2000-04-07) MB, MI?, MN, NY, ON, QC?, SK
- **CEGL002571 Inland Relict Cobble - Gravel Shore Sparse Vegetation** [Inland Relict Cobble - Gravel Shore Sparse Vegetation] []
  GNR. MB

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen and L. Sneddon, in Faber-Langendoen et al. (2014)
IVC Description Author: D. Faber-Langendoen and L. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A1862 Inland Lake Strand Beach Alliance

[ ]
Inland Lake Strand Beach Alliance
Inland Lake Strand Beach

IVC Scientific Name: Inland Lake Strand Beach Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: IN?, MB, ME, MI, MN, NY, ON, PA, SK, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002310 Inland Freshwater Strand Beach Sparse Vegetation** [Inland Freshwater Strand Beach Sparse Vegetation] []
  G4G5 (1996-10-03) IN?, MB, ME, MI, MN, NY, ON, PA, SK, VT, WI
- **CEGL002311 Inland Marine Strand Beach Sparse Vegetation** [Inland Marine Strand Beach Sparse Vegetation] []
  GNR. MB

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

M057 Eastern North American Coastal Dune, Grassland & Rocky Headland

Herbaçaies dunaires des côtes de l'est de l'Amérique du Nord

IVC Colloquial Name: Eastern North American Coastal Dune, Grassland & Rocky Headland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup encompasses coastal grasslands and shrublands along the Great Lakes, Lake Champlain, and Atlantic and Gulf coasts, occurring on sandy dunes and beaches along coastal shorelines and barrier islands, as well as on rocky headlands in the North Atlantic. It includes areas ranging from sparsely vegetated to lichen-dominated to grasslands and grassland-shrub complexes depending upon the degree of deposition, erosion, and distance from shore. Species composition varies geographically. Within the Great Lakes region and along the North Atlantic Coast, *Ammophila breviligulata* characterizes most herbaceous stands. *Schizachyrium scoparium* is common in many of these northern (not in Canada) sites as well. Common shrubs include *Arctostaphylos uva-ursi, Hudsonia tomentosa, Juniperus communis*, and *Juniperus horizontalis*. Some examples in the Great Lakes may also have a scattered overstory canopy dominated by *Pinus banksiana, Pinus resinosa*, and/or *Pinus strobus*, and on the Atlantic Coast, *Pinus rigida* or *Pinus taeda*. Along the Atlantic Coast *Morella pensylvanica* shrublands are common, and dwarf-shrubs include *Empetrum nigrum* or, less commonly, *Corema*. *Solidago sempervirens* is typical on Atlantic coastal sites. *Uniola paniculata* is diagnostic within sites along the South Atlantic Coast. *Panicum amarum* occurs on the foredunes, and *Spartina patens* and *Schizachyrium littorale* are common on the older dunes and sand flats. Soils are typically well-drained to excessively drained sands with little to no horizon development, or a thin patchy layer of organic material on rocky headlands. Heavy winds significantly impact these communities which can cause reworking of sand or by slower eolian processes. Sites along the Atlantic Coast are shaped by salt spray, overwash, and very high humidity. Fire suppression in the range of this macrogroup can cause an increase in woody species. Many areas have also been impacted by agriculture and grazing.

IVC Geographic Range: This macrogroup occurs along the Great Lakes shores of the United States and Canada ranging from Wisconsin to Ontario and New York and along the Atlantic Coast from the Maritime Provinces to southern Florida and along the Gulf Coast to Texas.

IVC Nations: CA,MX,US

IVC States/Provinces: AL, CT, DE, FL, GA, IL, IN, LA, MA, MD, ME, MI, MN, MS, NB, NC, NH, NJ, NS, NY, OH, ON, PA, PE, QC, RI, SC, TAM, TX, VA, VT, WI

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G582 North Atlantic Coastal Rocky Headland []**
- **G493 North Atlantic Coastal Dune & Grassland []**
- **G063 Northern Atlantic Acidic Sand Barrens Scrub & Grassland []**
- **G089 Great Lakes Dune []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M.A. Chrysler (1930); H.J. Oosting and W.D. Billings (1942); D.A. Albert (1995b); S.C. Gawler and A. Cutko (2010)

IVC Description Author: S. Menard, L. Sneddon, J. Cohen, and D. Faber-Langendoen

IVC Description Date: 2015-05-21

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by Jim Drake, Sue Gawler and Sean Basquill.

G582 North Atlantic Coastal Rocky Headland

[ ]

IVC Colloquial Name: North Atlantic Coastal Rocky Headland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group encompasses sparsely vegetated cliffs and shoreline outcrops along the North Atlantic Coast, primarily northeast of Penobscot Bay (Maine). Common species include *Achillea millefolium, Campanula rotundifolia, Festuca rubra, Plantago maritima, Prenanthes trifoliolata, Primula laurentiana*, and *Solidago sempervirens*. *Juniperus horizontalis* occurs in some locations and is indicative of the exposed coastal environment. In many locations, subarctic lithophilic plant species occur; these include *Euphrasia randii, Iris setosa, Lomatogonium rotatum, Rhodiola rosea*, and *Sagina nodosa ssp. borealis*. From Cobscook Bay east, *Dasiphora fruticosa ssp. floribunda* is also characteristic. Settings range from steep cliffs to nearly flat expanses of bedrock, all influenced by salt spray, frequent fog, and exposure to wind. Other sites include thin-soil areas, or cold-stressed sites. Dwarf heath-grassland is dominated by *Festuca rubra, Aronia melanocarpa, Symphyotrichum novi-belgii, Vaccinium angustifolium, Vaccinium vitis-idaea*, among others. Low coastal shrublands are *Gaylussacia baccata*- or *Gaylussacia dumosa*-dominated. Tall shrublands are dominated by *Alnus incana ssp. rugosa, Ilex mucronata, Aronia x prunifolia, Prunus pensylvanica*, and *Viburnum nudum*. *Gaylussacia baccata* and *Morella pensylvanica* occur in the understory. Common herbs include *Pteridium aquilinum var. latiusculum, Trientalis borealis*, and *Maianthemum canadense*.

IVC Dynamics: Rocky sea cliffs and headlands experience high winds, salt spray, and occasional wave overwash during storms. Rocky sea cliffs experience erosion at the base by mechanical abrasion, and over the long term, can result in slumping. At higher latitudes, cold temperatures can cause frost-wedging of rock and eventual slumping (Emery and Kuhn 2013).

IVC Environment: Vegetation is exposed to wind, salt spray, fog, and direct sun. Soil development is minimal and limited to rock crevices where plants are rooted. Sites may also occur on thin soil, till.

DISTRIBUTION

IVC Geographic Range: This group ranges from central Maine east through the Canadian Maritimes.

IVC Nations: CA,US

IVC States/Provinces: ME, NH, NS, QC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3933 Eastern North American Coastal Cliff & Outcrop Alliance** [Eastern North American Coastal Cliff & Outcrop Alliance] [] This alliance encompasses sparsely vegetated cliffs and shoreline outcrops along the North Atlantic Coast, primarily northeast of Penobscot Bay (Maine). Common species include *Achillea millefolium, Campanula rotundifolia, Festuca rubra, Plantago maritima, Prenanthes trifoliolata*, and *Solidago sempervirens*.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: S.C. Gawler and A. Cutko (2010)

IVC Description Author: S.C. Gawler, L.A. Sneddon and D. Faber-Langendoen

IVC Description Date: 2015-05-06

IVC Acknowledgments: Sean Basquill

A3933 Eastern North American Coastal Cliff & Outcrop Alliance

[ ]

Eastern North American Coastal Cliff & Outcrop Alliance

Eastern North American Coastal Cliff & Outcrop

IVC Scientific Name: Eastern North American Coastal Cliff & Outcrop Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance encompasses sparsely vegetated cliffs and shoreline outcrops along the North Atlantic Coast, primarily northeast of Penobscot Bay (Maine). Common species include *Achillea millefolium, Campanula rotundifolia, Festuca rubra, Plantago maritima, Prenanthes trifoliolata*, and *Solidago sempervirens*. *Juniperus horizontalis* occurs in some locations and is indicative of the exposed coastal environment. *Morella pensylvanica* also occurs, and *Empetrum nigrum* may form mats where bedrock is more level. In many locations, subarctic lithophilic plant species occur; these include *Euphrasia randii, Iris setosa, Lomatogonium rotatum, Rhodiola rosea*, and *Sagina nodosa ssp. borealis*. From Cobscook Bay east, *Dasiphora fruticosa ssp. floribunda* is also characteristic. Settings range from steep cliffs to nearly flat expanses of bedrock, all influenced by salt spray.

IVC Dynamics: High winds and salt spray prevent establishment of taller shrubs or trees.

IVC Environment: Settings range from steep cliffs to nearly flat expanses of bedrock, all influenced by salt spray.

DISTRIBUTION

IVC Geographic Range: This alliance encompasses sparsely vegetated cliffs and shoreline outcrops along the North Atlantic Coast, primarily northeast of Penobscot Bay (Maine).

IVC Nations: CA,US

IVC States/Provinces: ME, NH, NS, QC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006510 *Morella pensylvanica - Empetrum nigrum* Dwarf-shrubland** [Northern Bayberry - Black Crowberry Dwarf-shrubland] []
  GNR. ME, NH, NS?, QC
- **CEGL006529 *Solidago sempervirens - (Rhodiola rosea) - Juniperus horizontalis* Sparse Vegetation** [Seaside Goldenrod - (Roseroot Stonecrop) - Creeping Juniper Sparse Vegetation] []
  GNR. ME, NH, NS

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: S.C. Gawler and A. Cutko (2010)

IVC Description Author: D. Faber-Langendoen and L. Sneddon

IVC Description Date: 2014-12-18

IVC Acknowledgments:

G493 North Atlantic Coastal Dune & Grassland

[ ]

IVC Colloquial Name: North Atlantic Coastal Dune & Grassland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group encompasses vegetation of sandy coastlines and barrier islands, ranging from northernmost North Carolina northward to southern Maine where extensive sandy coastlines are replaced by rocky coasts. A range of physiognomies may be present, from somewhat sparse herbaceous dune vegetation with *Ammophila breviligulata* diagnostic, to backdune shrublands, and shrub-herb patchworks on nearshore sandplains. Characteristic species (in different associations within the group) include

Ammophila breviligulata, Andropogon virginicus, Cenchrus tribuloides, Diodia teres, Hudsonia tomentosa, Morella pensylvanica, Panicum amarum, Panicum virgatum, Polygonella articulata, Schizachyrium littorale, Schizachyrium scoparium, and *Solidago sempervirens*, among others. Dominant ecological processes are those associated with the maritime environment, including frequent salt spray, wind exposure, saltwater overwash, and wind-transported sand movement that are severe enough to limit tree growth. Vegetation in this group includes grasslands and shrublands of foredunes and more stabilized backdunes, as well as sandplain grasslands and heathlands of the southern New England / New York coast. In Atlantic Canada, coastal sandplain grasslands can also occur with 10s to 100s of meters from the coast. Most of the dwarf dune heath is *Empetrum* spp.-dominated, but some stands feature *Corema conradii* and *Hudsonia tomentosa*.

IVC Dynamics: The environment of this group is one of the most dynamic in existence for terrestrial vegetation. Reworking of sand by storms or by slower eolian processes may completely change the local environment in a short time, altering the substrate that effectively removes existing vegetation and provides new habitat for establishment of different vegetation. Some plants, such as *Ammophila breviligulata* and *Hudsonia tomentosa*, are well-adapted to sand burial and can send new shoots above the sand surface. Many of these sites are fairly early in the process of primary succession on recent surfaces. Chronic salt spray is an ongoing stress. Overwash and extreme salt spray from storms are frequent disturbances. Vegetation interacts strongly with geologic processes; the presence of grass is an important factor in the development of new dunes. Alteration of dynamic processes, such as artificial enhancement of dunes by planting or sand fencing, can have drastic effects on this vegetation, causing large areas to succeed to woody dominance. Limited areas along the New York and New England coastline support maritime sandplains, where sand movement is more limited but exposure to the elements is still high. The sandplain grasslands and heathlands that develop in these habitats have been affected by a combination of exposure, fire, and land use. Prior to European settlement, these habitats are believed to have occurred in limited areas near the coast, where the effects of wind and salt spray prevented tree growth; there may also have been patches in the vicinity of Native American settlements, based on the prevalence of charcoal in some palynological cores. Some heathlands may have developed on severely disturbed soils following the abandonment of agriculture and grazing.

IVC Environment: *Climate:* Vegetation in this group is subject to a north-temperate maritime climate. Wind and salt spray are important factors in vegetation development. *Soil/substrate/hydrology:* This vegetation occurs on coastal strands and barrier islands, on sand dunes and sand flats. Strong salt spray is an important influence on vegetation in many parts. Overwash by seawater during storms is important on sand flats not protected by continuous dunes. Overwash caused by coastal storms can profoundly change the character of the vegetation where it overwhelms dunes and deposits new sand over existing vegetation. On dunes, present or recent sand movement is an important factor. On sandplains away from the immediate shore, but still subject to maritime influence, sand movement is less of a factor but wind and salt spray remain important. The combination of these factors prevents the dominance of woody vegetation. Most sites may be dry, but some areas are temporarily wet by freshwater from rainfall and the local water table. Soils are sandy, with little organic matter and little or no horizon development. Soils may be excessively drained on the higher dunes. Soils are low in nutrient-holding capacity, but aerosol input of sea salt provides a continuous source of nutrients.

DISTRIBUTION

IVC Geographic Range: This group ranges from northernmost North Carolina (EPA ecoregion 63d) and southeastern Virginia to southern Maine. The southern portion is a transition zone from around Kitty Hawk, North Carolina, to the Virginia-North Carolina border. The northern limit is around Merrymeeting Bay, Maine.

IVC Nations: CA,US

IVC States/Provinces: CT, DE, MA, MD, ME, NB, NC, NH, NJ, NS, NY, PE, QC?, RI, VA

IVC Omernik Ecoregions: 8.1.7.59:C, 8.5.1.63:C, 8.5.4.84:C

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4470 *Ammophila breviligulata - Schizachyrium littorale - Spartina patens* Dune Grassland** [American Beachgrass - Shore Little Bluestem - Saltmeadow Cordgrass Dune Grassland] []

This alliance consists of coastal dune grasslands of barrier islands and other coastal areas, ranging from northernmost North Carolina northward to southern Maine, where extensive sandy coastlines are replaced by rocky coasts.

- **A1062 *Hudsonia tomentosa* Dune Dwarf-shrubland Alliance** [Woolly Beach-heather Dune Dwarf-shrubland Alliance] []
  This alliance comprises associations that occur on northern Atlantic coastal dune settings, occasionally on more interior sand flats, usually in the low interdunal areas that do not intersect the water table, characterized by *Hudsonia tomentosa*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.A. Chrysler (1930)
IVC Description Author: S.C. Gawler and L.A. Sneddon
IVC Description Date: 2015-05-06
IVC Acknowledgments:

A4470 American Beachgrass - Shore Little Bluestem - Saltmeadow Cordgrass Dune Grassland

[ ]
Ammophila breviligulata - Schizachyrium littorale - Spartina patens Dune Grassland
North Atlantic Coastal Dune Grassland

IVC Scientific Name: *Ammophila breviligulata - Schizachyrium littorale - Spartina patens* Dune Grassland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of vegetation of barrier islands and other coastal areas, ranging from northernmost North Carolina northward to southern Maine (where extensive sandy coastlines are replaced by rocky coasts). A range of plant communities may be present, but natural vegetation is predominately herbaceous, with *Ammophila breviligulata, Panicum amarum, Solidago sempervirens*, and *Chamaesyce polygonifolia* diagnostic. Shrublands resulting from succession from grasslands may occur in limited areas. Both dune uplands and non-flooded wetland vegetation of interdunal swales are included. In the northern portion of the range, these swales are often characterized by *Vaccinium macrocarpon*, while south of New Jersey, swales are characterized by a variety of graminoids and forbs, usually including *Schoenoplectus pungens, Fimbristylis castanea, Fimbristylis caroliniana, Juncus* spp. and others. Other associates may include *Leymus mollis* ssp. *mollis, Lathyrus japonicus* in the northern portion of the range, and in the southern portion may include *Cakile edentula* ssp. *edentula, Cenchrus tribuloides, Chamaesyce polygonifolia, Diodia teres, Lechea maritima, Nuttallanthus canadensis, Oenothera humifusa, Panicum amarum* var. *amarulum, Panicum amarum* var. *amarum, Polygonella articulata, Salsola kali* ssp. *kali, Schizachyrium littorale, Solidago sempervirens, Spartina patens, Strophostyles helvola, Triplasis purpurea*, and *Vitis rotundifolia*. Sparse individuals of stunted *Morella pensylvanica* shrubs and seedlings may occur. Small patches of natural woodland may also be present in limited areas, especially in the northern part of the range. Dominant ecological processes are those associated with the maritime environment, including frequent salt spray, saltwater overwash, and sand movement.
IVC Dynamics: The environment of this system is one of the most dynamic in existence for terrestrial vegetation. Reworking of sand by storms or by slower eolian processes may completely change the local environment in a short time, changing one association to another. Many of these sites are fairly early in the process of primary succession on recent surfaces. Chronic salt spray is an ongoing stress. Overwash and extreme salt spray in storms are frequent disturbances. Vegetation interacts strongly with geologic processes; the presence of grass is an important factor in the development of new dunes. Alteration of dynamic processes, such as artificial enhancement of dunes by planting or sand fencing, can have drastic effects on this system, causing large areas to succeed to woody vegetation. Fire is probably not a major natural factor in this system, but may have been important locally. Most vegetation is too sparse to carry fire well.
IVC Environment: This system occurs on coastal strands and barrier islands, on sand dunes and sand flats. Strong salt spray is an important influence on vegetation in many parts. Overwash by sea water during storms is important on sand flats not protected by continuous dunes. On dunes, present or recent sand movement is an important factor. The combination of these factors prevents the dominance of woody vegetation. Sites may be either dry or saturated by freshwater from rainfall and the local water table. Areas connected to tidal influence are placed in other systems. Soils are sandy, with little organic matter and little or no horizon development. Soils may be excessively drained on the higher dunes. Soils are low in nutrient-holding capacity, but aerosol input of sea salt provides a continuous source of nutrients.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from northernmost North Carolina and southeastern Virginia to southern Maine.

IVC Nations: CA?,US
IVC States/Provinces: CT, DE, MA, MD, ME, NC, NH, NJ, NY, QC?, RI, VA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL006274 *Ammophila breviligulata - Lathyrus japonicus* Grassland** [American Beachgrass - Beach Pea Grassland] []
  G4? (1997-12-01) CT, DE?, MA, ME, NH, NY, RI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: R. Evans, M. Pyne, S.C. Gawler, and L.A. Sneddon
IVC Description Date:
IVC Acknowledgments:

A1062 Woolly Beach-heather Dune Dwarf-shrubland Alliance

[ ]
Hudsonia tomentosa Dune Dwarf-shrubland Alliance
Woolly Beach-heather Dune Dwarf-shrubland

IVC Scientific Name: *Hudsonia tomentosa* Dune Dwarf-shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance comprises associations that occur on northern Atlantic coastal dune settings, occasionally on more interior sand flats, usually in the low interdunal areas that do not intersect the water table. *Hudsonia tomentosa* is dominant, occurring as discrete patches that may coalesce into a dense mat on older, more stabilized dunes. A number of other shrubs, such as *Morella pensylvanica, Morella cerifera, Pinus taeda* saplings, and *Prunus maritima*, may occur but are low in abundance and cover. Herbaceous associates may include scattered individuals of *Ammophila breviligulata, Artemisia stelleriana, Chamaesyce polygonifolia, Cyperus grayi, Dichanthelium acuminatum, Diodia teres, Lechea maritima, Nuttallanthus canadensis, Oenothera humifusa, Panicum amarum var. amarulum, Panicum amarum var. amarum, Pseudognaphalium obtusifolium, Schizachyrium littorale*, and *Solidago sempervirens*. *Toxicodendron radicans* is a common vine. Scattered vines of *Smilax* are occasional. The unstable substrate is influenced by wind-deposited sand and supports no soil development; large patches of sparsely vegetated or unvegetated sand are common.
IVC Dynamics: The unstable substrate is influenced by wind-deposited sand, preventing accumulation of litter and subsequent soil development; large patches of sparsely vegetated or unvegetated sand are common. Sand burial stimulates new growth in *Hudsonia tomentosa*.
IVC Environment: This alliance is largely confined to maritime interdunes. This alliance occurs on well-drained sands of backdunes and interdunes.

DISTRIBUTION

IVC Geographic Range: This alliance occurs on the coast from Maine (possibly Quebec) to North Carolina.
IVC Nations: CA?,US
IVC States/Provinces: CT, DE, MA, MD, ME, NC, NH, NJ, NY, RI, VA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006143 *Hudsonia tomentosa - Arctostaphylos uva-ursi* Dwarf-shrubland** [Woolly Beach-heather - Bearberry Dwarf-shrubland] []
  G2G3 (2007-01-30) CT, MA, ME, NY, RI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: A.S. Weakley and L.E. Morse, in Faber-Langendoen et al. (2013)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G063 Northern Atlantic Acidic Sand Barrens Scrub & Grassland

[ ]

IVC Colloquial Name: Northern Atlantic Acidic Sand Barrens Scrub & Grassland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group encompasses vegetation dominated by shrubs and/or herbs, sometimes with scrubby *Pinus rigida*, on sandy, well-drained, nutrient-poor soils. It is often associated with pine barrens but lacks significant tree cover. *Pinus rigida* may form a shrub cover, often with one or more of the scrubby oaks *Quercus ilicifolia, Quercus prinoides*, or *Quercus marilandica*. Common shrubs include *Gaylussacia baccata* (and, near the coast, *Gaylussacia dumosa*), *Kalmia angustifolia, Vaccinium angustifolium, Vaccinium pallidum, Comptonia peregrina*, and *Viburnum dentatum*. The dwarf-shrubs *Corema conradii, Hudsonia tomentosa*, and *Arctostaphylos uva-ursi* are particularly diagnostic of this vegetation. Herb cover may be extensive in patches among the shrubs, with *Schizachyrium scoparium* the most abundant and characteristic grass. *Deschampsia flexuosa* and *Carex pensylvanica* or *Carex lucorum* are common but less abundant graminoids. Forbs (and creeping forblike shrubs) include *Ionactis linariifolius, Melampyrum lineare, Achillea millefolium, Lespedeza hirta, Lupinus perennis, Gaultheria procumbens, Polygonella articulata*, and *Epigaea repens*. *Pteridium aquilinum* is a common fern, and in seasonally wet spots *Lycopodiella appressa* may be characteristic. This group includes the well-known dwarf "pine plains" of the New Jersey Pine Barrens where *Pinus rigida* less than 1 m tall forms cover with scrub oaks and a mixture of dwarf-shrubs and herbs including *Arctostaphylos uva-ursi, Pyxidanthera barbulata, Leiophyllum buxifolium*, and *Helianthemum canadense*.
IVC Dynamics: This vegetation typically develops in high-frequency fire areas or in frost pockets within pine barrens. In some cases it has developed after catastrophic removal of forest or woodland vegetation.
IVC Environment: *Climate:* North-temperate. *Soil/substrate/hydrology:* This vegetation develops on well-drained, sandy, nutrient-poor soils. Most of the distribution is in glaciated territory where the typical occurrence is on glacial outwash plains, but it also occurs south of the glacial extent in the New Jersey Pine Barrens and at a few locations in eastern and central Pennsylvania.

DISTRIBUTION

IVC Geographic Range: This group occurs in the northeastern United States from New Jersey north to Maine and west to central Pennsylvania and New York.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, ME, NH, NJ, NS, NY, PA, RI, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G2G3 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type

across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4369 *Morella pensylvanica / Schizachyrium* spp. Heath & Grassland Alliance** [Northern Bayberry / Little Bluestem species Heath & Grassland Alliance] []
  This alliance comprises sandplain grasslands and shrublands of the northeastern Atlantic coast.
- **A3913 *Vaccinium angustifolium - Vaccinium pallidum* Sandy Heath Alliance** [Lowbush Blueberry - Blue Ridge Blueberry Sandy Heath Alliance] []
  This northeastern U.S. heath barrens alliance is dominated by low, usually heath shrubs on inland and coastal, dry, sandy, nutrient-poor soils.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: R.H. Whittaker (1979a)
IVC Description Author: S.C. Gawler
IVC Description Date: 2010-03-18
IVC Acknowledgments:

A4369 Northern Bayberry / Little Bluestem species Heath & Grassland Alliance

[ ]
Morella pensylvanica / Schizachyrium spp. Heath & Grassland Alliance
Coastal Sandplain Heath & Grassland

IVC Scientific Name: *Morella pensylvanica / Schizachyrium* spp. Heath & Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance comprises sandplain grasslands and shrublands of the northeastern Atlantic coast. It occurs on dry, nutrient-poor, sandy or gravelly soils of outwash plains influenced by offshore winds and salt spray. They are often associated with frost pockets on the landscape. Low shrubs occur with variable cover (up to 50%). Species can include *Morella pensylvanica, Gaylussacia baccata, Vaccinium angustifolium, Arctostaphylos uva-ursi, Comptonia peregrina, Quercus ilicifolia, Rhus copallinum*, and *Rubus flagellaris*. The herbaceous layer is very diverse; graminoids are dominant and tend to form a dense turf. Dominant species include *Schizachyrium littorale, Danthonia spicata, Deschampsia flexuosa, Carex pensylvanica*, and occasionally *Andropogon gerardii*. Other typical species include *Ionactis linariifolius, Solidago puberula, Lechea maritima, Antennaria plantaginifolia, Polygala polygama, Sericocarpus asteroides, Symphyotrichum dumosum, Helianthemum dumosum, Juncus greenei, Pityopsis falcata, Euthamia graminifolia, Euthamia caroliniana, Solidago nemoralis, Tephrosia virginiana, Dichanthelium scoparium, Liatris scariosa* var. *novae-angliae, Chrysopsis mariana, Aristida purpurascens, Asclepias tuberosa, Baptisia tinctoria, Viola pedata, Symphyotrichum concolor, Linum intercursum*, and others. Lichens are generally present, characteristically including *Cladonia rangiferina*.
IVC Dynamics: This type occurs on the landscape in association with sandplain heathlands, scrub oak shrublands, and coastal/maritime shrublands and forests. Motzkin et al. (2002) suggest that greater frost exposure on these xeric sites limits shrub canopy height and may contribute to slow establishment of trees. This vegetation may have become more common as a result of cutting and burning.
IVC Environment: This alliance occurs on dry, nutrient-poor, sandy/gravelly soils of outwash plains influenced by offshore winds and salt spray. It is often associated with frost pockets on the landscape.

DISTRIBUTION

IVC Geographic Range: This alliance comprises sandplain grasslands and shrublands of the northeastern Atlantic coast, from New Jersey to Maine.
IVC Nations: CA,US

IVC States/Provinces: CT?, MA, ME, NH, NJ, NS, NY, RI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021b)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3913 Lowbush Blueberry - Blue Ridge Blueberry Sandy Heath Alliance

[ ]
Vaccinium angustifolium - *Vaccinium pallidum* Sandy Heath Alliance
Blueberry Sandy Heath Barrens

IVC Scientific Name: *Vaccinium angustifolium* - *Vaccinium pallidum* Sandy Heath Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This northeastern U.S. heath barrens alliance of dry, sandy, nutrient-poor soils is dominated by low, usually heath shrubs such as *Gaylussacia baccata, Vaccinium angustifolium*, and *Vaccinium pallidum*, and other low shrubs such as *Arctostaphylos uva-ursi* and *Comptonia peregrina*. Characteristic herbs and forbs include *Carex lucorum, Carex pensylvanica, Ionactis linariifolius, Pteridium aquilinum, Schizachyrium scoparium*, and *Sericocarpus asteroides*.
IVC Dynamics: Where this vegetation arose from human activity, native tree cover has been eliminated, with subsequent regular management through burning and/or cutting. In presettlement times, this vegetation appears to have been maintained via a natural fire regime. This vegetation has been used extensively for blueberry production in certain locations; cover of *Vaccinium* spp. has been greatly enhanced by fire and herbicide use. This vegetation can also be found along some powerline rights-of-way where few or no herbicides are used. In maritime settings, wind, storms, and salt spray act to suppress tree establishment.
IVC Environment: This vegetation occupies well-drained to xeric sandy soils. It can occur inland as a result of clearing or burning, or in coastal settings where maritime influences such as wind, storms, and salt spray act to maintain the treeless condition.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from Maine discontinuously to Pennsylvania.
IVC Nations: CA,US
IVC States/Provinces: CT?, MA, ME, NH, NJ, NY, PA, RI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006426 *Vaccinium (angustifolium, myrtilloides, pallidum) - Cladonia rangiferina* Dwarf-shrubland** [(Lowbush Blueberry, Velvetleaf Huckleberry, Blue Ridge Blueberry) - Grey-green Reindeer Lichen Dwarf-shrubland] []
  GNR. ME, NY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: A.F. Hill (1923)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-09-26
IVC Acknowledgments:

G089 Great Lakes Dune

[ ]

IVC Colloquial Name: Great Lakes Dune
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group occurs along the Great Lakes shores region of the United States and Canada. It often occurs within dunal complexes but can also occur on coastal shorelines, on sandy former lake embayments, and sandplains. Component plant communities vary from sparsely vegetated to communities dominated by a combination of grasses, shrubs, and scattered trees, depending on the degree of sand deposition, sand erosion, and distance from the lake. Depositional areas, where Great Lakes beachgrass foredunes and coastal beaches are found, are dominated by *Ammophila breviligulata* (or in the eastern part of the range *Ammophila champlainensis*). Erosional areas, such as slacks in blowouts and dunefields, may be dominated by *Calamovilfa longifolia*, and stabilized areas by *Schizachyrium scoparium*. Low evergreen shrubs (*Arctostaphylos uva-ursi, Juniperus communis, Juniperus horizontalis*) occupy dune crests and also the ground layer in the savanna edge of dunes and sandplains. Deciduous shrubs are dominant in many areas and include *Prunus pumila, Salix cordata*, and *Salix myricoides*. *Populus deltoides* can form an open overstory canopy, while *Juniperus communis, Juniperus horizontalis, Arctostaphylos uva-ursi*, and *Koeleria macrantha* form a scattered ground layer along low dunefields and sandplains with more advanced plant succession that often follows the first open dunes and swales. Due to lakeshore proximity, heavy winds commonly affect this group.

IVC Dynamics: This group is influenced by wind deposition including active dune processes of wind-caused "blowouts" and subsequent restabilization. Environmental processes include sand deposition, sand erosion, and stabilization. Open forested beach ridges may support fire regimes characteristic of similar upland forest systems outside of these complexes. Due to proximity to lakeshores, heavy winds and resultant windthrow are common and changes in water levels and wave disturbances can affect this group.

IVC Environment: This group occurs on gently sloping beaches, sandy lake embayments, sandplains, and dunes with any aspect. Sites range from somewhat steep, west-facing dune summits and kame terraces to moderate to gentle north- and northwest-facing shoreline to flat to moderate west- and south-facing transverse dunes. Dunal blowouts also are contained within this group. Soils are rapidly drained sand. Surficial geology is lacustrine sand and gravel and coarse-textured glacial till.

DISTRIBUTION

IVC Geographic Range: This group occurs along the Great Lakes shores of the United States and Canada ranging from Wisconsin to Ontario and New York in the Great Lakes, and in isolated occurrences along the shores of Lake Champlain, Vermont.
IVC Nations: CA,US
IVC States/Provinces: IL, IN, MI, MN, NY, OH, ON, PA, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G3G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered

by the expert reviewers include: range moderately extensive, area of occupancy moderately low, long-term decline moderate, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3719 *Ammophila breviligulata - Juniperus* spp. Great Lakes Dune Grassland Alliance** [American Beachgrass - Juniper species Great Lakes Dune Grassland Alliance] []
  This alliance occurs along the Great Lakes shores region of the United States and Canada on stabilized foredunes and varies from sparsely vegetated, active dunes to communities dominated by grasses, shrubs, and trees.
- **A1493 *Populus deltoides* Dune Woodland Alliance** [Eastern Cottonwood Dune Woodland Alliance] []
  This alliance is found on dune systems in the Great Lakes region of the United States and Canada and is characterized by a very open canopy, ranging from 5-25%, with little subcanopy or shrub layer dominated by *Populus deltoides*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D.A. Albert (1995b)
IVC Description Author: S.E. Menard
IVC Description Date: 2015-05-05
IVC Acknowledgments:

A3719 American Beachgrass - Juniper species Great Lakes Dune Grassland Alliance

[ ]
Ammophila breviligulata - Juniperus spp. Great Lakes Dune Grassland Alliance
Great Lakes Dune Grassland

IVC Scientific Name: *Ammophila breviligulata - Juniperus* spp. Great Lakes Dune Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance occurs along the Great Lakes shores region of the United States and Canada on stabilized foredunes and in depositional, erosional areas such as slacks in blowouts. Component plant communities vary from sparsely vegetated, active dunes to communities dominated by grasses, shrubs, and trees, depending on the degree of sand deposition, sand erosion, and distance from the lake. Depositional areas, where Great Lakes beachgrass foredunes are found, are dominated by *Ammophila breviligulata* with erosional areas dominated by *Calamovilfa longifolia* and stabilized areas dominated by *Schizachyrium scoparium*. In dune fields and on the most stable dune ridges, low shrubs such as *Arctostaphylos uva-ursi, Juniperus communis, Juniperus horizontalis*, and *Hudsonia tomentosa* occupy dune crests, gently to moderately sloping dunes, and also the ground layer in the savanna edge of dunes; elsewhere, deciduous shrubs are dominant, including *Prunus pumila* and *Salix* spp. High winds, distance from the lake, and changing lake levels impact this alliance.
IVC Dynamics: High winds, distance from the lake, and changing lake levels impact this alliance along with sand deposition, sand erosion, and stabilization. Dynamic tension exists at the forest edge where trees invade dune fields, often creating wind-stressed savanna. When lake levels go down and beach and dune area increases lakeward, wind speed and sand abrasion decrease in the savanna edge, permitting forest development.
IVC Environment: This alliance is found on depositional areas, erosional areas such as slacks in blowouts. It also occurs on long flat-topped, windswept, stabilized foredunes, and low and midslope areas of dunes. Some stands contain a cryptobiotic crust on the soil.

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout dune areas of the Great Lakes region of the United States and Canada, ranging from the shores of southern Michigan in Illinois, and Indiana northward to the shores of other Great Lakes, such as Lake Superior in Wisconsin eastward to New York, including isolated occurrences along the shores of Lake Champlain, Vermont.
IVC Nations: CA,US
IVC States/Provinces: IL, IN, MI, MN, NY, OH, ON, PA, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005098** ***Ammophila breviligulata - (Schizachyrium scoparium)*** **Grassland** [American Beachgrass - (Little Bluestem) Grassland] []
  G3G5 (1996-10-03) IL, IN, MI, MN, NY, ON, PA, VT, WI
- **CEGL005064** ***Juniperus horizontalis - Arctostaphylos uva-ursi - Juniperus communis*** **Dune Dwarf-shrubland** [Creeping Juniper - Kinnikinnick - Common Juniper Dune Dwarf-shrubland] []
  G3G4 (2002-10-24) IL, IN?, MI, MN, ON, WI
- **CEGL002209** ***Leymus mollis - Artemisia campestris ssp. caudata - Lathyrus japonicus*** **Grassland** [American Dunegrass - Tailed Wormwood - Beach Pea Grassland] []
  GNR. ON
- **CEGL005075** ***Prunus pumila - (Ptelea trifoliata)*** **Dune Shrubland** [Sandcherry - (Common Hoptree) Dune Shrubland] []
  G2Q (1998-06-22) IL, IN, MI, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Chapman, D.A. Albert, and G.A. Reese (1989)
IVC Description Author: S. Menard
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A1493 Eastern Cottonwood Dune Woodland Alliance

[ ]
Populus deltoides Dune Woodland Alliance
Great Lakes Eastern Cottonwood Dune Woodland

IVC Scientific Name: *Populus deltoides* Dune Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found on dune systems in the Great Lakes region of the United States and Canada. The canopy is very open, ranging from 5-25%, with little subcanopy or shrub layer. *Populus deltoides* is the dominant species. *Juniperus virginiana* can often co-occur and may codominate some examples. The ground layer is dominated by exposed sand, with a scattered herbaceous layer. Typical associates include *Schizachyrium scoparium, Ammophila breviligulata, Sporobolus cryptandrus*, and *Poa compressa*.
IVC Dynamics: High winds and distance from the lake impact this alliance along with sand deposition, sand erosion, and stabilization.
IVC Environment: This alliance occurs in dune fields and on the most stable dune ridges.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the southern Great Lakes region, especially around Lake Erie and Lake Ontario, ranging from Ohio and Ontario east to Pennsylvania, New York, and Vermont.
IVC Nations: CA,US
IVC States/Provinces: IN, MI, NY, OH, ON, PA, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005119** ***Populus deltoides - (Juniperus virginiana)*** **Dune Woodland** [Eastern Cottonwood - (Eastern Red-cedar) Dune Woodland] []
  G1G2 (1998-06-22) IN, MI, NY, OH, ON, PA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: W.D. Bakowsky and H.T. Lee (1996)
IVC Description Author: S. Menard
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M059 Pacific Coastal Beach & Dune

Végétation des plages et des dunes de la côte du Pacifique

IVC Colloquial Name: Pacific Coastal Beach & Dune

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup consists of herbaceous and shrubby vegetation on temperate coastal sandy and cobble-on-sand beaches, beach dunes, and sand spits. Wetland dune swales are excluded. Herbaceous communities include salt-tolerant forb-dominated types with *Abronia latifolia, Achillea millefolium var. borealis, Cochlearia groenlandica, Equisetum variegatum, Honckenya peploides, Lathyrus japonicus var. maritimus, Mertensia maritima*, and grasslands dominated by *Leymus mollis, Leymus arenarius*, and/or *Festuca rubra*. Dwarf-shrub are dominated by *Empetrum nigrum, Ericameria ericoides, Lupinus chamissonis, Lupinus arboreus, Gaultheria shallon, Vaccinium ovatum, Myrica gale*, or *Salix* spp. Herbaceous species intermixed with dwarf-shrubs include *Lathyrus japonicus var. maritimus, Conioselinum chinense, Cornus suecica*, and *Cnidium cnidiifolium*. This macrogroup occurs along the Pacific coast from Mexico to Alaska, including the Aleutian Islands.

IVC Geographic Range: This macrogroup occurs on the immediate sandy coastline and sand dunes typically within 2 km of the coast, from the Aleutian Islands south along Alaska's central and southeastern coastline (including Kodiak and other islands), British Columbia, Washington, Oregon, California and possibly into Mexico.

IVC Nations: CA,MX,US

IVC States/Provinces: AK, BC, BCN, CA, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G498 North Pacific Maritime Dune & Coastal Beach []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G498 North Pacific Maritime Dune & Coastal Beach

[ ]

IVC Colloquial Name: North Pacific Maritime Dune & Coastal Beach

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group consists of herbaceous and shrubby vegetation on coastal sandy and cobble-on-sand beaches, beach dunes, and sand spits that occur along the Pacific coast from central California to Alaska, including coastlines on the Gulf of Alaska, the Aleutian Islands and further north, encompassing the arctic coastlines along the Bering Sea of western Alaska. Processes that define the group include sand and salt deposition, wind and water erosion, and overwash from storm surges. Soils are usually sandy and well-drained, though dune slacks may be poorly drained. Beaches and dunes are dominated by a mosaic of barren sands, herbaceous and scrub vegetation. This group includes dunes that may occur as much as 2 km inland which may or may not experience salt spray or storm surges. Patch size is small to moderate and often linear. Vegetation within this group includes grasslands, salt-tolerant forb communities and dwarf-shrublands. Salt-tolerant forb communities occur just above mean high tide and are dominated or codominated by *Abronia latifolia, Achillea millefolium var. borealis, Cochlearia groenlandica, Equisetum variegatum, Honckenya peploides, Lathyrus japonicus var. maritimus*, or *Mertensia maritima*. Grasslands communities occur on cobble beaches and on dunes that become higher and further away from beach and are dominated by *Leymus mollis, Leymus arenarius*, or *Festuca rubra* and may include other graminoids such as *Poa eminens, Hordeum brachyantherum*, and *Deschampsia beringensis*, and forbs such as *Abronia latifolia, Achillea millefolium var. borealis, Angelica*

genuflexa, Angelica lucida, Claytonia sibirica, Fragaria chiloensis, Heracleum maximum, Honckenya peploides, Lathyrus japonicus var. maritimus, Ligusticum scoticum, Lupinus nootkatensis, Potentilla villosa, and *Senecio pseudoarnica*. Dwarf-shrub communities occur on older dunes, usually behind grassland-dominated dunes and are dominated by *Empetrum nigrum, Gaultheria shallon, Vaccinium ovatum, Myrica gale*, or *Salix* spp. Herbaceous species intermixed with dwarf-shrubs include *Lathyrus japonicus var. maritimus, Conioselinum chinense, Cornus suecica*, and *Cnidium cnidiifolium*.

IVC Dynamics: Processes that define the group include sand deposition, salt spray, wind erosion, long-shore transport, dune formation, and water erosion such as overwash from storm surges. Herbaceous species stabilize the sand deposits (dunes, beaches), and the older deposits support dwarf-shrubs mixed with herbaceous species.

IVC Environment: This group occurs on sandy beaches and dunes, with and without salt spray, within 2 km of the coast. Soils are usually sandy and well-drained; some areas may have a cobble layer on top of sand. Environmental information is summarized from the following sources: Shacklette et al. (1969), Byrd (1984), Talbot et al. (1984, 2006), Viereck et al. (1992), Talbot and Talbot (1994), Shephard (1995), DeVelice et al. (1999), Boggs (2000), Boggs et al. (2003), Croll et al. (2005), and Fleming and Spencer (2007).

DISTRIBUTION

IVC Geographic Range: This group is restricted to the immediate sandy coastline (within 2 km) from the Alaskan western arctic coast and Aleutian Islands south through Alaska central and southeast coastline (including Kodiak and other islands), British Columbia, and Washington to the central Oregon coast (roughly Coos Bay) and continues to southern California, although with diminishing abundance due to development.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA, OR, WA

IVC Omernik Ecoregions: 6.2.11.78:P, 7.1.8.1:P

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: FJR: If this Group is truly alkaline fens (not intermediate), then, IMO, G3 is too high. I'd say G2 at best. We discussed this in our NCCN peer review meeting and I think we were all leaning to include intermediate with truly alkaline fens. If that is the case, G3 may be too high. Intermediate fens are abundant and many are in good condition. range moderately extensive, long-term decline high to very high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2066 *Poa macrantha - Leymus mollis - Festuca rubra* Sand Dune Grassland Alliance** [Seashore Bluegrass - American Dunegrass - Red Fescue Sand Dune Grassland Alliance] []
  This alliance represents upland, native herbaceous coastal sand dune communities found from central Washington south to Point Reyes near San Francisco characterized by the perennial grasses and forbs *Artemisia campestris, Festuca rubra, Leymus mollis, Lupinus littoralis*, and *Poa macrantha*.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2011)

IVC Description Author: G. Kittel

IVC Description Date: 2015-11-09

IVC Acknowledgments:

A2066 Seashore Bluegrass - American Dunegrass - Red Fescue Sand Dune Grassland Alliance

[ ]

Poa macrantha - Leymus mollis - Festuca rubra Sand Dune Grassland Alliance

Seashore Bluegrass - American Dunegrass - Red Fescue Sand Dune Grassland

IVC Scientific Name: *Poa macrantha - Leymus mollis - Festuca rubra* Sand Dune Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance represents upland, native herbaceous coastal sand dune communities found from central Washington south to Point Reyes near San Francisco. These herbaceous areas are characterized by the perennial grasses and forbs *Artemisia campestris, Festuca rubra, Leymus mollis, Lupinus littoralis*, and *Poa macrantha*. They are typically open and only slightly stabilizing their substrates, although the *Festuca rubra* communities can occur on partially stabilized dunes. They are restricted to coastal areas, generally within 2 km of the ocean, although some extensive dune areas such as those at Oregon Dunes National Recreation Area can extend inland up to 10 km. Elevation ranges from sea level to 200 m (0-600 feet). Aspect varies and the dunes can move seasonally. These grasslands occur on sand substrates, ranging from low foredunes along the ocean, coastal plains, and giant, often moving dunes.

IVC Dynamics: Stands in this open native, dune grassland alliance are generally seral, as they are rapidly invaded by *Arctostaphylos uva-ursi, Gaultheria shallon, Vaccinium ovatum*, and other typical dune shrubs, followed by *Pinus contorta var. contorta*. Dune processes, such as blowouts, create new habitat for this community. A combination of non-native sand-binding plant introductions and a significant reduction of sand input due to extensive dams on major rivers has altered natural conditions and threatened most examples of this alliance (Kagan et al. 2012).

IVC Environment: This alliance represents upland, native herbaceous coastal sand dune communities found from central Washington south to Point Reyes near San Francisco. They are restricted to coastal areas, generally within 2 km of the ocean, although some extensive dune areas such as at Oregon Dunes National Recreation Area can extend inland up to 10 km. Elevation ranges from sea level to 200 m (0-600 feet). Aspect varies and the dunes can move seasonally. Sand represents the substrate, ranging from low foredunes along the ocean, coastal plains, and giant, often moving dunes.

DISTRIBUTION

IVC Geographic Range: This alliance is found from central Washington south to Point Reyes near San Francisco, California.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001796 *Leymus mollis - Abronia latifolia* Grassland** [American Dunegrass - Coastal Sand-verbena Grassland] []
  G2? (2000-01-18) BC, CA, OR, WA
- **CEGL003368 *Carex macrocephala* Grassland** [Large-head Sedge Grassland] []
  G1G2 (2002-10-17) BC, OR, WA
- **CEGL003370 *Artemisia campestris - Festuca rubra / Racomitrium canescens* Grassland** [Field Sagewort - Red Fescue / Silver Moss Grassland] []
  G1 (2002-09-30) BC, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Kagan and G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz and M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

M058 Pacific Coastal Cliff & Bluff

Végétation des falaises et des escarpements de la côte du Pacifique

IVC Colloquial Name: Pacific Coastal Cliff & Bluff

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup occurs from the coast of the Aleutian Islands, south through California and possibly into Mexico. It consists of sparsely to moderately densely vegetated sea cliffs, scree slopes and rocky (but not cobble-on-sand) coastlines exposed to salt spray and ocean wave action. The vascular vegetation is typically composed of grasses and low shrubs, which are restricted to small cracks in rock, or slight, sheltered depressions. Lichen cover can be high. In the north, dominants include *Aruncus dioicus var. acuminatus, Campanula* spp., *Carex macrochaeta, Chamerion latifolium, Chamerion latifolium, Deschampsia* spp., *Fragaria chiloensis, Heuchera glabra, Lupinus nootkatensis, Phegopteris connectilis, Potentilla villosa, Prenanthes alata*, and *Rhodiola rosea*. On Haida Gwaii, *Festuca rubra* (native subspecies) is a common dominant of rocky headlands. Associated species include *Achillea millefolium, Conioselinum gmelinii, Fragaria chiloensis, Maianthemum dilatatum, Mimulus guttatus, Plantago maritima*, and *Potentilla villosa*. However, a wide range of other species may occur and may be dominant in some cases. *Picea sitchensis* tolerates salt spray and often occupies appropriate microsites on the rocky headlands. They are generally characterized by stunted growth, usually with branches from top to bottom of bole. Lichen cover can be high, but species are poorly described. Coastal bluffs further south, in the Georgia Strait and Puget Sound areas, also have *Festuca rubra* as a common dominant but associated species include *Bromus sitchensis, Grindelia integrifolia, Heuchera micrantha, Plectritis congesta, Sedum* spp., and *Zigadenus venenosus*, among others. Trees, if present, are stunted and/or windblown and may include *Arbutus menziesii, Quercus garryana*, or *Pseudotsuga menziesii*. *Juniperus maritima* may also occur. Shrubs are also infrequent and may include *Holodiscus discolor, Amelanchier alnifolia*, or *Mahonia aquifolium*. Mosses can be abundant, including species such as *Racomitrium canescens, Polytrichum piliferum*, or *Dicranum* spp. Introduced species are often found, e.g., *Aira* spp., *Cynosurus echinatus*, and *Cytisus scoparius*. Coastal bluff-scrub on the California coastal islands has *Artemisia californica, Coreopsis gigantea, Dudleya caespitosa, Dudleya greenei, Eriogonum arborescens, Eriogonum giganteum, Eriogonum grande var. rubescens, Isocoma menziesii, Malacothrix saxatilis var. implicata*, and many other species, including many endemic species. This types includes rocky headlands and sea cliffs. Frequent exposure to salt spray distinguishes this macrogroup from inland and alpine rock outcrops and cliffs. Substrates include glacial deposits along the Pacific Ocean. Exposure to waves, eroding and desiccating winds, slope failures, and sheet erosion create rocky substrates that are often unstable. Soils are thin and limited to fine materials blown into cracks and fissures in the bedrock substrate.

IVC Geographic Range: This macrogroup occurs from the coast of the Aleutian Islands, central and southern Alaska coast, British Columbia and Washington south to Mexico.

IVC Nations: CA,MX,US

IVC States/Provinces: AK, BC, BCN, CA, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G554 North Pacific Coastal Cliff & Bluff []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G554 North Pacific Coastal Cliff & Bluff

[ ]

IVC Colloquial Name: North Pacific Coastal Cliff & Bluff

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group consists of sparsely vegetated sea cliffs, scree slopes and rocky (but not cobble-on-sand) coastlines exposed to salt spray and ocean wave action. Vegetation is sparse and consists of grasses, lichens and low shrubs. Some cliff communities have been described from Alaska, including *Eurhynchium-Puccinellia-Caloplaca, Potentilla-Draba-Saxifraga, Xanthoria-Ramalina*, and *Leymus-Ligusticum-Anemone*. Other species include *Alnus viridis ssp. sinuata, Aruncus dioicus var. acuminatus, Campanula* spp., *Carex macrochaeta, Chamerion latifolium, Deschampsia* spp., *Heuchera glabra, Lupinus nootkatensis, Phegopteris connectilis, Potentilla villosa*, and *Rubus spectabilis*. Stunted *Picea sitchensis* may also occur. It occurs from the coast of the Aleutian Islands, central and southern Alaska coast, British Columbia and Washington south to central Oregon. Frequent exposure to salt spray distinguishes this group from inland and alpine rock outcrops and cliffs. Elevation is usually within 15 m (50 feet), but some cliffs are much higher. Salt spray, wind and wave erosion, desiccation, and slope failures create a harsh growing environment.

IVC Dynamics: Steep slopes, salt spray, wind and wave erosion, desiccation, and slope failures create a harsh growing environment.

IVC Environment: This group includes rocky headlands and sea cliffs. Sea cliffs typically occur below 50 m elevation; however, on some extremely exposed cliffs, such as those on outer headlands, salt spray from winter storms may affect cliffs at 100-200 m elevation. Vegetation cover is typically sparse to absent. Frequent exposure to salt spray distinguishes this group from inland and alpine rock outcrops and cliffs. In addition to salt spray, wind and wave erosion, desiccation, and slope failures create a harsh growing environment. Substrates include glacial deposits along the Pacific Ocean and associated marine and estuarine inlets. Exposure to waves, eroding and desiccating winds, slope failures, and sheet erosion create gravelly to rocky substrates that are often unstable. Soils are thin and limited to fine materials blown into cracks and fissures in the bedrock substrate. Environmental information was summarized from the following sources: Shacklette et al. (1969), Viereck et al. (1992), and Boggs et al. (2008b).

DISTRIBUTION

IVC Geographic Range: It occurs from the coast of the Aleutian Islands, central and southern Alaska coast, British Columbia and Washington south to central Oregon.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3455 *Eurhynchium* sp. - *Saxifraga* sp. - *Xanthoria* sp. Grassland Alliance** [Eurhynchium Moss species - Saxifrage species - Orange Wall Lichen species Grassland Alliance] []
  Herbaceous vegetation of the northern Pacific Coast and Alaska characterized by sparse to open herbaceous vegetation composed of variable coastal species.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2011)

IVC Description Author: G. Kittel

IVC Description Date: 2015-11-09

IVC Acknowledgments:

A3455 Eurhynchium Moss species - Saxifrage species - Orange Wall Lichen species Grassland Alliance

[ ]

Eurhynchium sp. - *Saxifraga* sp. - *Xanthoria* sp. Grassland Alliance

North Pacific Coastal Herb Cliff & Bluff

IVC Scientific Name: *Eurhynchium* sp. - *Saxifraga* sp. - *Xanthoria* sp. Grassland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Herbaceous vegetation of the northern Pacific Coast and Alaska characterized by sparse to open herbaceous vegetation composed of variable coastal species.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance occurs from the coast of the Aleutian Islands, central and southern Alaska coast, British Columbia and Washington south to central Oregon.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M. Hall, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-03-14

IVC Acknowledgments:

M511 North Pacific Coastal Ruderal Grassland & Shrubland

[ ]

IVC Colloquial Name: North Pacific Coastal Ruderal Grassland & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup occurs on coastal dunes and other sandy areas at sea level from California into British Columbia. Substrates are eolian sands without horizon development or accumulated organic material. These areas are dominated by non-native beachgrasses *Ammophila arenaria, Ammophila breviligulata*, and/or forbs and succulents such as *Cakile edentula, Cakile maritima, Carpobrotus* spp., and *Mesembryanthemum* spp. Dunes may also have introduced shrubs such as *Lupinus arboreus*.

IVC Geographic Range: This macrogroup ranges from California into British Columbia, Canada, and possibly southeastern Alaska. It may reach south into Mexico. No data or descriptive information are available from Mexico or Alaska.

IVC Nations: CA,MX?,US

IVC States/Provinces: BC, BCN?, CA, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G647 North Pacific Maritime Coastal Ruderal Dune []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M.G. Barbour and J. Major (1977)

IVC Description Author: G. Kittel

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G647 North Pacific Maritime Coastal Ruderal Dune

[ ]

IVC Colloquial Name: North Pacific Maritime Coastal Ruderal Dune

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group occurs on shifting sands of outer coastal dunes and other sandy areas at sea level from California to Washington and likely British Columbia. Substrates are entirely eolian sands without horizon development or accumulated organic material. These dunes systems are dominated by, and have been physically modified by, the introduction of non-native beachgrasses *Ammophila arenaria* and *Ammophila breviligulata* or restoration areas of planted *Leymus mollis ssp. mollis* (the native dunegrass). In addition, there are areas of introduced low shrubs such as *Mesembryanthemum* spp. and *Carpobrotus* spp. Several other non-native species may be dominant, but generally are limited to those that can invade and thrive in the shifting sand and salt-spray environment of the coastal sand dunes and sandsheets. With time the sand dunes become stabilize and vegetative cover increases, at which point other invasive species may appear. Other non-native species may also be present, including *Bromus diandrus, Cirsium vulgare, Poa pratensis*, and *Rumex acetosella*.

IVC Dynamics: *Ammophila arenaria* is native to Europe and was introduced to stabilize dunes in the 1880s. It rapidly naturalized and became dominant over much of the northern Pacific coast. Dense stands of *Ammophila* created steep foredunes, a landform which was rare in the region prior to 1930 (Weidemann 1966). Native foredune and strand communities are threatened by expansion of this vegetation (Barbour and Major 1977). This ruderal type is found in areas that have experienced recent soil disturbance, i.e., sandy soils that have been exposed to physical disturbances such as grazing (Rocchio et al. 2012). Restoration projects that have planted the West Coast native dunegrass *Leymus mollis ssp. mollis* will remain in this group until they successfully mature into a recognizable native plant association.

Cytisus scoparius is native to Spain and is found in waste places throughout the Pacific Northwest and in California in areas below 1000 m in elevation. This group specifically refers to stands on sand dunes along the immediate coast. Other environments where *Cytisus* spp. stands are found belong to another ruderal group, Southern Vancouverian Lowland Ruderal Grassland & Shrubland Group (G648).

IVC Environment: This group occupies coastal dunes and other sandy areas at sea level. Substrates are entirely eolian sands without horizon development or accumulated organic material. These dunes tend to be higher and more stabilized and therefore more abundant than historically due to the introduction of non-native dunegrass.

DISTRIBUTION

IVC Geographic Range: This group occurs on shifting sands of outer coastal dunes and other sandy areas at sea level from California to Washington and likely British Columbia.

IVC Nations: CA,MX?,US

IVC States/Provinces: BC?, BCN?, CA, OR, WA

IVC Omernik Ecoregions: 7.1.8.1:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2012-05-22)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2061 *Ammophila arenaria* Coastal Dunegrass Ruderal Grassland Alliance** [European Beachgrass Coastal Dunegrass Ruderal Grassland Alliance] []
  This alliance is dominated by non-native beachgrasses *Ammophila arenaria* and *Ammophila breviligulata* and occurs on shifting sands of outer coastal dunes and other sandy areas at sea level from California to Washington and likely British Columbia.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2012)

IVC Description Author: G. Kittel

IVC Description Date: 2015-05-20

IVC Acknowledgments:

A2061 European Beachgrass Coastal Dunegrass Ruderal Grassland Alliance

[ ]

Ammophila arenaria Coastal Dunegrass Ruderal Grassland Alliance

Ruderal Coastal Dunegrass Grassland

IVC Scientific Name: *Ammophila arenaria* Coastal Dunegrass Ruderal Grassland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance occurs on shifting sands of outer coastal dunes and other sandy areas at sea level from California to Washington and likely British Columbia. These dune systems have been modified by the introduction of non-native beachgrasses *Ammophila arenaria* and *Ammophila breviligulata* or are restoration areas of planted *Leymus mollis ssp. mollis* (native dunegrass). Additional non-native species such as *Holcus lanatus* can be codominant with the dunegrass. Other non-native species may also be present, including *Bromus diandrus, Cirsium vulgare, Poa pratensis*, and *Rumex acetosella*. Native herbaceous species that may be present but with low abundance include *Abronia latifolia, Cakile* spp., *Galium aparine, Lathyrus littoralis, Poa macrantha*, and *Pteridium aquilinum*. Sparsely scattered shrubs and trees may also occur, particularly near the landward edge, including *Arctostaphylos uva-ursi, Arctostaphylos columbiana, Gaultheria shallon, Ledum glandulosum, Lonicera involucrata, Pinus contorta, Rosa nutkana, Rubus ursinus*, and *Salix hookeriana*. Colonization of active sand dunes by introduced species or by restoration planting of native dunegrass has resulted in an increase in the area of stabilized dunes, in some cases more than the historic extent. Substrates are entirely eolian sands without horizon development or accumulated organic material.

IVC Dynamics: *Ammophila arenaria* is native to Europe and was introduced to stabilize dunes in the 1880s. It rapidly naturalized and became dominant over much of the northern Pacific Coast. Dense stands of *Ammophila* created steep foredunes, a landform which was rare in the region prior to 1930 (Wiedemann 1966). Native foredune and strand communities are threatened by expansion of this vegetation (Barbour and Major 1977). This ruderal type is found in areas that have experienced recent soil disturbance of sandy soils that have been exposed to physical disturbances such as grazing (Rocchio et al. 2012).

IVC Environment: This alliance occurs on shifting sands of outer coastal dunes at sea level from California to Washington and likely into British Columbia and possibly Baja California. The climate is strongly maritime with many cloudy or foggy days and mild temperatures. Onshore winds typically transport abundant salt spray and sand. Substrates are entirely eolian sands without horizon development or accumulated organic material.

DISTRIBUTION

IVC Geographic Range: This alliance occurs on shifting sands of outer coastal dunes and on disturbed sand deposits along shorelines from California to Washington and likely extends into British Columbia and possibly Baja California, Mexico.

IVC Nations: CA?,MX?,US

IVC States/Provinces: BC?, BCN?, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2012-05-22)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Kagan and G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-09-26

IVC Acknowledgments:

M402 North American Arctic Coastal Shore

Végétation des rivages côtiers des zones arctique et boréale de l'Amérique du Nord

IVC Colloquial Name: North American Arctic Coastal Shore

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This type occurs along the North American Arctic coastline and consists of stabilized coastal beaches and beach dunes. It also occurs on Arctic coastline sea cliffs, rocky headlands, and cobble beaches. Patch size is small to moderate and often linear. Two different physiognomic structures are found in the group: grasslands and dwarf-shrublands, as well as areas of bare sand or cobbles. Vegetation typically includes herbaceous species with varying degrees of tolerance for salt spray and wind abrasion. Salt-tolerant forb communities occur just above mean high tide and are dominated or codominated by *Cochlearia groenlandica, Achillea millefolium var. borealis, Honckenya peploides*, and/or *Mertensia maritima*. As dune height and distance from the ocean increase, sites are dominated by *Leymus mollis* communities that may include near-monocultures of *Leymus mollis* to more species-rich associations including *Leymus mollis, Lathyrus japonicus var. maritimus*, and *Poa eminens*. Older dunes support dwarf-shrubs (primarily *Empetrum nigrum*) mixed with herbaceous species which often grow in narrow stringers on the older beach ridges behind the *Leymus mollis* zone. On rocky cliff and cobble shores, a variety of species may occur depending on the level of salt exposure, steepness, aspect, and available microsites. Shrubs such as *Alnus viridis ssp. sinuata* or *Rubus spectabilis* may be present but usually account for less than 5% of the total vascular plant cover. Herbaceous cover is diverse and may include many of the following species: *Aruncus dioicus var. acuminatus, Campanula* spp., *Carex macrochaeta, Chamerion latifolium, Deschampsia* spp., *Heuchera glabra, Lupinus nootkatensis, Phegopteris connectilis, Potentilla villosa, Prenanthes alata*, and *Rhodiola rosea*. *Picea sitchensis* may also occupy these rocky headlands, and is characterized by somewhat stunted growth, usually with branches from top to bottom of bole. Epiphytic lichens are abundant in this macrogroup. Beaches are dry to mesic and typically sandy. Cobble beaches are associated with cliff and bluff systems or coarse-textured glacial deposits (i.e., coastal moraines). Beaches are often steep and feature distinct storm berms. These are typically high-energy environments exposed to wave action, wind, salt spray and storm swell. Cobble beaches may have a mixture of silts and sands below the surface (particularly in outwash plains), but the fine material is buried and not subjected to wind and water transport. Forbs, grasses, shrubs, and stunted trees establish on ledges and in cracks.

IVC Geographic Range: This type occurs along North America's Arctic coastline, from the Bristol Bay lowlands in southwestern Alaska to the North Slope on the Arctic Ocean, and northwestern Canada.

IVC Nations: CA,GL,RU?,US

IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G864 Arctic Coastal Dune & Beach []**
- **G611 Arctic Coastal Rocky Shore []**
- **G863 Arctic Inland Dune []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2015)

IVC Description Author: K. Boggs, M.E. Hall, G. Kittel, D. Faber-Langendoen

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G864 Arctic Coastal Dune & Beach

[ ]

IVC Colloquial Name: Arctic Coastal Dune & Beach

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is defined by grasslands developing on coastal beaches and dunes. *Leymus mollis* is the most constant and abundant species, with the salt-tolerant forbs *Honckenya peploides* and *Lathyrus japonicus var. maritimus* indicating the group. Bryophytes, lichens and woody species are generally absent. This group develops on coastal beaches above the elevation of maximum high tide as well as on dunes along mainland shores and barrier islands. Sites are not regularly inundated by tidal waters but are subject to salt spray and occasional inundation by storm surges. Soils are dry to mesic and typically sandy with small pebbles. Permafrost is present at depth along the Arctic Ocean coast but becomes discontinuous along the Bering Sea coast.

IVC Dynamics: Sites are not regularly inundated by tidal waters but are subject to salt spray and occasional inundation by storm surges. During snow- and ice-free periods, sites are fully exposed to coastal processes, especially erosion by wind and water. This is a ruderal type held in an early-successional state by frequent disturbance. Where beaches and dunes gain protection from tidal and storm surge effects (e.g., through rise above tidal range or other progradation of the seaward margin), the type may transition to the adjacent inland vegetation type.

IVC Environment: This group develops on coastal beaches above the reach of maximum high tide as well as on dunes along mainland shores and barrier islands. Soils are dry to mesic and typically sandy with small pebbles. Permafrost is present at depth along the Arctic Ocean mainland coast and remnant barrier islands but becomes discontinuous along the Bering Sea coast and is absent from constructed barrier islands. Among the barrier islands, vegetated dunes are more common on the remnant barrier islands, which represent relict coastline, than they are on constructed types, which are highly dynamic systems representing comparatively recent depositions of sediment.

DISTRIBUTION

IVC Geographic Range: This group occurs along Alaska's Arctic Ocean and Bering Sea coastlines, from the Bristol Bay lowlands in southwestern Alaska, across the Arctic Coastal Plain and likely extending to Canada and Greenland.

IVC Nations: CA,GL?,US

IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4297 Arctic Coastal Beach Alliance** [Arctic Coastal Beach Alliance] []
- **A4296 Arctic Coastal Dune Alliance** [Arctic Coastal Dune Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program

IVC Description Author: L. Flagstad and K. Boggs

IVC Description Date: 2016-01-19

IVC Acknowledgments: Mark Hall, Gwen Kittel

A4297 Arctic Coastal Beach Alliance

[ ]

Arctic Coastal Beach Alliance

Arctic Coastal Beach

IVC Scientific Name: Arctic Coastal Beach Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002572 Marine Cobble - Gravel Shore Sparse Vegetation** [Marine Cobble - Gravel Shore Sparse Vegetation] []
  GNR. MB, ON?
- **CEGL002580 Marine Sand Flats - Bars Sparse Vegetation** [Marine Sand Flats - Bars Sparse Vegetation] []
  GNR. MB

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4296 Arctic Coastal Dune Alliance

[ ]
Arctic Coastal Dune Alliance
Arctic Coastal Dune

IVC Scientific Name: Arctic Coastal Dune Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G611 Arctic Coastal Rocky Shore

[ ]

IVC Colloquial Name: Arctic Coastal Rocky Shore
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Sea cliffs, rocky headlands, and cobble beaches occur commonly along the North American Arctic coastline. Cobble beaches are associated with cliff and bluff systems or coarse-textured glacial deposits (i.e., coastal moraines). Beaches are often steep and feature distinct storm berms. These are typically high-energy environments exposed to wave action, wind, salt spray and storm swell. Cobble beaches may have a mixture of silts and sands below the surface (particularly in outwash plains), but the fine material is buried and not subjected to wind and water transport. Forbs, grasses, shrubs, and stunted trees establish on ledges and in cracks. Vegetation typically includes herbaceous species with varying degrees of tolerance for salt spray and wind abrasion.
IVC Dynamics: The primary disturbance is exposure to high wind, storm swells and salt spray.
IVC Environment: Sea cliffs, rocky headlands, and cobble beaches occur commonly along the Arctic coastline. Cobble beaches are associated with cliff and bluff systems or coarse-textured glacial deposits (i.e., coastal moraines). Beaches are often steep and feature distinct storm berms. These are typically high-energy environments exposed to wave action and storm swell. Cobble beaches may have a mixture of silts and sands below the surface (particularly in outwash plains), but the fine material is buried and not subjected to wind and water transport. Beach meadows may occupy well-drained stable portions of the upper beach.

DISTRIBUTION

IVC Geographic Range: This group occurs along the coast line of the Arctic region.
IVC Nations: CA,GL,US
IVC States/Provinces: AK, NT, NU, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2119 Arctic Coastal Cliff Alliance** [Arctic Coastal Cliff Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2011)
IVC Description Author: M.E. Hall
IVC Description Date: 2011-11-04
IVC Acknowledgments:

A2119 Arctic Coastal Cliff Alliance

[ ]
Arctic Coastal Cliff Alliance
Arctic Coastal Cliff

IVC Scientific Name: Arctic Coastal Cliff Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is tentatively proposed to represent arctic coastal cliffs.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, MB, NT, NU, ON, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002566 Subarctic Acidic Cliff Sparse Vegetation** [Subarctic Acidic Cliff Sparse Vegetation] []
  GNR. MB, ON
- **CEGL002567 Subarctic Marine Cliff Sparse Vegetation** [Subarctic Marine Cliff Sparse Vegetation] []
  GNR. MB, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G863 Arctic Inland Dune

[ ]

IVC Colloquial Name: Arctic Inland Dune
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL?,RU?,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:
- **A4294 Arctic Inland Forb & Grass Dune Alliance** [Arctic Inland Forb & Grass Dune Alliance] []
- **A4295 Arctic Inland Willow Shrub Dune Alliance** [Arctic Inland Willow Shrub Dune Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4294 Arctic Inland Forb & Grass Dune Alliance

[ ]
Arctic Inland Forb & Grass Dune Alliance
Arctic Inland Forb & Grass Dune

IVC Scientific Name: Arctic Inland Forb & Grass Dune Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4295 Arctic Inland Willow Shrub Dune Alliance

[ ]
Arctic Inland Willow Shrub Dune Alliance
Arctic Inland Willow Shrub Dune

IVC Scientific Name: Arctic Inland Willow Shrub Dune Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

2.C. Shrub & Herb Wetland

Shrub & Herb Wetland includes open bogs, fens, fresh and saltwater marshes, wet meadows and wet shrublands. The vegetation occurs from tropical to polar regions.

2.C.2. Temperate to Polar Bog & Fen

Temperate to Polar Bog & Fen includes temperate bogs and fens dominated by *Sphagnum* or brown mosses with ericaceous shrubs, graminoids, and low scrub tree growth forms, across the mid-latitudes of the Northern Hemisphere from 23° to 70°N, but is much less common in the southern mid-latitudes.

Macrogroups in Canada:

- **M876 North American Boreal & Subboreal Bog & Acidic Fen [Tourbières oligotrophes et minérotrophes acides, boréales et subboréales, de l'Amérique du Nord]**
  This boreal acidic bog and fen macrogroup extends across the boreal regions of North America, extending south into subboreal regions of the Pacific Maritimes and Rocky Mountains, the Great Lakes region and northeastern U.S. It is dominated by a continuous layer of *Sphagnum* mosses (sometimes submerged in bog pools), typically to depths exceeding 40 cm, as well as ericaceous dwarf-shrubs and thin-leaved graminoids. Scrub trees may be common, but trees are otherwise sparse.
- **M877 North American Boreal & Subboreal Alkaline Fen [Tourbières minérotrophes alcalines, boréales et subboréales, de l'Amérique du Nord]**
  This alkaline fen macrogroup occurs on peatlands across the boreal regions of North America, extending south into subboreal regions of the Rocky Mountains, Great Lakes, and northeastern and north-central U.S. *Sphagnum* peatmoss and ericaceous shrubs are patchy to absent and brown mosses, broad-leaved non-ericaceous shrubs, and thin-leaved graminoids are common.
- **M063 North Pacific Bog & Fen [Tourbières oligotrophes et tourbières minérotrophes du nord du Pacifique]**
  This macrogroup contains alkaline, acidic, and neutral peatlands (fens and bogs) that occur throughout southern Alaska (including the Aleutian Islands), maritime British Columbia, Washington, Oregon, and northern California. The vegetation is low-shrub or graminoid physiognomy, or stunted coastal Pacific tree species, and nearly all examples have a moss-dominated ground layer.

M876 North American Boreal & Subboreal Bog & Acidic Fen

Tourbières oligotrophes et minérotrophes acides, boréales et subboréales, de l'Amérique du Nord

IVC Colloquial Name: North American Boreal & Subboreal Bog & Acidic Fen

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup extends across the boreal regions of North America, extending south into subboreal regions of the Pacific Maritime and Rocky Mountain divisions, Great Lakes region and northeastern U.S. It occurs where sufficiently cold climatic conditions allow the rate of peat accumulation to exceed its decomposition, resulting in ombrotrophic and acidic peatlands in which the bog surface is raised above the water table. Stands are dominated by a continuous layer of *Sphagnum* mosses (sometimes submerged in bog pools) and ericaceous dwarf-shrubs and thin-leaved graminoids. Scrub trees <2 m may be common, but trees >5 m are <10% cover. Dominant shrubs include *Andromeda polifolia, Betula nana, Chamaedaphne calyculata, Empetrum nigrum, Gaultheria hispidula, Kalmia polifolia, Ledum palustre ssp. decumbens, Ledum groenlandicum, Rubus chamaemorus, Vaccinium macrocarpon* (east), *Vaccinium oxycoccos, Vaccinium vitis-idaea*, and *Vaccinium uliginosum*. The herbaceous layer is typically graminoid-dominated. Species include *Carex aquatilis, Carex lasiocarpa, Carex livida, Carex membranacea, Carex microglochin, Carex oligosperma* (more eastern), *Carex pauciflora, Carex pluriflora, Carex rariflora* (more eastern), *Carex rotundata* (more eastern), *Carex stylosa, Eriophorum angustifolium, Eriophorum brachyantherum*, and *Eriophorum virginicum*. Graminoids common to both poorer and richer fens include *Carex chordorrhiza, Carex lasiocarpa*, and *Carex limosa* Insectivorous plants are common features of bogs and may include *Drosera intermedia, Drosera rotundifolia, Sarracenia purpurea*, and *Utricularia intermedia*. Trees include *Picea mariana, Picea glauca*, and *Larix laricina*.

Acidic peatlands range from strictly ombrotrophic bog (isolated from groundwater, precipitation-fed) to weakly minerotrophic poor fen. The surface morphology of a bog may be more-or-less level, domed, or eccentric, but typically is above the water table. As peat accumulates, ridges may form, which can be relatively dry compared to the flat areas. Secondary bog pools (schlenke) may be present in the raised portions of the peatlands. Peat deposits are composed primarily of partially decomposed *Sphagnum* mosses, and depth of peat exceeds 40 cm, separating this from similar wetlands that are non-peatlands. The water table is at or just above the surface, although the surface of some bogs is raised above the surrounding terrain.

In the eastern U.S., acidic peatlands extend southward through the Great Lakes and Northeast. Here *Sphagnum* and shrub peatlands occur in basins south through the Laurentian-Acadian region down to near the glacial boundary in the northeastern and north-central U.S. Unlike the true raised bogs of boreal regions, the vegetation is not raised above the groundwater level. The nutrient-poor substrate and the reduced throughflow of water create oligotrophic conditions fostering the development of *Sphagnum* peat and the growth of peatland vegetation. Although these peatlands are often called bogs, in most cases they are technically "poor fens," as the vegetation remains in contact with the weakly minerotrophic (nutrient-poor) groundwater.

In the Atlantic region, from Labrador to Downeast Maine, acidic peatlands take a somewhat different form. In basins, they develop raised plateaus with undulating sedge and dwarf-shrub vegetation. *Trichophorum cespitosum* may form sedge lawns on the raised plateau. The system may also occur as "blanket bogs" over a sloping rocky substrate in extreme maritime settings; here, dwarf-shrubs and *Sphagnum* are the dominant cover. Species characteristic of this maritime setting include *Empetrum nigrum* and *Rubus chamaemorus*. Typical bog heaths such as *Gaylussacia dumosa, Gaylussacia baccata, Kalmia angustifolia, Kalmia polifolia*, and *Ledum groenlandicum* are also present. Morphological characteristics and certain coastal species distinguish these from more inland acidic peatlands.

IVC Geographic Range: This macrogroup extends across the western boreal regions of North America, extending south into subboreal regions of the Pacific Maritime and Rocky Mountain divisions. In the east, it extends across the boreal regions of central and eastern Canada and southward into adjacent subboreal and cold temperate regions of Canada and northeast and north-central United States. It occurs infrequently throughout the mountains of the Interior West, the Sky Islands of Arizona and high mountains and plateaus of Nevada and Utah, and the Rocky Mountains of Utah, Colorado, Wyoming, Montana, Idaho, and north into interior Canada, where it is known from interior (non-coastal) British Columbia, Alberta and Alaska. It is associated with the glacial terminus or stagnation zones, and interior from the Atlantic Coastal Plain. Maritime examples occur near the coast from eastern Maine (Mount Desert Island) eastward into the Canadian Maritimes and the coast of Labrador. Subboreal acidic peatlands are found in lower New England and southern New York, south to Pennsylvania, New Jersey and high montane regions of West Virginia, and westward to extreme southern Ontario, northern Ohio, northern Indiana and Illinois, Michigan and Wisconsin.

IVC Nations: CA,US

IVC States/Provinces: AB, AK, AZ, BC, CA, CO, CT, DE, IA, ID, IL, IN, KY, LB, MA, MB, MD, ME, MI, MN, MT, NB, ND, NF, NH, NJ, NS, NT, NU, NV, NY, OH, ON, OR, PA, PE?, QC, RI, SK, UT, VA, VT, WA, WI, WV, WY, YT

ADDITIONAL INFORMATION

CNVC Status: Standard
CNVC Classification Comments:
Groups in Canada:
- **G1172 Eastern North American Boreal-Subboreal Bog & Acidic Fen []**
- **G360 Western North American Boreal Bog & Acidic Fen []**
- **G515 Rocky Mountain Acidic Fen []**

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: National Wetlands Working Group (1988)
IVC Description Author: D. Faber-Langendoen, G. Kittel, M. Reid, M. Hall, K. Boggs, T. Boucher, S.C. Gawler
IVC Description Date: 2017-03-29
IVC Acknowledgments:

G1172 Eastern North American Boreal-Subboreal Bog & Acidic Fen

[ ]

IVC Colloquial Name: Eastern North American Boreal-Subboreal Bog & Acidic Fen
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These acidic peatlands are found in eastern boreal regions of central and eastern Canada and southward into adjacent subboreal regions of northeast and north-central United States. Climates are cold enough to allow the rate of peat accumulation to exceed its decomposition. They contain a continuous (>80% cover) layer of *Sphagnum* mosses (sometimes submerged in bog pools), to depths exceeding 40 cm, with ericaceous dwarf-shrubs and thin-leaved graminoids >25% cover. Scrub trees <2 m may be common, but trees >5 m are <10% cover. Acidic peatlands range from strictly ombrotrophic bog (isolated from groundwater, precipitation fed) to weakly minerotrophic poor fen. They occur in extensive areas of low flats, or develop in open or closed, relatively shallow basins with nutrient-poor and acidic conditions. Many occur in association with larger lakes or streams. Some occur as kettlehole fens (usually called kettlehole "bogs") associated with eskers or other glacial deposits. Poor fens often develop adjacent to open water and may form a floating mat over water. The surface morphology of a bog may be more-or-less level, domed, or eccentric, but typically is above the water table. As peat accumulates, ridges may form, which can be relatively dry compared to the flat areas. Secondary bog pools (schlenke) may be present in the raised portions of the peatlands. *Sphagnum* mosses play a key role in these systems because they trap base cations, causing the organic soils to acidify, and they retain moisture, thus slowing the decomposition rate and promoting peat accumulation. Species diversity is low. Dwarf-shrubs include *Chamaedaphne calyculata, Ledum groenlandicum, Kalmia polifolia, Andromeda polifolia, Vaccinium oxycoccos, Vaccinium macrocarpon*, occasionally *Gaultheria hispidula* or *Betula pumila*. Rarely, tall ericaceous shrubs such as *Vaccinium corymbosum* are dominant. Common sedges include *Carex oligosperma, Carex chordorrhiza, Carex magellanica* ssp*. irrigua, Carex limosa*, and *Carex lasiocarpa*. Other herbs include *Eriophorum vaginatum, Eriophorum virginicum, Drosera rotundifolia, Menyanthes trifoliata, Sarracenia purpurea*, and *Scheuchzeria palustris*. When present, stunted *Picea mariana* and *Larix laricina* are the dominant trees. Dominant mosses include *Sphagnum fuscum* and *Sphagnum magellanicum*, and less commonly *Sphagnum angustifolium. Pleurozium schreberi* can be common on raised mats.

In the Atlantic region, from Labrador to Downeast Maine, acidic peatlands take on somewhat different characteristics. In basins, they develop raised plateaus with undulating sedge and dwarf-shrub vegetation. *Trichophorum cespitosum* may form sedge lawns on the raised plateau. The system may also occur as "blanket bogs" over a sloping rocky substrate in extreme maritime settings; here, dwarf-shrubs and *Sphagnum* are the dominant cover. Species characteristic of this maritime setting include *Empetrum nigrum* and *Rubus chamaemorus*. Typical bog heaths such as *Kalmia angustifolia, Kalmia polifolia, Gaylussacia baccata, Ledum groenlandicum*, and *Gaylussacia dumosa* are also present. Morphological characteristics and certain coastal species distinguish these from more inland acidic peatlands.

IVC Dynamics:
IVC Environment: Bogs occur in both continental and maritime climates. In the northeastern United States, true bogs may reach their core southern limit in Maine and extreme northern New Hampshire and Vermont (Damman and French 1987, figure 3), though isolated occurrences are possible elsewhere.

Soil/substrate/hydrology: Sites are found in depressions, on acidic seepage slopes, with either ombrotrophic or weakly minerotrophic groundwater. They occur in a variety of landforms, including peat bog-lake systems (lake-fill bogs, moat bogs,

and pond border bogs), perched water peatland systems in valleys and depressions, peat bog-stream systems, and ombrogenous peatland systems, including raised bogs (Damman and French 1987). Sub-boreal bogs are often limited to specific geological and microclimate settings. They are found in colder regions, mostly in areas where glacial stagnation left coarse deposits and glacial depressions (many are "kettleholes"). The basins are generally closed, i.e., without inlets or outlets of surface water, and typically small in area. The nutrient-poor substrate and the reduced throughflow of water create oligotrophic conditions fostering the development of *Sphagnum* peat and the growth of peatland vegetation. These acidic peatlands occur in a variety of landforms, including peat bog-lake systems (lake-fill bogs, moat bogs, and pond border bogs), perched water-peatland systems in valleys and depressions, and more rarely, peat bog-stream systems.

DISTRIBUTION

IVC Geographic Range: These acidic peatlands are found in eastern boreal regions of central and eastern Canada and southward into adjacent sub-boreal regions of the northeastern and north-central United States, from Manitoba to Newfoundland and Labrador and south from Minnesota to Maine. They are associated with the glacial terminus or stagnation zones, and interior from the coastal plain, but rarely occur in the Laurentian-Acadian Division. Maritime examples occur near the coast from eastern Maine (Mount Desert Island) eastward into the Canadian Maritimes and the coast of Labrador. Subboreal bogs are found across the Laurentian-Acadian region from temperate regions of Atlantic Canada and Quebec, and from New England and southern New York, south to Pennsylvania, New Jersey, and high montane regions of West Virginia, and west to central Ontario, northern Ohio, Michigan, northern Indiana and Illinois, Wisconsin, and Minnesota.

IVC Nations: CA,US

IVC States/Provinces: CT, IA, IL, IN, KY, LB, MA, MB, MD, ME, MI, MN, NB, ND, NF, NH, NJ, NS, NY, OH, ON, PA, PE?, QC, RI, VA, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4398 *Chamaedaphne calyculata / Carex lasiocarpa* Poor Fen Alliance** [Leatherleaf / Woolly-fruit Sedge Poor Fen Alliance] []
  This poor fen alliance is found in the boreal and subboreal regions of eastern Canada and the midwestern and northeastern United States. The ground layer is dominated by ericaceous dwarf-shrubs (>25% cover), including *Chamaedaphne calyculata, Kalmia polifolia*, and *Andromeda polifolia* var. *glaucophylla,* with tree cover < 10%. *Carex lasiocarpa* and *Carex oligosperma* are typically dominant.
- **A4399 *Chamaedaphne calyculata / Carex oligosperma* Bog Alliance** [Leatherleaf / Few-seed Sedge Bog Alliance] []
  This bog alliance is found in the boreal regions of eastern Canada and the northern regions of the midwestern and northeastern United States. The ground layer is dominated by ericaceous dwarf-shrubs (>25% cover), including *Chamaedaphne calyculata, Kalmia polifolia*, and *Andromeda polifolia* var. *glaucophylla, or* graminoids, such as *Carex oligosperma.*
- **A3483 *Gaylussacia* spp. / *Trichophorum cespitosum / Sphagnum* spp. Maritime Acidic Graminoid Bog & Fen Alliance** [Huckleberry species / Tufted Bulrush / Peatmoss species Maritime Acidic Graminoid Bog & Fen Alliance] []
  This is a maritime dwarf-shrub bog community of the coastal region of northern New England and the adjacent maritime provinces of Canada. It has an ombrotrophic or weakly minerotrophic nutrient regime and occurs in both coastal bogs and as thin peat blankets over sloping bedrock. The moss layer is essentially continuous and forms the vegetation substrate. *Empetrum nigrum* and *Gaylussacia dumosa*, often with scattered *Juniperus communis*, are the diagnostic shrubs.
- **A3836 *Picea mariana / Sphagnum* spp. Eastern Boreal Treed Bog Alliance** [Black Spruce / Peatmoss species Eastern Boreal Treed Bog Alliance] []
  This acidic bog forest alliance is found in the Great Lakes and northeastern parts of the United States and the Ontario and Quebec boreal region in Canada (excluding Atlantic Boreal region). Tree canopy cover is variable but generally exceeds 10%. Stunted *Picea mariana* trees (<10 m tall) dominate the canopy, which may also include scattered *Larix laricina*. The dwarf-shrub layer is dominated by ericaceous species.
- **A3451 *Sphagnum rubellum - Rhynchospora alba* Moss Fen Alliance** [Red Peatmoss - White Beaksedge Moss Fen Alliance] []
  This open sphagnum moss lawn occurs in the northeastern and upper midwestern United States and adjacent Canada within floating or grounded peat mats in very acidic portions of open peatlands (pH <4) isolated from upland runoff or lakewater.

Sphagnum rubellum is strongly dominant; *Vaccinium oxycoccos* is prominent, despite its diminutive stature, and stunted *Chamaedaphne calyculata* is always present with variable cover.

- **A1018 *Vaccinium corymbosum* Peat Shrubland Alliance** [Highbush Blueberry Peat Shrubland Alliance] []
  This alliance, found in the eastern midwestern and northeastern United States and probably many of the eastern Canadian provinces, contains tall-shrub peat swamps dominated by *Vaccinium corymbosum* with ericaceous shrubs and peatmosses, little or no groundwater influence, and usually nutrient-poor and acidic water.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen and S.C. Gawler
IVC Description Date:
IVC Acknowledgments:

A4398 Leatherleaf / Woolly-fruit Sedge Poor Fen Alliance

[ ]
Chamaedaphne calyculata / *Carex lasiocarpa* Poor Fen Alliance
Eastern Boreal-Subboreal Poor Fen

IVC Scientific Name: *Chamaedaphne calyculata* / *Carex lasiocarpa* Poor Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance, found in eastern boreal Canada and north-central and northeastern United States, is composed of weakly minerotrophic peatlands dominated by graminoids or shrubs. *Carex lasiocarpa* and *Carex oligosperma* are typically dominant. Associated species include *Carex chordorrhiza, Eriophorum* spp., *Rhynchospora alba, Menyanthes trifoliata, Scheuchzeria palustris*, and *Trichophorum cespitosum. Sphagnum* spp. form a moderate to nearly continuous ground cover. Shrubs and small trees are common. *Betula pumila, Chamaedaphne calyculata, Larix laricina, Ledum groenlandicum, Picea mariana, Myrica gale*, and *Salix* spp. are the most abundant. Weakly minerotrophic indicators that distinguish this type from bog include *Betula pumila, Carex lasiocarpa, Carex chordorrha, Equisetum fluviatile, Menyanthes triofliata, Potentilla palustris,* and *Salix pedicellaris.* Stands are found in depressions on deep peat (>1 m) that receives minimal nutrient-rich runoff from surrounding uplands. The surface water is slightly to strongly acidic (typically pH is <5.5). The microtopography consists of low to intermediate hummocks and hollows.
IVC Dynamics:
IVC Environment: This alliance is found in depressions on deep peat (>1 m) that receives minimal nutrient-rich runoff from surrounding uplands. The surface water is slightly to strongly acidic (pH <5.5). The microtopography consists of low to intermediate hummocks and hollows.

DISTRIBUTION

IVC Geographic Range: This alliance is found widely in the boreal regions of eastern Canada, extending southward into the Great Lakes and northeastern United States. It ranges from possibly Minnesota and Michigan, northward in Canada from Ontario (possibly Manitoba) to Labrador, Newfoundland. and the Maritime Provinces. Distribution northward into the Canadian territories is also possible.
IVC Nations: CA,US
IVC States/Provinces: CT, IA, IL, MA, MB, ME, MI, MN, ND, NH, NJ, NY, OH, ON, PA, QC?, RI, VT, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006513** ***Chamaedaphne calyculata / Eriophorum virginicum / Sphagnum rubellum*** **Acidic Peatland** [Leatherleaf / Tawny Cottongrass / Red Peatmoss Acidic Peatland] []
  GNR. ME, NH, NY, VT
- **CEGL002547** ***(Carex oligosperma) - Carex lasiocarpa - (Carex michauxiana) - Rhynchospora alba*** **Fen** [(Few-seed Sedge) - Woolly-fruit Sedge - (Michaux's Sedge) - White Beaksedge Fen] []
  GNR. MB, ON
- **CEGL006524** ***Carex (oligosperma, exilis) - Chamaedaphne calyculata*** **Shrub Acidic Peatland** [(Few-seed Sedge, Coastal Sedge) - Leatherleaf Shrub Acidic Peatland] []
  GNR. ME, NH, NY, PA, VT
- **CEGL005277** ***Chamaedaphne calyculata / Carex oligosperma / Sphagnum*** **spp. Poor Fen** [Leatherleaf / Few-seed Sedge / Peatmoss species Poor Fen] []
  G5 (2000-03-29) MI, MN, ON, QC?, WI
- **CEGL002265** ***Carex lasiocarpa - Carex oligosperma / Sphagnum*** **spp. Poor Fen** [Woolly-fruit Sedge - Few-seed Sedge / Peatmoss species Poor Fen] []
  G3G4 (1996-10-03) MB, MI, MN, ND, ON, WI
- **CEGL006522** ***Carex limosa - Rhynchospora alba / Sphagnum pulchrum - Odontoschisma*** **sp. Fen** [Mud Sedge - White Beaksedge / Beautiful Peatmoss - Notchwort species Fen] []
  GNR. ME, NH, NY, VT
- **CEGL006008** ***Chamaedaphne calyculata - (Gaylussacia dumosa) - Decodon verticillatus / Woodwardia virginica*** **Acidic Peatland** [Leatherleaf - (Dwarf Huckleberry) - Swamp-loosestrife / Virginia Chainfern Acidic Peatland] []
  G5 (1997-12-01) CT, MA, ME, NH, NJ, NY, OH, ON, PA, RI
- **CEGL005226** ***Larix laricina / Chamaedaphne calyculata / Carex lasiocarpa*** **Poor Fen** [Tamarack / Leatherleaf / Woolly-fruit Sedge Poor Fen] []
  G4G5 (2000-03-24) MI, MN, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021c)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

A4399 Leatherleaf / Few-seed Sedge Bog Alliance

[ ]
Chamaedaphne calyculata / *Carex oligosperma* Bog Alliance
Eastern Boreal-Subboreal Bog

IVC Scientific Name: *Chamaedaphne calyculata* / *Carex oligosperma* Bog Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance, found in eastern boreal Canada and north-central and northeastern United States, is composed of largely ombrotrophic (rain-fed) peatlands dominated by graminoids. *Carex oligosperma* is a typical graminoid dominant. Associated species include *Carex chordorrhiza, Eriophorum* spp., *Rhynchospora alba, Scheuchzeria palustris*, and *Trichophorum cespitosum. Sphagnum* spp. form a moderate to nearly continuous ground cover. Shrubs and small trees are common. *Betula pumila, Chamaedaphne calyculata, Larix laricina, Ledum groenlandicum, Picea mariana*, and *Salix* spp. are the most abundant. These bogs do not have indicators of weakly minerotrophic indicators, such as *Betula pumila, Carex lasiocarpa, Carex chordorrha, Equisetum fluviatile, Menyanthes triofliata, Potentilla palustris, and Salix pedicellaris.* Stands are found in depressions on deep peat (>1 m) that receives minimal nutrient-rich runoff from surrounding uplands. The surface water is slightly to strongly acidic (typically pH is <4.5). The microtopography consists of low to intermediate hummocks and hollows.
IVC Dynamics:

IVC Environment: Stands are found in depressions on deep peat (>1 m) that receives minimal nutrient-rich runoff from surrounding uplands. The surface water is slightly to strongly acidic (typically pH is <4.5). The microtopography consists of low to intermediate hummocks and hollows.

DISTRIBUTION

IVC Geographic Range: This bog alliance is found widely in the boreal regions of eastern Canada, extending southward into the Great Lakes and northeastern United States. It ranges from possibly Minnesota and Michigan, northward in Canada from Ontario (possibly Manitoba) to Labrador, Newfoundland, and the Maritime Provinces. Distribution northward into the Canadian territories is also possible.

IVC Nations: CA,US

IVC States/Provinces: IL, IN, MB, ME, MI, MN, NH, NS, NY, OH, ON, PA, QC, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002525** ***Picea mariana / Ledum groenlandicum / Sphagnum*** **spp. Bog** [Black Spruce / Bog Labrador-tea / Peatmoss species Bog] []
  GNR. MB, MN, ON, WI
- **CEGL006514** ***Rhododendron canadense - Chamaedaphne calyculata*** **Acidic Peatland** [Rhodora - Leatherleaf Acidic Peatland] []
  GNR. ME, NH, NY, PA, VT
- **CEGL005278** ***Chamaedaphne calyculata - Ledum groenlandicum - Kalmia polifolia*** **Bog** [Leatherleaf - Bog Labrador-tea - Bog Laurel Bog] []
  G5 (2000-03-31) MB, MI, ON, WI
- **CEGL005092** ***Chamaedaphne calyculata / Carex oligosperma - Eriophorum virginicum*** **Bog** [Leatherleaf / Few-seed Sedge - Tawny Cottongrass Bog] []
  G3G4 (2002-10-24) IL, IN, MI, OH, ON, WI
- **CEGL005256** ***Carex oligosperma - Carex pauciflora - Eriophorum vaginatum / Sphagnum*** **spp. Bog** [Few-seed Sedge - Few-flower Sedge - Tussock Cottongrass / Peatmoss species Bog] []
  G4G5 (2000-03-06) ME, MI, MN, ON, QC, WI
- **CEGL002501** ***Carex lasiocarpa - Rhynchospora alba - Scheuchzeria palustris*** **Acidic Peatland** [Woolly-fruit Sedge - White Beaksedge - Rannoch-rush Acidic Peatland] []
  G2? (2000-03-24) MB, MN, ON?
- **CEGL006225** ***Kalmia angustifolia - Chamaedaphne calyculata - (Picea mariana) / Cladonia*** **spp. Acidic Peatland** [Sheep Laurel - Leatherleaf - (Black Spruce) / Cup Lichen species Acidic Peatland] []
  G5 (1997-12-01) ME, NS, NY, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021c)

IVC Description Author: D. Faber-Langendoen

IVC Description Date:

IVC Acknowledgments:

A3483 Huckleberry species / Tufted Bulrush / Peatmoss species Maritime Acidic Graminoid Bog & Fen Alliance

[ ]

Gaylussacia spp. / *Trichophorum cespitosum / Sphagnum* spp. Maritime Acidic Graminoid Bog & Fen Alliance

North Atlantic Maritime Dwarf-shrub Acidic Bog & Fen

IVC Scientific Name: *Gaylussacia* spp. / *Trichophorum cespitosum / Sphagnum* spp. Maritime Acidic Graminoid Bog & Fen Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This maritime bog community occurs in the coastal region of northern New England and the adjacent maritime provinces of Canada. It has an ombrotrophic nutrient regime and occurs in both coastal bogs and as thin peat blankets over sloping bedrock (3-10% slope); the two settings may be contiguous. Most known sites are within 24 km (15 miles) of the ocean. Peat accumulation isolates this community from groundwater influence. Conditions are highly acidic, with pH usually below 5.0. There are two subtypes of this alliance. The dwarf-shrub bog contains low or matted dwarf-shrubs, often less than 20 cm tall; trees and tall shrubs are absent or at most widely scattered. Herbs are likewise sparse. The bryoid layer is essentially continuous and forms the vegetation substrate. *Empetrum nigrum* and *Gaylussacia dumosa*, often with scattered *Juniperus communis*, are the diagnostic shrubs; other bog ericads are often present, such as *Chamaedaphne calyculata, Kalmia angustifolia, Kalmia polifolia, Ledum groenlandicum, Rhododendron canadense*, and *Vaccinium oxycoccos*. *Rubus chamaemorus* is often present. Characteristic herbs include *Calopogon tuberosus, Drosera rotundifolia, Eriophorum vaginatum var. spissum, Rhynchospora alba, Sarracenia purpurea, Solidago uliginosa, Trichophorum cespitosum*, and *Trientalis borealis*. The bryophyte layer is a carpet of primarily *Sphagnum fuscum*, with other species including *Sphagnum rubellum, Sphagnum affine, Sphagnum flavicomans, Sphagnum magellanicum*, and lichens of the genus *Cladonia* (*Cladonia rangiferina, Cladonia arbuscula*, and others). The dwarf-shrubs *Empetrum nigrum, Gaylussacia dumosa*, and *Rubus chamaemorus*, the sedge *Trichophorum cespitosum*, and the moss *Sphagnum affine* differentiate this subtype.

The sedge-dominated form occurs on the central, raised, relatively drier portions of maritime peatlands. The substrate is *Sphagnum* peat, usually saturated, and is acidic, around pH 4.5. Trees and shrubs are absent to sparse; dwarf-shrub cover is variable, from sparse to (rarely) over 80%. Even where dwarf-shrubs are abundant, however, their short stature allows the sedge lawns to visually dominate the vegetation. The bryoid layer is continuous. The peatland "lawns" are characterized by abundant *Trichophorum cespitosum*. Scattered low shrubs include *Gaylussacia dumosa* and *Chamaedaphne calyculata*, as well as occasional *Andromeda polifolia var. glaucophylla, Empetrum nigrum, Kalmia angustifolia, Kalmia polifolia, Ledum groenlandicum, Rubus chamaemorus*, and *Vaccinium oxycoccos*. Other associates include *Arethusa bulbosa, Calopogon tuberosus, Drosera rotundifolia, Eriophorum vaginatum var. spissum*, and *Solidago uliginosa*. The bryophyte layer is dominated by *Sphagnum rubellum* and *Sphagnum fuscum*, as well as *Sphagnum magellanicum* and *Sphagnum flavicomans*. Fruticose lichens characterize and distinguish this subtype and include *Cladonia rangiferina, Cladonia mitis, Cladonia arbuscula, Cladonia terrae-novae, Cladonia uncialis*, and *Cladonia crispata*. Diagnostic characters are its location in maritime peatlands and the relative abundance of *Trichophorum cespitosum* with other peatland plants. *Empetrum nigrum* and *Rubus chamaemorus* are also good indicators.

IVC Dynamics:

IVC Environment: This alliance has two subtypes. The dwarf-shrub bog subtype has an ombrotrophic nutrient regime and occurs in both coastal bogs and as thin peat blankets over sloping bedrock (3-10% slope); the two settings may be contiguous. Most known sites are within 24 km (15 miles) of the ocean. Peat accumulation isolates this community from groundwater influence. Conditions are highly acidic, with pH usually below 5.0. The open graminoid subtype is an ombrotrophic, coastal bog community of northern New England and adjacent Canadian maritime provinces that occurs on the central, raised, relatively drier portions of maritime peatlands. The substrate is *Sphagnum* peat, usually saturated, and is acidic, around pH 4.5.

DISTRIBUTION

IVC Geographic Range: This bog community occurs in the coastal region of northern New England and adjacent maritime provinces of Canada.

IVC Nations: CA,US

IVC States/Provinces: LB?, ME, NB?, NF?, NS, QC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006248 *Empetrum nigrum - Gaylussacia dumosa - Rubus chamaemorus / Sphagnum* spp. Acidic Peatland** [Black Crowberry - Dwarf Huckleberry - Cloudberry / Peatmoss species Acidic Peatland] []
  G3G5 (1997-12-01) LB?, ME, NB?, NF?, NS?, QC

- **CEGL006260 *Trichophorum cespitosum - Gaylussacia dumosa / Sphagnum (fuscum, rubellum, magellanicum)* Acidic Peatland** [Tufted Bulrush - Dwarf Huckleberry / (Brown Peatmoss, Red Peatmoss, Magellan's Peatmoss) Acidic Peatland] []
  GNR. ME, NB?, NS

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: E.D. Wells (1996)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3836 Black Spruce / Peatmoss species Eastern Boreal Treed Bog Alliance

[ ]
Picea mariana / Sphagnum spp. Eastern Boreal Treed Bog Alliance
Eastern Boreal-Subboreal Black Spruce Treed Bog

IVC Scientific Name: *Picea mariana / Sphagnum* spp. Eastern Boreal Treed Bog Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This bog forest alliance is found in the Great Lakes and northeastern parts of the United States and the Ontario and Quebec boreal region in Canada (excluding Atlantic boreal region). Tree canopy cover is variable but generally exceeds 10%. Stunted *Picea mariana* trees (<10 m tall) dominate the canopy, which may also include scattered *Larix laricina*. The dwarf-shrub layer is dominated by ericaceous species, such as *Andromeda polifolia var. glaucophylla, Chamaedaphne calyculata, Kalmia polifolia*, and *Ledum groenlandicum*. *Kalmia angustifolia* is common in the eastern part of the range (Quebec). Herbaceous species include *Carex trisperma* and *Eriophorum vaginatum*. *Sphagnum* mosses (usually *Sphagnum fuscum, Sphagnum angustifolium*, and *Sphagnum magellanicum*) cover the ground layer, with scattered feathermosses *Pleurozium schreberi, Dicranum undulatum*, and *Polytrichum strictum*. This alliance is best developed on the crests and upper slopes of raised bogs within bog complexes, but is also found in basin bogs and occasionally on shores (but isolated from groundwater contact). Here, sphagnum mosses can prevent most tree reproduction except that of *Picea mariana* and *Larix laricina*, which can reproduce by layering. The substrate consists of deep, fibric peat.
IVC Dynamics:
IVC Environment: This alliance is best developed on the crests and upper slopes of raised bogs within bog complexes, but is also found in basin bogs and occasionally on shores (but isolated from groundwater contact). Here, sphagnum mosses can prevent most tree reproduction except that of *Picea mariana* and *Larix laricina*, which can reproduce by layering. The substrate consists of deep, fibric peat.

DISTRIBUTION

IVC Geographic Range: This type is found in eastern Ontario and Quebec, and adjacent northern regions of the northeastern United States from the western Great Lakes to northern New England. It does not extend into the Atlantic boreal region.
IVC Nations: CA,US
IVC States/Provinces: CT, LB?, MA, MB, ME, MI, MN, NB, NF?, NH, NJ, NS?, NY, ON, PA, QC, RI, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005218 *Picea mariana* / *Chamaedaphne calyculata* / *Sphagnum* spp. Open Treed Bog** [Black Spruce / Leatherleaf / Peatmoss species Open Treed Bog] []
  G4G5 (2000-03-06) MI, MN, ON, QC, WI

- **CEGL002485 *Picea mariana / Ledum groenlandicum / Carex trisperma / Sphagnum* spp. Treed Bog** [Black Spruce / Bog Labrador-tea / Three-seeded Sedge / Peatmoss species Treed Bog] []
  G5 (1996-10-03) MB, ME, MI, MN, NB, NH, NY, ON, QC, VT, WI
- **CEGL006082 *Picea mariana / Rubus chamaemorus / Sphagnum* spp. Swamp Woodland** [Black Spruce / Cloudberry / Peatmoss species Swamp Woodland] []
  G3G5 (1997-12-01) LB?, ME, NB, NF?, NS?
- **CEGL006098 *Picea mariana / (Vaccinium corymbosum, Gaylussacia baccata) / Sphagnum* spp. Swamp Woodland** [Black Spruce / (Highbush Blueberry, Black Huckleberry) / Peatmoss species Swamp Woodland] []
  G3G5 (1997-12-01) CT, MA, ME, NB, NH, NJ, NY, PA, RI, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: A.G. Harris et al. (1996)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2015-06-09
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by K. Baldwin.

A3451 Red Peatmoss - White Beaksedge Moss Fen Alliance

[ ]
Sphagnum rubellum - Rhynchospora alba Moss Fen Alliance
Subboreal Graminoid-Moss Lawn Fen

IVC Scientific Name: *Sphagnum rubellum - Rhynchospora alba* Moss Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This open sphagnum moss lawn occurs within floating or grounded peat mats in very acidic portions of open peatlands (pH <4) isolated from upland runoff or lakewater. *Sphagnum rubellum* is strongly dominant. *Vaccinium oxycoccos* is prominent, despite its diminutive stature. Stunted *Chamaedaphne calyculata* is always present with variable cover. Additional dwarf-shrubs can include *Andromeda polifolia var. glaucophylla, Kalmia angustifolia, Kalmia polifolia, Vaccinium macrocarpon*, and occasionally *Gaylussacia dumosa* near the coast. Herbaceous species often include *Drosera intermedia, Drosera rotundifolia, Eriophorum virginicum, Juncus pelocarpus, Rhynchospora alba, Sarracenia purpurea, Utricularia cornuta, Xyris montana*, and occasionally *Eriophorum vaginatum var. spissum*.
IVC Dynamics:
IVC Environment: This moss lawn occurs in oligotrophic kettleholes and other peatland basins that are isolated from upland runoff or open water. The pH is usually <4.0. Peat is poorly decomposed in the upper 0.5 m.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the northeastern U.S. and is possible in the Midwest and adjacent eastern temperate Canada. It ranges from southern Maine to Virginia.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, ME, NH, NY, PA, RI, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen and L. Sneddon, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A1018 Highbush Blueberry Peat Shrubland Alliance

[ ]
Vaccinium corymbosum Peat Shrubland Alliance
Highbush Blueberry Peat Shrubland

IVC Scientific Name: *Vaccinium corymbosum* Peat Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance, found in the eastern midwestern and northeastern United States and probably many of the eastern Canadian provinces, contains tall-shrub swamps dominated by *Vaccinium corymbosum*. This tall-shrub bog thicket occurs on oligotrophic to weakly minerotrophic peat soils, commonly as a border thicket around more open dwarf heath shrub peatlands or within small, isolated basins. Significant seasonal water level fluctuation can occur, especially in isolated basins without inlet or outlet streams. A tall-shrub layer is characterized by abundant *Vaccinium corymbosum*, with *Chamaedaphne calyculata, Gaylussacia baccata, Kalmia angustifolia, Lyonia ligustrina, Ilex mucronata*, and *Rhododendron canadense* in more northern or cooler microclimates, and *Ilex verticillata* and *Rhododendron viscosum* in the south. In locally wetter areas, *Cephalanthus occidentalis* or *Decodon verticillatus* can occur. Coastal occurrences may have additional shrub species such as *Eubotrys racemosa, Clethra alnifolia*, and *Gaylussacia dumosa*. Sparse, scattered trees may occur, including *Acer rubrum, Betula populifolia, Larix laricina, Nyssa sylvatica, Picea mariana, Pinus rigida*, or *Pinus strobus*, with species dependent on environmental setting. The herbaceous layer tends to be sparse, although can be locally abundant. Common herbs include *Carex trisperma, Maianthemum trifolium, Osmunda cinnamomea, Sarracenia purpurea, Thelypteris palustris, Triadenum virginicum*, and *Woodwardia virginica*. *Sphagnum* mosses blanket well-developed hummocks and hollows, including *Sphagnum capillifolium, Sphagnum centrale, Sphagnum fimbriatum, Sphagnum fuscum, Sphagnum magellanicum*, and *Sphagnum rubellum*. These tall shrublands can occur at margins of kettles in glaciated regions, and in basins or at the heads of streams throughout the range. Soils are usually deep peats or mucks, and the water is often acidic.
IVC Dynamics:
IVC Environment: These tall shrublands can occur at margins of kettles in glaciated regions, and in basins or at the heads of streams throughout the range. Soils are usually deep peats or mucks and the water is often acidic.

DISTRIBUTION

IVC Geographic Range: This alliance is found from New Hampshire to West Virginia and west to Ohio, and Ontario, Canada, and probably other eastern provinces. This alliance may also be found in Michigan.
IVC Nations: CA,US
IVC States/Provinces: CT, IN, MA, MD, ME, MI, NH, NJ, NY, OH, ON, PA, RI, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005085 *Vaccinium corymbosum - Gaylussacia baccata - Aronia melanocarpa / Calla palustris* Acidic Peatland** [Highbush Blueberry - Black Huckleberry - Black Chokeberry / Water Arum Acidic Peatland] []
  G2G3 (2000-03-27) IN, MI, OH, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: G.J. Edinger et al. (2002)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G360 Western North American Boreal Bog & Acidic Fen

[ ]

IVC Colloquial Name: Western North American Boreal Bog & Acidic Fen
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group extends across the western boreal regions of North America, extending south into subboreal regions of the Pacific Maritime and Rocky Mountain divisions. It occurs in wet depressions and old lake basins. Occurrences form where the rate of peat accumulation exceeds its decomposition, resulting in ombrotrophic and acidic peatlands in which the bog surface is raised above the water table. Patch size is small to large. These are primarily depressional wetlands, and secondary bog pools may also be present. This group may be tree- or shrub-dominated or dwarf-shrub/herbaceous. Trees may be stunted and dwarfed. Trees are dense or scattered, with common species including *Picea mariana, Picea glauca*, and *Larix laricina*. Dominant shrubs include *Betula nana, Ledum palustre ssp. decumbens, Ledum groenlandicum, Andromeda polifolia, Kalmia polifolia, Chamaedaphne calyculata, Empetrum nigrum, Rubus chamaemorus, Vaccinium oxycoccos, Vaccinium vitis-idaea*, and *Vaccinium uliginosum*. The herbaceous layer is typically graminoid-dominated. Species include *Carex chordorrhiza, Carex lasiocarpa, Carex limosa, Carex livida, Carex membranacea, Carex microglochin, Carex pauciflora, Carex pluriflora, Carex rariflora* (more eastern), *Carex rotundata* (more eastern), *Carex stylosa, Eriophorum brachyantherum*, and *Eriophorum angustifolium*.

IVC Dynamics: In boreal wetlands the general successional trend is from marsh to fen to treed bog; however, succession is not necessarily directional, and environmental conditions, such as nutrient content and abundance of groundwater, may prevent fens from developing into bogs (Zoltai et al. 1988). Succession begins in shallow ponds or low-lying wetlands formed by processes such as glacial recession and floodplain dynamics (oxbows) or thermokarst. An organic root mat typically develops and is either anchored to the mineral soil or floating on water such as a pond's edge. Over time, peat-forming mosses and sedges may fill in the basin. As the peat layer develops, low and/or dwarf-shrubs become established. Dwarf-trees may establish on the well-developed peat and also around the margin of the peatland.

Many peatlands on the Kenai Lowland formed in kettles after remnant glacial ice melted. In this region there is a trend toward peatlands drying and ponds shrinking and filling in.

Permafrost degradation leading to collapse scars and thaw ponds is common in boreal Alaska, and studies from the Tanana Flats show areas of widespread degradation. Thaw ponds form when ice-rich permafrost degrades and collapses forming a basin. Aquatic plants rapidly colonize the pond. Over time, marsh plants and sphagnum moss invade creating peatland conditions. This trend is leading to widespread ecosystem conversion in the Tanana Flats (Jorgenson et al. 2001b). If a collapse scar is isolated, succession follows a bog development model, whereas in an open hydrologic setting, succession follows a fen development model. Pond systems may become connected as adjacent permafrost thaws.

IVC Environment: This group extends across the western boreal regions of North America, extending south into sub-boreal regions of the Pacific Maritime and Rocky Mountain divisions. Sites are generally flat to gently sloping terrain, on slopes up to 8°. Occurrences form where the rate of peat accumulation exceeds its decomposition, resulting in ombrotrophic and acidic peatlands in which the bog surface is raised above the water table. Patch size is small to large. These are primarily depressional wetlands, and secondary bog pools may also be present. Soils are poorly-drained and acidic, often with a well-developed peat layer. Permafrost is generally present and may form permafrost plateaus supporting the system in boreal Alaska but is generally absent in the boreal transition region.

DISTRIBUTION

IVC Geographic Range: This group extends across the western boreal regions of North America, extending south into sub-boreal regions of the Pacific Maritime and Rocky Mountain divisions.

IVC Nations: CA,US

IVC States/Provinces: AB, AK, BC, ID, MB, MT, NT, NU, SK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned

by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4300 *Betula nana* Poor Fen Alliance** [Dwarf Birch Poor Fen Alliance] []
- **A4299 *Carex chordorrhiza - Carex aquatilis - Carex limosa* Poor Fen Alliance** [Creeping Sedge - Water Sedge - Mud Sedge Poor Fen Alliance] []
- **A4298 *Picea mariana / Sphagnum* spp. Western Boreal Scrub Bog Alliance** [Black Spruce / Peatmoss species Western Boreal Scrub Bog Alliance] []
- **A3448 *Vaccinium oxycoccos - Andromeda polifolia / Sphagnum* spp. Shrub Bog Alliance** [Small Cranberry - Bog-rosemary / Peatmoss species Shrub Bog Alliance] []
  This bog and poor fen acidic peatland alliance occurs in the western North American boreal region from Alaska to central Canada. The vegetation is dominated by low ericaceous shrubs, including *Betula glandulosa, Chamaedaphne calyculata, Empetrum nigrum, Kalmia polifolia, Ledum groenlandicum, Ledum palustre ssp. decumbens, Vaccinium oxycoccos*, and *Vaccinium uliginosum*, with patches of graminoids and bryophyte lawns.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, M. Reid, M. Hall, K. Boggs, T. Boucher, D. Faber-Langendoen, in Faber-Langendoen et al. (2011)
IVC Description Author: M.E. Hall and D. Faber-Langendoen
IVC Description Date: 2013-06-06
IVC Acknowledgments:

A4300 Dwarf Birch Poor Fen Alliance

[ ]
Betula nana Poor Fen Alliance
Western Boreal Dwarf Birch Poor Fen

IVC Scientific Name: *Betula nana* Poor Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4299 Creeping Sedge - Water Sedge - Mud Sedge Poor Fen Alliance

[ ]
Carex chordorrhiza - Carex aquatilis - Carex limosa Poor Fen Alliance
Western Boreal Sedge Poor Fen

IVC Scientific Name: *Carex chordorrhiza - Carex aquatilis - Carex limosa* Poor Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4298 Black Spruce / Peatmoss species Western Boreal Scrub Bog Alliance

[ ]
Picea mariana / Sphagnum spp. Western Boreal Scrub Bog Alliance
Western Boreal Conifer Scrub Bog

IVC Scientific Name: *Picea mariana / Sphagnum* spp. Western Boreal Scrub Bog Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3448 Small Cranberry - Bog-rosemary / Peatmoss species Shrub Bog Alliance

[ ]

Vaccinium oxycoccos - Andromeda polifolia / Sphagnum spp. Shrub Bog Alliance

Western Boreal Ericaceous Shrub Bog

IVC Scientific Name: *Vaccinium oxycoccos - Andromeda polifolia / Sphagnum* spp. Shrub Bog Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This bog and poor fen acidic peatland occurs in the boreal and boreal transition regions of western North America. The vegetation is dominated by low ericaceous shrubs, including *Betula glandulosa, Chamaedaphne calyculata, Empetrum nigrum, Kalmia polifolia, Ledum groenlandicum, Ledum palustre ssp. decumbens, Rubus chamaemorus, Vaccinium oxycoccos*, and *Vaccinium uliginosum*, along with patches of graminoids and bryophyte lawns. Sedge species include *Carex chordorrhiza, Carex lasiocarpa, Carex limosa, Carex livida, Carex membranacea, Carex microglochin, Carex pluriflora, Carex pauciflora, Carex rariflora, Carex rotundata, Carex stylosa, Eriophorum brachyantherum*, and *Eriophorum angustifolium*. *Sphagnum* species are characteristic, including *Sphagnum capillifolium, Sphagnum magellanicum, Sphagnum fuscum, Sphagnum papillosum*, and *Sphagnum cuspidatum*. Conifers sometimes occur (*Picea mariana* or *Larix laricina*). In this acidic peatland there is little to no groundwater inputs, and there are thick (>40 cm) peat deposits. Permafrost processes may also occur. This peatland forms where the rate of sphagnum peat accumulation exceeds its decomposition, resulting in ombrotrophic and acidic peatlands in which, under the most acidic conditions, the peat surface is raised above the water table (i.e., a raised bog). These peatlands are typically formed as lake-filled basins or depressions. The surface morphology of the peatland may be more-or-less level, domed, or eccentric. Secondary bog pools may be present. While the raised portion defines these bogs, boreal fen systems may occupy some portion of the same basin, due to localized groundwater input.

IVC Dynamics:

IVC Environment: In this acidic peatland there is little to no groundwater inputs, and there are thick (>40 cm) peat deposits. Permafrost processes may also occur. This peatland forms where the rate of sphagnum peat accumulation exceeds its

decomposition, resulting in ombrotrophic and acidic peatlands in which, under the most acidic conditions, the peat surface is raised above the water table (i.e., a raised bog). These peatlands are typically formed as lake-filled basins or depressions. The surface morphology of the peatland may be more-or-less level, domed, or eccentric. Secondary bog pools may be present. While the raised portion defines these bogs, boreal fen systems may occupy some portion of the same basin, due to localized groundwater input.

DISTRIBUTION

IVC Geographic Range: This bog and poor fen acidic peatland alliance occurs in the boreal and boreal transition regions of western North American from Alaska to central Canada.
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G515 Rocky Mountain Acidic Fen

[ ]

IVC Colloquial Name: Rocky Mountain Acidic Fen
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group occurs infrequently throughout the Rocky Mountains from Colorado north into Canada. Fens usually occur as a mosaic of several plant associations dominated by *Carex aquatilis, Carex livida, Carex lasiocarpa, Carex limosa, Dulichium arundinaceum, Ledum glandulosum*, and *Trichophorum cespitosum*. The surrounding landscape may be ringed with other wetland systems, e.g., riparian shrublands, or a variety of upland systems from grasslands to forests. This group is confined to specific environments defined by groundwater discharge, soil chemistry, and peat accumulation of at least 40 cm. Fens form at low points in the landscape or on slopes where groundwater intercepts the soil surface. Groundwater inflows maintain a fairly constant water level year-round, with water at or near the surface most of the time. Acidic fens are restricted to areas where bedrock is noncalcareous (e.g., sandstone, basalt, quartzite, granite). Constant high water levels and cold winter temperatures lead to accumulation of organic material. In addition to peat accumulation and perennially saturated soils, soil chemistry is acidic and nutrients are low. Iron fens are the exception where the pH is low (acidic) but nutrients are high.
IVC Dynamics: Mountain fens act as natural filters cleaning ground and surface water. Fens also act as sponges by absorbing heavy precipitation, slowly releasing it downstream, minimizing erosion and recharging groundwater systems (Windell et al. 1986). The persistent groundwater and cold temperatures allow organic matter to accumulate (forming peat) which allows classification of wetlands within this group as fens. Fens produce peat that accumulates at the rate of 20 to 30 cm (8-11 inches) per 1000 years, making peatlands a repository of 10,000 years of post-glacial history (Windell et al. 1986).
IVC Environment: *Soil/substrate/hydrology:* Fens are wetlands that develop where a relatively constant supply of groundwater maintains saturated conditions and the water chemistry reflects the mineralogy of the local soils and geological materials (Bedford and Godwin 2003). Organic soil of partially decomposed peat has a minimum depth of 40 cm (although some authors use 30-cm depth criteria). Acidic fens arise either because the groundwater accounts for only a small fraction of the annual

water budget or because groundwater inputs move through materials with low solubility and are non-calcareous (e.g., basalt gneiss, granite) or low buffering capacity (e.g., sand, quartz) (Bedford and Godwin 2003).

DISTRIBUTION

IVC Geographic Range: This group occurs infrequently throughout the mountains of the interior west, the Sky Islands of Arizona and high mountains and plateaus of Nevada and Utah, and the Rocky Mountains of Utah, Colorado, Wyoming, Montana, Idaho, and north into interior Canada, where it is known from interior (non-coastal) British Columbia and Alberta.

IVC Nations: CA,US

IVC States/Provinces: AB, AK?, AZ, BC, CA, CO, ID, MT, NV, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3437 *Carex lasiocarpa - Carex livida - Dulichium arundinaceum* Acidic Graminoid Fen Alliance** [Woolly-fruit Sedge - Livid Sedge - Threeway Sedge Acidic Graminoid Fen Alliance] []
  This alliance covers herbaceous-dominated wetlands dominated by *Carex* species such as *Carex livida, Carex lasiocarpa*, and/or *Carex aquatilis*. Mosses, including *Sphagnum* spp., cover the ground and sites are acidic (<5.5 pH) fens with organic soils at least 30 cm deep.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Rocchio, D. Cooper, B. Bedford, in Faber-Langendoen et al. (2011)

IVC Description Author: G. Kittel

IVC Description Date: 2015-11-23

IVC Acknowledgments:

A3437 Woolly-fruit Sedge - Livid Sedge - Threeway Sedge Acidic Graminoid Fen Alliance

[ ]

Carex lasiocarpa - Carex livida - Dulichium arundinaceum Acidic Graminoid Fen Alliance

Acidic Sedge Graminoid Fen

IVC Scientific Name: *Carex lasiocarpa - Carex livida - Dulichium arundinaceum* Acidic Graminoid Fen Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance covers herbaceous-dominated wetlands dominated by *Carex* species such as *Carex livida, Carex lasiocarpa*, and/or *Carex aquatilis*. Other species dominant to codominant species include *Trichophorum cespitosum* and *Dulichium arundinaceum*. Other herbaceous species commonly present are *Carex muricata, Gentiana calycosa, Packera streptanthifolia, Spiranthes romanzoffiana*, and *Swertia perennis*. Mosses, including *Sphagnum* spp., cover the ground. Sites are acidic (<5.5 pH) fens with organic soils at least 30-40 cm deep that are seasonally flooded or saturated. This alliance is found in the mountains of Colorado, Wyoming, Montana, Idaho, Utah, eastern Washington, Alberta, and British Columbia.

IVC Dynamics:

IVC Environment: Stands occur in meadows, basins, glacial kettle ponds, and lake margins on deep organic soils. Elevations range from 1380 to 2900 m. Soils are usually Histosols with thick accumulations of partially decomposed sedges. Types occur on poorly drained organic mats. Sites are often flooded into the growing season with water tables remaining within the root zone.

The wettest communities are organic mats floating on water or muck. Slightly drier sites have organic mats overlying saturated mineral layers, with large rocks that may protrude into shrubby hummocks.

DISTRIBUTION

IVC Geographic Range: The alliance occurs in the mountains of Colorado, Wyoming, Montana, Idaho, Utah, eastern Washington, Alberta, and British Columbia.
IVC Nations: CA,US
IVC States/Provinces: AB, AK?, BC, CA, CO, ID, MT, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001810 *Carex lasiocarpa* Fen** [Woolly-fruit Sedge Fen] []
  G4? (2000-04-27) AB, AK?, BC, CA?, CO, ID, MT, OR, UT, WA
- **CEGL001831 *Dulichium arundinaceum* Shore Fen** [Threeway Sedge Shore Fen] []
  G3 (2000-10-20) AK?, BC, CA, ID, MT, OR, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

M877 North American Boreal & Subboreal Alkaline Fen

Tourbières minérotrophes alcalines, boréales et subboréales, de l'Amérique du Nord

IVC Colloquial Name: North American Boreal & Subboreal Alkaline Fen

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This alkaline fen vegetation contains a mossy peat layer with depths typically exceeding 40 cm, and extends across the boreal regions of North America, extending south into subboreal regions of Alaska and the Yukon Territory, the Rocky Mountains, Great Lakes, and northeastern and north-central U.S. The vegetation may be graminoid-dominated, shrub-dominated, or a patchwork of the two, with broad-leaved non-ericaceous shrubs typically dominant. There is a discontinuous to absent layer of *Sphagnum* peatmoss, with brown mosses (*Calliergon, Campylium, Drepanocladus, Tomentypnum, Scorpidium scorpioides*) present to dominant. Broad-leaved non-ericaceous shrubs such as *Alnus incana, Betula glandulosa, Betula pumila, Dasiphora fruticosa ssp. floribunda, Myrica gale, Rhamnus alnifolia, Salix barclayi* (west), *Salix candida, Salix maccalliana* (west), and other *Salix* spp. exceed the cover of ericaceous shrubs, although some shore fens may be dominated by *Chamaedaphne calyculata*. Thin-leaved graminoids include especially *Carex lasiocarpa*, as well as *Carex aquatilis* (on peat), *Carex diandra, Carex interior, Carex limosa, Carex livida, Eriophorum viridicarinatum, Muhlenbergia glomerata, Rhynchospora alba*, and *Trichophorum alpinum*. A wide diversity of herbs is found, especially *Equisetum fluviatile, Menyanthes trifoliata, Sarracenia purpurea, Solidago uliginosa* (east), *Triantha glutinosa*, and *Triglochin maritima*. Other herbs include *Comarum palustre* and *Calla palustris*.

These fens develop in open basins where lateral groundwater flows through circumneutral to calcareous parent materials or causes calcareous upwellings, creating moderately to strongly alkaline conditions. They are found on level to gently sloping surfaces, or in closed wet depressions (sometimes as floating mats), and along wetland margins and lake- and rivershores. The shore fens are occasionally flooded, and so are included here because flooding tends to create moderately alkaline conditions. Peat deposits are composed primarily of partially decomposed brown mosses and sedges. Depth of peat exceeds 40 cm, separating this from similar wetlands that are non-peatlands. The water table is at or just above the surface.

In the subboreal regions of southeastern Canada and the northeastern United States, this macrogroup is typically found in glaciated settings, in pitted outwash or in kettle lakes associated with kettle-kame-moraine topography. The characteristic species include the shrubs *Cornus amomum, Cornus racemosa, Cornus sericea, Dasiphora fruticosa ssp. floribunda*, prairie grasses such as *Andropogon gerardii* and *Spartina pectinata*, sedges including *Carex flava, Carex sterilis, Carex prairea*, and other graminoids such as *Trichophorum alpinum*, and forbs such as *Packera aurea, Symplocarpus foetidus, Triantha glutinosa*, and *Lobelia kalmii*. Less commonly, *Cladium mariscoides* may be a dominant.

In the western boreal regions of North America, this macrogroup occurs in shallow depressions and basins, pond margins, and thermokarst pits with an open hydrologic regime. Fens are nutrient-rich and have a thick peat layer that may be floating or submerged. Standing water is usually present. They are most abundant in areas of limestone bedrock, and widely scattered in areas where calcareous substrates are scarce.

IVC Geographic Range: This macrogroup is found in scattered locations of boreal New England and Canada west to the Great Lakes and northern Minnesota and extends across the western boreal regions of Canada and the U.S., with occurrences within inland British Columbia, western Alberta, and north into Alaska and Yukon Territory.

IVC Nations: CA,US

IVC States/Provinces: AB, AK, AZ, BC, CA, CO, CT, IA, ID, IL, IN, KS, MA, MB, ME, MI, MN, MO, MT, NB, ND, NE, NH, NJ, NM, NS, NT, NU, NV, NY, OH, ON, OR, PA, PE?, QC, RI, SD, SK, UT, VA, VT, WA, WI, WV, WY, YT

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G805 Central Appalachian-Northeast Alkaline Fen []**
- **G183 Midwest Prairie Alkaline Fen []**
- **G804 Eastern North American Boreal-Subboreal Alkaline Fen []**
- **G361 Western North American Boreal Alkaline Fen []**
- **G516 Rocky Mountain Alkaline Fen []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: National Wetlands Working Group (1988)
IVC Description Author: D. Faber-Langendoen, G. Kittel, M. Reid, M. Hall, K. Boggs, T. Boucher, S.C. Gawler
IVC Description Date: 2017-03-29
IVC Acknowledgments:

G805 Central Appalachian-Northeast Alkaline Fen

[ ]

IVC Colloquial Name: Central Appalachian-Northeast Alkaline Fen
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group encompasses shrub and herbaceous fen vegetation in the northeastern temperate region, including Allegheny Plateau and much of New York and New England, as well as the tallgrass prairie and southern Great Lakes regions of the north-central Midwest. Associations may be shrub-dominated, a mixture of shrubs and herbs, or herb-dominated. Characteristic species include the shrubs *Dasiphora fruticosa ssp. floribunda, Cornus amomum, Cornus racemosa, Cornus sericea*, prairie grasses such as *Andropogon gerardii* and *Spartina pectinata*, sedges, including *Carex flava, Carex sterilis, Carex prairea, Carex stricta*, and other graminoids such as *Trichophorum alpinum*, and forbs such as *Lobelia kalmii, Packera aurea, Symplocarpus foetidus, Rhynchospora* spp., and *Triantha glutinosa*. Less commonly, *Cladium mariscoides* may be a dominant. Vegetation develops on shallow to deep peat over a gently sloping or level substrate, where the groundwater, typically minerotrophic and slightly alkaline, provides nutrients. In glaciated areas, they are characteristically in pitted outwash or in kettle lakes associated with kettle-kame-moraine topography.

IVC Dynamics: The presence of cold, mineral-rich groundwater which promotes the formation of peat and marl is key to the formation and maintenance of this group. Where cold, mineral-rich groundwater emerges as seeps and diffuse springs, decomposition of plant matter is slowed and peat can accumulate. Marl forms under sustained flow of calcium- and magnesium-rich water. The marl occurs where the groundwater emerges and in "spring runs" where water has cut a channel through the peat. Peat accumulation tends to be thickest in the center of the fens and can form raised mounds over time. Some of these areas are kept open by grazing, and succession to heavier shrub cover may occur in the absence of disturbance. Fire can spread from surrounding upland grasslands in the prairie landscape and can help limit the spread of trees and shrubs in those areas.

IVC Environment: *Climate:* North-temperate. *Soil/substrate/hydrology:* Sedge or moss peat forms the vegetation substrate. Moisture is supplied by moving groundwater which is typically alkaline and cold throughout the summer. These fens typically remain saturated throughout the growing season.

DISTRIBUTION

IVC Geographic Range: This group ranges from the central U.S. and southern Canada from eastern Montana southeast to Missouri and east to the Great Lakes states, east to lower New England and then south in the Central Appalachians to West Virginia and western Virginia.

IVC Nations: CA,US
IVC States/Provinces: CT, MA, ME, NH, NJ, NY, OH, ON, PA, RI?, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4479 *Dasiphora fruticosa* - *Carex flava* - *Carex tetanica* Alkaline Fen Alliance** [Shrubby-cinquefoil - Yellow Sedge - Rigid Sedge Alkaline Fen Alliance] []

This alliance is found in the northeastern United States in and in southern Ontario, Canada. Stands are a variable combination of tall shrubs, dwarf-shrubs, and herbs on minerotrophically rich mucks, often called marl fens.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S.C. Gawler and S. Menard, in Faber-Langendoen et al. (2015)
IVC Description Author: S.C. Gawler, S. Menard, D. Faber-Langendoen
IVC Description Date: 2015-06-03
IVC Acknowledgments:

A4479 Shrubby-cinquefoil - Yellow Sedge - Rigid Sedge Alkaline Fen Alliance

[ ]
Dasiphora fruticosa - Carex flava - Carex tetanica Alkaline Fen Alliance
Central Appalachian-Northeast Rich Fen

IVC Scientific Name: *Dasiphora fruticosa - Carex flava - Carex tetanica* Alkaline Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This rich fen alliance is found in the temperate regions of the northeastern United States and in southern Ontario, Canada. Stands are a variable combination of tall shrubs, low shrubs and herbs on minerotrophically rich mucks, often called marl fens. Patterning within large fens may occur, leading to recognizable zones, such as sedge flats, which occur around the spring discharge; fen meadows, which occur in the adjacent saturated zone as a variable combination of shrubs and herbs; and tall-shrub fens, which occur on more elevated portions or edges of the fen. The central marl fen is described here. The most consistent shrub dominant is *Dasiphora fruticosa* ssp. *floribunda*, but other shrubs include *Cornus amomum, Physocarpus opulifolius, Rosa palustris, Salix discolor*, and *Toxicodendron vernix*. Typical herbaceous associates include a variety of sedges that vary across the range of the alliance, including *Carex flava, Carex interior, Carex lasiocarpa, Carex sterilis*, and *Carex stricta*. Northern species such as *Alnus serrulata, Drosera rotundifolia*, and *Aronia melanocarpa* may be present. Dominance by *Dasiphora fruticosa* ssp. *floribunda* may be because of low fire probability, which historically may have occurred in fire-protected areas, e.g., where poorly vegetated areas with spring runs served as natural firebreaks. Soils are saturated mucks, neutral to alkaline, marly, and with excessive water-retaining capacity.
IVC Dynamics: Dominance by *Dasiphora fruticosa* ssp. *floribunda* may be because of low fire probability, which historically may have occurred in fire-protected areas, e.g., where poorly vegetated areas with spring runs served as natural firebreaks.
IVC Environment: Soils are saturated mucks, neutral to alkaline, marly, and with excessive water-retaining capacity. Stands occur where calcareous groundwater seeps to the surface, often at the base of gravelly moraines or other glacial features. These sites vary from gently to moderately sloping to flat. The minerals that are in the groundwater often form areas of marl. Peat forms in some stands.

DISTRIBUTION

IVC Geographic Range: This rich fen alliance is found in the temperate regions of the northeastern United States and in southern Ontario, Canada.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, NH, NJ, NY, OH, ON, PA, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005140 *Dasiphora fruticosa* / *Carex interior - Carex flava - Parnassia glauca* Fen** [Shrubby-cinquefoil / Inland Sedge - Yellow Sedge - Fen Grass-of-Parnassus Fen] []
  This rich fen community is found in the Allegheny region and Lake Erie-Lake Ontario plains of the United States and Canada.

Stands are minerotrophic and alkaline to circumneutral in character, with groundwater flowing through shallow peats and marls on level to sloping glacial deposits. Graminoids dominate, though forbs and dwarf-shrubs can be prominent. G3 (2002-10-24) NY, OH, ON, PA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

G183 Midwest Prairie Alkaline Fen

[ ]

IVC Colloquial Name: Midwest Prairie Alkaline Fen
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group encompasses shrub and herbaceous fen vegetation in the Midwest prairie region. Associations may be shrub-dominated, a mixture of shrubs and herbs, or herb-dominated. Characteristic species include the shrubs *Dasiphora fruticosa ssp. floribunda, Cornus amomum, Cornus racemosa, Cornus sericea*, prairie grasses such as *Andropogon gerardii* and *Spartina pectinata*, sedges including *Carex flava, Carex sterilis, Carex prairea, Carex stricta*, and other graminoids such as *Trichophorum alpinum*. Vegetation develops on shallow to deep peat over a gently sloping or level substrate, where the groundwater, typically minerotrophic and slightly alkaline, provides nutrients. In glaciated areas, they are characteristically in pitted outwash or in kettle lakes associated with kettle-kame-moraine topography.
IVC Dynamics: The presence of cold, mineral-rich groundwater which promotes the formation of peat and marl is key to the formation and maintenance of this group. Where cold, mineral-rich groundwater emerges as seeps and diffuse springs, decomposition of plant matter is slowed and peat can accumulate. Marl forms under sustained flow of calcium- and magnesium-rich water. The marl occurs where the groundwater emerges and in "spring runs" where water has cut a channel through the peat. Peat accumulation tends to be thickest in the center of the fens and can form raised mounds over time. Some of these areas are kept open by grazing, and succession to heavier shrub cover may occur in the absence of disturbance. Fire can spread from surrounding upland grasslands in the prairie landscape and can help limit the spread of trees and shrubs in those areas.
IVC Environment: *Climate:* Midwestern. *Soil/substrate/hydrology:* Sedge or moss peat forms the vegetation substrate. Moisture is supplied by moving groundwater which is typically alkaline and cold throughout the summer. These fens typically remain saturated throughout the growing season.

DISTRIBUTION

IVC Geographic Range: This group ranges across the tallgrass prairie region of the Midwest from western Ohio and southern Michigan, and possibly southwest Ontario to western Minnesota and south to Kansas.
IVC Nations: CA,US
IVC States/Provinces: IA, IL, IN, KS, MB, MI, MN, MO, MT, ND, NE, NJ, OH, ON, SD, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3704 *Dasiphora fruticosa / Oligoneuron riddellii - Andropogon gerardii* Graminoid Fen Alliance** [Shrubby-cinquefoil / Riddell's Goldenrod - Big Bluestem Graminoid Fen Alliance] []
  This alliance is currently found in the north-central Midwest of the United States and perhaps in southwestern Ontario, Canada. Stands are a variable combination of low shrubs and herbs on minerotrophically rich mucks, often called prairie fens. The most consistent shrub dominant is *Dasiphora fruticosa ssp. floribunda*, but other shrubs include *Salix candida*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S.C. Gawler and S. Menard, in Faber-Langendoen et al. (2011)
IVC Description Author: S.C. Gawler, S. Menard, D. Faber-Langendoen and J. Drake
IVC Description Date: 2015-06-02
IVC Acknowledgments:

A3704 Shrubby-cinquefoil / Riddell's Goldenrod - Big Bluestem Graminoid Fen Alliance

[ ]
Dasiphora fruticosa / Oligoneuron riddellii - Andropogon gerardii Graminoid Fen Alliance
Midwest Prairie Fen

IVC Scientific Name: *Dasiphora fruticosa / Oligoneuron riddellii - Andropogon gerardii* Graminoid Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is currently found in the north-central Midwest of the United States and perhaps in southwestern Ontario, Canada. Stands are a variable combination of low shrubs and herbs on minerotrophically rich mucks, often called prairie fens. The shrub layer is low (0.5-1 m) and varies from scattered to dense cover over a dense herbaceous layer. Patterning within large fens may occur, leading to recognizable zones, such as sedge flats, which occur around the spring discharge; fen meadows, which occur in the adjacent saturated zone as a variable combination of shrubs and herbs; and tall-shrub fens, which occur on more elevated portions or edges of the fen. The most consistent shrub dominant is *Dasiphora fruticosa ssp. floribunda*, but other shrubs include *Salix candida*. Typical herbaceous associates include a variety of sedges that vary across the range of the alliance, including *Carex sterilis, Carex lasiocarpa*, and *Carex stricta*. Many prairie species may be typically associated, including *Andropogon gerardii, Oligoneuron ohioense, Sorghastrum nutans, Sporobolus heterolepis*, and others. Fire probability is higher in prairie fens than in most other fens. Soils are saturated mucks, neutral to alkaline, marly, and with excessive water-retaining capacity.
IVC Dynamics:
IVC Environment: Soils are saturated mucks, neutral to alkaline, marly, and with excessive water-retaining capacity. Fire probability is higher in prairie fens than in most other fens.

DISTRIBUTION

IVC Geographic Range: This alliance is currently found in the north-central Midwest of the United States and perhaps in southwestern Ontario, Canada.
IVC Nations: CA,US
IVC States/Provinces: IA, IL, IN, MB, MI, MN, ND, NJ, OH, ON, SD, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002189** ***Betula pumila - Salix candida / Carex lasiocarpa - Symphyotrichum boreale*** **Prairie Fen** [Bog Birch - Willow species / Woolly-fruit Sedge - Northern Bog Aster Prairie Fen] []
  G3 (2002-10-24) MB, MN, ND, SD
- **CEGL005087** ***Cornus amomum - Salix*** **spp.** ***- Toxicodendron vernix - Rhamnus lanceolata*** **Fen** [Silky Dogwood - Willow species - Poison-sumac - Lanceleaf Buckthorn Fen] []
  G2G3 (1998-06-22) IL, IN, MI, OH, ON, WI
- **CEGL005139** ***Dasiphora fruticosa / Carex sterilis - Andropogon gerardii - Arnoglossum plantagineum*** **Fen** [Shrubby-cinquefoil / Dioecious Sedge - Big Bluestem - Groove-stem Indian-plantain Fen] []
  G3G4 (2002-10-24) IL, IN, MI, MN, OH, ON, WI
- **CEGL005103** ***Cladium mariscoides - Carex cryptolepis - Rhynchospora alba - Juncus canadensis*** **Fen** [Smooth Sawgrass - Northeastern Sedge - White Beaksedge - Canadian Rush Fen] []
  GNRQ (2000-03-29) IN?, NJ, OH, ON
- **CEGL005104** ***Cladium mariscoides - (Carex lasiocarpa, Hypericum kalmianum, Oligoneuron riddellii, Eleocharis elliptica)*** **Fen** [Smooth Sawgrass - (Woolly-fruit Sedge, Kalm's St. John's-wort, Riddell's Goldenrod, Elliptic Spikerush) Fen] []
  G2? (2000-05-24) IN, OH, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G804 Eastern North American Boreal-Subboreal Alkaline Fen

[ ]

IVC Colloquial Name: Eastern North American Boreal-Subboreal Alkaline Fen
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: [The concept for this group is under review with Canadian ecologists; the current concept overlaps with Eastern North American Subboreal Alkaline Fen Group (G185).] These fens, distributed across eastern boreal regions of North America, develop in open basins where lateral groundwater flow through circumneutral to calcareous parent materials creates moderately to strongly alkaline conditions. They are found on level to gently sloping surfaces, or in closed wet depressions (sometimes as floating mats), and along wetland margins and lakeshores and rivershores. The shore fens are occasionally flooded, and so are included here because flooding tends to create moderately alkaline conditions. The vegetation may be graminoid-dominated, shrub-dominated, or a patchwork of the two, with broad-leaved non-ericaceous shrubs typically dominant. There is a discontinuous to absent layer of *Sphagnum* peatmoss (<80% cover), with brown mosses (*Calliergon, Campylium, Drepanocladus, Tomentypnum*) present to dominant. Broad-leaved non-ericaceous shrubs (*Alnus incana, Betula glandulosa, Betula pumila, Dasiphora fruticosa ssp. floribunda, Myrica gale, Salix* spp.) exceed cover of ericaceous shrubs, although some shore fens may be dominated by *Chamaedaphne calyculata*. Thin-leaved graminoids include *Carex interior, Carex lasiocarpa, Carex limosa, Carex livida, Eriophorum viridicarinatum, Muhlenbergia glomerata*, and *Trichophorum alpinum*. In the tree layer, *Picea mariana* is rare to absent and *Larix laricina* is variable. Minerotrophic *Sphagnum* dominates the substrate among medium fens, but brown mosses become increasingly common under richer conditions. *Campylium stellatum* is an indicator brown moss bryophyte.

IVC Dynamics:

IVC Environment: *Soil/substrate/hydrology:* These fens develop in open basins where lateral groundwater flow through circumneutral to calcareous parent materials creates moderately to strongly alkaline conditions. They are found on level to gently sloping surfaces, or in closed wet depressions (sometimes as floating mats), and along wetland margins and lake- and rivershores The shore fens are occasionally flooded, and so are included here because flooding tends to create moderately alkaline conditions.

DISTRIBUTION

IVC Geographic Range: This group is found across the boreal regions of eastern North America, primarily in Canada, but potentially in subboreal parts of the Laurentian-Acadian region of the United States.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, MB, ME, MI, MN, NB, NH, NJ, NS, NY, OH, ON, PA, QC, RI, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4441 *Betula pumila / Carex lasiocarpa - Carex flava* Alkaline Fen Alliance** [Bog Birch / Woolly-fruit Sedge - Yellow Sedge Alkaline Fen Alliance] []
  This moderately rich fen is dominated by a combination of *Betula pumila, Myrica gale, Dasiphora fruticosa* ssp. *floribunda*, ericaceous shrubs, and sedges such as *Carex lasiocarpa*. It is found across the eastern boreal region of Canada and the adjacent U.S., including the northern Great Lakes region and northern Appalachian-Acadian region, in a variety of peatland settings.
- **A4401 *Chamaedaphne calyculata - Myrica gale / Carex lasiocarpa* Fen Alliance** [Leatherleaf - Sweetgale / Woolly-fruit Sedge Fen Alliance] []
- **A2081 *Cladium mariscoides - Carex viridula - Lobelia kalmii* Fen Alliance** [Smooth Sawgrass - Little Green Sedge - Ontario Lobelia Fen Alliance] []
- **A4400 *Myrica gale - Chamaedaphne calyculata / Carex lasiocarpa* Shore Fen Alliance** [Sweetgale - Leatherleaf / Woolly-fruit Sedge Shore Fen Alliance] []
  This community is found typically on floating (or occasionally grounded) mats on the edges of lakes and streams in the Great Lakes region of the United States and Canada.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2015)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2015-06-02
IVC Acknowledgments:

A4441 Bog Birch / Woolly-fruit Sedge - Yellow Sedge Alkaline Fen Alliance

[ ]
Betula pumila / *Carex lasiocarpa* - *Carex flava* Alkaline Fen Alliance
Eastern Boreal-Subboreal Rich Fen

IVC Scientific Name: *Betula pumila* / *Carex lasiocarpa* - *Carex flava* Alkaline Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This moderately rich shrub fen is found across the eastern boreal region of Canada and the adjacent U.S., including in the northern Great Lakes region and northern Appalachian-Acadian region. Dominant shrubs include *Betula pumila, Myrica gale, Dasiphora fruticosa* ssp. *floribunda,* and ericaceous shrubs, including low to moderate cover of *Andromeda polifolia, Chamaedaphne calyculata, Ledum groenlandicum*, and *Vaccinium oxycoccos*. Other minerotrophic shrubs include *Lonicera villosa, Rhamnus alnifolia, Rubus arcticus* ssp. *acaulis, Rubus pubescens*, and *Salix pedicellaris*. Scattered, small (2-10 m) tree stems of *Larix laricina, Picea mariana*, and *Thuja occidentalis* are present at low cover. There is diverse forb, graminoid, and moss cover, at least in the richer examples of this type. The graminoids include *Calamagrostis canadensis, Carex aquatilis, Carex buxbaumii, Carex chordorrhiza, Carex lasiocarpa, Carex leptalea, Eriophorum viridicarinatum, Rhynchospora alba,* and *Rhynchospora capillacea*. Forbs include *Comarum palustre, Drosera rotundifolia, Equisetum fluviatile, Maianthemum trifolium, Menyanthes trifoliata, Sarracenia purpurea*, and *Solidago uliginosa*. The moss layer contains *Aulacomnium palustre, Pleurozium*

schreberi, Sphagnum angustifolium, and *Sphagnum capillifolium*. Less frequent are *Campylium stellatum, Sphagnum fuscum*, and *Tomentypnum nitens*. Stands are found on the margins of water tracks of large peatlands, or in the interior of small basins that are relatively isolated from runoff, or on shores of northern and boreal rivers, with occasional flooding. Some stands occur on floating peat mats. The groundwater is slightly acidic to circumneutral and minerotrophic to moderately minerotrophic.

IVC Dynamics:

IVC Environment: Stands are found on the margins of water tracks of large peatlands, or in the interior of small basins that are relatively isolated from runoff, or on shores of northern and boreal rivers, with occasional flooding. Some stands occur on floating peat mats. The groundwater is slightly acidic to circumneutral and minerotrophic to moderately minerotrophic.

DISTRIBUTION

IVC Geographic Range: This rich fen type is found across the eastern boreal region of Canada and the adjacent U.S., including the northern Great Lakes region, ranging from northwestern Ontario and probably Manitoba, south to Minnesota east to Nova Scotia and Newfoundland, and south to Maine.

IVC Nations: CA,US

IVC States/Provinces: MB, ME, MI, MN, NH, NY, OH, ON, QC, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002495** ***Betula pumila - Dasiphora fruticosa / Carex lasiocarpa - Trichophorum alpinum*** **Fen** [Bog Birch - Shrubby-cinquefoil / Woolly-fruit Sedge - Alpine Bulrush Fen] []
  G3G5 (2000-03-24) MB, ME?, MI, MN, ON, QC
- **CEGL002494** ***Betula pumila / Chamaedaphne calyculata / Carex lasiocarpa*** **Fen** [Bog Birch / Leatherleaf / Woolly-fruit Sedge Fen] []
  G4G5 (1996-10-03) ME, MI, MN, ON, QC?, WI
- **CEGL002496** ***Carex lasiocarpa - Trichophorum cespitosum - Rhynchospora capillacea / Andromeda polifolia*** **Fen** [Woolly-fruit Sedge - Tufted Bulrush - Needle Beaksedge / Bog-rosemary Fen] []
  G2Q (1998-06-22) MB, MI, MN, ON, WI
- **CEGL002500** ***Carex lasiocarpa - Carex buxbaumii - Trichophorum cespitosum*** **Boreal Fen** [Woolly-fruit Sedge - Buxbaum's Sedge - Tufted Bulrush Boreal Fen] []
  G4G5 (1996-10-03) MB, MI, MN, ON, WI
- **CEGL002529** ***Salix planifolia - Betula pumila var. glandulifera*** **Fen** [Diamondleaf Willow - Bog Birch Fen] []
  GNR. MB
- **CEGL005083** ***Cornus*** **spp. -** ***Salix*** **spp. -** ***Vaccinium corymbosum - Rhamnus alnifolia - Toxicodendron vernix*** **Fen** [Dogwood species - Willow species - Highbush Blueberry - Alderleaf Buckthorn - Poison-sumac Fen] []
  G4? (1996-10-03) MI, NY, OH, ON, WI
- **CEGL006331** ***Carex (interior, hystericina, flava) - Trichophorum alpinum / Campylium stellatum*** **Fen** [(Inland Sedge, Bottlebrush Sedge, Yellow Sedge) - Alpine Bulrush / Star Campylium Moss Fen] []
  G2G3 (1997-11-13) NH, NY, VT
- **CEGL005193** ***Thuja occidentalis - (Myrica gale) / Trichophorum alpinum / Drepanocladus*** **spp. Fen** [Northern White-cedar - (Sweetgale) / Alpine Bulrush / Brown Moss species Fen] []
  GNR. MI, ON
- **CEGL002548** ***Calla palustris - Carex canescens - Calamagrostis canadensis*** **Fen** [Water Arum - Silvery Sedge - Bluejoint Fen] []
  GNR. MB, ON?
- **CEGL002545** ***Carex aquatilis - Glyceria striata*** **Fen** [Water Sedge - Fowl Mannagrass Fen] []
  GNR. MB, ON?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021c)

IVC Description Author: D. Faber-Langendoen

IVC Description Date:
IVC Acknowledgments:

A4401 Leatherleaf - Sweetgale / Woolly-fruit Sedge Fen Alliance

[ ]
Chamaedaphne calyculata - Myrica gale / Carex lasiocarpa Fen Alliance
Eastern Boreal-Subboreal Medium & Shore Fen

IVC Scientific Name: *Chamaedaphne calyculata - Myrica gale / Carex lasiocarpa* Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is an intermediate fen overlying deep peat accumulations of lakes and other depressions in the Great Lakes region east to the northeastern United States. It is characterized by rhizomatous sedges that form a mat, with variable shrub cover. Typical sedges include *Carex lasiocarpa, Carex prairea, Carex leptalea, Carex stricta, Carex buxbaumii, Carex flava, Carex cryptolepis, Carex lacustris, Carex livida, Carex aquatilis, Cladium mariscoides, Trichophorum alpinum, Eleocharis elliptica*, as well as *Vaccinium macrocarpon* and *Vaccinium oxycoccos*. Other herbaceous associates include *Carex rostrata, Carex trisperma, Eleocharis rostellata, Muhlenbergia glomerata, Rhynchospora alba, Schoenoplectus acutus, Typha latifolia, Doellingeria umbellata, Drosera rotundifolia, Iris versicolor, Osmunda regalis, Parnassia glauca, Pogonia ophioglossoides*, and *Thelypteris palustris*. Shrubs are generally confined to hummocks, but cover varies among occurrences and can exceed 25%. Characteristic species include *Myrica gale, Dasiphora fruticosa* ssp. *floribunda, Betula pumila, Salix candida, Rhamnus alnifolia, Alnus* spp., and *Cornus sericea. Larix laricina* may occur as scattered individuals atop hummocks. Hollows and channels often support *Utricularia intermedia, Utricularia gibba, Menyanthes trifoliata*, and *Lobelia kalmii*. Other herbs include *Symphyotrichum boreale* and *Sarracenia purpurea*. Characteristic mosses include *Campylium stellatum, Limprichtia revolvens, Scorpidium scorpioides*, and *Tomentypnum nitens. Sphagnum* spp. may be absent or are minor components. When present, species include the more minerotrophic *Sphagnum contortum, Sphagnum warnstorfii*, and *Sphagnum teres*. Diagnostic species include *Dasiphora fruticosa* ssp. *floribunda* and *Myrica gale*, and the mixture of brown mosses and minerotrophic *Sphagnum* mosses.
IVC Dynamics:
IVC Environment: This alliance is an intermediate or medium fen overlying deep peat accumulations of lakes and other depressions in the Great Lakes region east to the northeastern United States.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the Great Lakes region east to the northeastern United States.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, ME, NH, NJ, NY, PA, QC?, RI, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006068** ***Myrica gale - Dasiphora fruticosa / Carex lasiocarpa - Cladium mariscoides*** **Fen** [Sweetgale - Shrubby-cinquefoil / Woolly-fruit Sedge - Smooth Sawgrass Fen] []
  G2G3 (1998-01-12) CT, MA, NH?, NJ, NY, PA, QC?, RI?, VT
- **CEGL006302** ***Myrica gale - Chamaedaphne calyculata / Carex (lasiocarpa, utriculata) - Utricularia*** **spp. Fen** [Sweetgale - Leatherleaf / (Woolly-fruit Sedge, Northwest Territory Sedge) - Bladderwort species Fen] []
  G4G5 (1997-12-31) CT, MA, ME, NH, NY, PA, RI, VT
- **CEGL006512** ***Myrica gale - Spiraea alba - Chamaedaphne calyculata*** **Fen** [Sweetgale - White Meadowsweet - Leatherleaf Fen] []
  GNR. CT, MA, ME, NH, NY, RI, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021c)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2081 Smooth Sawgrass - Little Green Sedge - Ontario Lobelia Fen Alliance

[ ]
Cladium mariscoides - Carex viridula - Lobelia kalmii Fen Alliance
Great Lakes Shore Fen

IVC Scientific Name: *Cladium mariscoides - Carex viridula - Lobelia kalmii* Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: MI, ON, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005115 *Calamagrostis canadensis - Carex viridula - Cladium mariscoides - Lobelia kalmii* Fen** [Bluejoint - Little Green Sedge - Smooth Sawgrass - Ontario Lobelia Fen] []
  G1G2 (2000-04-12) MI, ON?, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021c)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4400 Sweetgale - Leatherleaf / Woolly-fruit Sedge Shore Fen Alliance

[ ]
Myrica gale - Chamaedaphne calyculata / *Carex lasiocarpa* Shore Fen Alliance
Eastern Boreal & Subboreal Shore Fen

IVC Scientific Name: *Myrica gale - Chamaedaphne calyculata* / *Carex lasiocarpa* Shore Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This community is found typically on floating (or occasionally grounded) mats on the edges of lakes and streams in the Great Lakes region of the United States and Canada. Lakes and streams have low wave and current energy and seasonally flood the mat. Permanent surface pools and small hummocks with *Sphagnum* spp. and ericaceous shrubs may be present. The substrate is a mat of fibric to mesic peat held together by roots and rhizomes. Graminoids or shrubs dominate the stand. Common shrubs include *Betula pumila* var. *glandulifera* and *Myrica gale*, with *Alnus incana* and *Salix* spp. as codominants (including *Salix pyrifolia, Salix planifolia, Salix pedicellaris*, and *Salix petiolaris*). Other less constant tall shrubs include *Cornus sericea* and *Rhamnus alnifolia. Chamaedaphne calyculata* dominates the dwarf-shrub layer, with lesser amounts of *Ledum groenlandicum, Andromeda polifolia* var. *glaucophylla, Kalmia polifolia, Rubus arcticus* ssp. *acaulis, Rubus idaeus*, and *Rubus pubescens*. The graminoid *Carex lasiocarpa* can form extensive "lawns." Other herbaceous species present include *Carex lacustris, Carex leptalea, Carex rostrata, Carex trisperma, Eleocharis elliptica, Equisetum fluviatile, Comarum palustre (= Potentilla palustris), Maianthemum trifolium, Rhynchospora alba, Triadenum fraseri, Utricularia intermedia*, and *Utricularia minor. Menyanthes trifoliata* can occur at high cover, especially at the outer edge of the floating mat.

IVC Dynamics:

IVC Environment: This community is found typically on floating (or occasionally grounded) mats on the edges of lakes and streams. Lakes and streams have low wave and current energy and seasonally flood the mat. Permanent surface pools and small hummocks with *Sphagnum* spp. and ericaceous shrubs may be present. The substrate is a mat of fibric to mesic peat held together by roots and rhizomes.

DISTRIBUTION

IVC Geographic Range: This inland (non-Great Lakes) shore fen is found across the eastern boreal region of Canada and the adjacent U.S., including northern Minnesota.

IVC Nations: CA,US

IVC States/Provinces: MN, ON, PA, QC?

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005227 *Betula pumila - Alnus incana - Salix* spp. / *Chamaedaphne calyculata* Fen** [Bog Birch - Gray Alder - Willow species / Leatherleaf Fen] []
  GNR. MN, ON
- **CEGL005228 *Chamaedaphne calyculata - Myrica gale / Carex lasiocarpa* Fen** [Leatherleaf - Sweetgale / Woolly-fruit Sedge Fen] []
  G4G5 (2000-03-24) MN, ON
- **CEGL005275 *Dasiphora fruticosa - Myrica gale* Shore Fen** [Shrubby-cinquefoil - Sweetgale Shore Fen] []
  G1G2 (2000-04-12) ON
- **CEGL005229 *Carex lasiocarpa - (Carex rostrata) - Equisetum fluviatile* Fen** [Woolly-fruit Sedge - (Beaked Sedge) - Water Horsetail Fen] []
  GNR. ON, PA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021c)

IVC Description Author:

IVC Description Date:

IVC Acknowledgments: A. Harris et al. (1996)

G361 Western North American Boreal Alkaline Fen

[ ]

IVC Colloquial Name: Western North American Boreal Alkaline Fen

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group extends across the western boreal regions of North America, with occurrences in inland British Columbia, east into western Alberta, and north into Alaska and Yukon Territory. These fens, distributed across glaciated western and central Canada, develop in open basins where bedrock or other substrate influence creates circumneutral to calcareous conditions. They are most abundant in areas of limestone bedrock, and widely scattered in areas where calcareous substrates are scarce. Shore fens, which are peatlands that are occasionally flooded along streams and lakeshores, are also included here because flooding tends to create moderately alkaline conditions. Fens are nutrient-rich and have a thick peat layer that may be floating or submerged. Standing water is usually present. The edge of the basin may be shallow to deep peat over a sloping substrate, where seepage waters provide nutrients. The vegetation may be graminoid-dominated, shrub-dominated, or a patchwork of the two. *Dasiphora fruticosa ssp. floribunda* is a common diagnostic shrub, along with *Betula pumila, Betula glandulosa, Betula nana, Myrica gale, Salix barclayi, Salix candida, Salix maccalliana, Vaccinium macrocarpon*, and *Larix laricina*. The herbaceous flora is usually species-rich and includes calciphilic graminoids and forbs. Species may include *Carex lasiocarpa, Carex diandra, Menyanthes trifoliata, Equisetum fluviatile, Comarum palustre, Calla palustris, Eriophorum angustifolium, Trichophorum cespitosum*, and *Carex aquatilis*.

IVC Dynamics: In boreal wetlands the general successional trend is from marsh to fen to treed bog; however, succession is not necessarily directional, and environmental conditions, such as nutrient content and abundance of groundwater, may prevent fens from developing into bogs (Zoltai et al. 1988). Succession begins in ponds or low-lying wetlands formed by processes such as glacial recession and floodplain dynamics (oxbows). An organic root mat typically develops and is either anchored to the mineral soil or floating on water such as a pond's edge. Over time, peat-forming mosses and sedges may fill in the basin. As the peat layer develops, low and/or dwarf-shrubs become established. Dwarf-trees may establish on the well-developed peat and also around the margin of the peatland.

Many peatlands on the Kenai Lowland formed in kettles after remnant glacial ice melted. In this region, there is a trend toward peatlands drying and ponds shrinking and filling in (Klein et al. 2005). In the boreal region, fens are often associated with thermokarst processes.

IVC Environment: This group occurs in shallow depressions and basins, pond margins, and thermokarst pits with an open hydrologic regime. Fens are nutrient-rich and have a thick peat layer that may be floating or submerged. Standing water is usually present. They are most abundant in areas of limestone bedrock, and widely scattered in areas where calcareous substrates are scarce.

DISTRIBUTION

IVC Geographic Range: This group extends across the western boreal regions of North America, with occurrences in inland British Columbia, east into western Alberta, and north into Alaska and Yukon Territory.

IVC Nations: CA,US

IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4303 *Carex aquatilis* - Mixed Sedge Alkaline Fen Alliance** [Water Sedge - Mixed Sedge Alkaline Fen Alliance] []
- **A3449 *Dasiphora fruticosa* - *Carex* spp. / *Calliergon* spp. Western Boreal Alkaline Shrub Fen Alliance** [Shrubby-cinquefoil - Sedge species / Spear Moss species Western Boreal Alkaline Shrub Fen Alliance] []
  This medium to rich fen alliance extends across the western boreal regions of North America, from Alaska to central Canada, and develops in open basins where bedrock or other substrate influence creates circumneutral to calcareous conditions. The herbaceous flora is usually species-rich, with calciphilic graminoids and forbs, and with *Dasiphora fruticosa ssp. floribunda* a common shrub.
- **A4301 *Menyanthes trifoliata / Carex utriculata* Alkaline Fen Alliance** [Buckbean / Northwest Territory Sedge Alkaline Fen Alliance] []
- **A4302 *Myrica gale* Alkaline Fen Alliance** [Sweetgale Alkaline Fen Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, M. Reid, M. Hall, K. Boggs, T. Boucher, D. Faber-Langendoen, in Faber-Langendoen et al. (2011)
IVC Description Author: M.E. Hall and D. Faber-Langendoen
IVC Description Date: 2013-05-22
IVC Acknowledgments:

A4303 Water Sedge - Mixed Sedge Alkaline Fen Alliance

[ ]
Carex aquatilis - Mixed Sedge Alkaline Fen Alliance
Western Boreal Sedge Fen

IVC Scientific Name: *Carex aquatilis* - Mixed Sedge Alkaline Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3449 Shrubby-cinquefoil - Sedge species / Spear Moss species Western Boreal Alkaline Shrub Fen Alliance

[ ]
Dasiphora fruticosa - Carex spp. / *Calliergon* spp. Western Boreal Alkaline Shrub Fen Alliance
Western Boreal Alkaline Shrub Fen

IVC Scientific Name: *Dasiphora fruticosa - Carex* spp. / *Calliergon* spp. Western Boreal Alkaline Shrub Fen Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This medium to rich alliance extends across the western boreal regions of North America from Alaska to central Canada. The vegetation may be graminoid-dominated, shrub-dominated, or a patchwork of the two. *Dasiphora fruticosa ssp. floribunda* is a common diagnostic shrub, along with *Betula pumila, Betula glandulosa, Betula nana, Myrica gale, Salix barclayi, Salix candida, Salix maccalliana, Vaccinium macrocarpon*, and *Larix laricina*. The herbaceous flora is usually species-rich and includes calciphilic graminoids and forbs. Dominant species may include *Calla palustris, Carex aquatilis, Carex diandra, Carex lasiocarpa, Comarum palustre, Equisetum fluviatile, Eriophorum angustifolium, Menyanthes trifoliata*, and *Trichophorum cespitosum*. Other common but non-dominant species include *Caltha palustris, Cicuta virosa, Galium trifidum, Rumex arcticus*, and *Utricularia* spp. Aquatic plants such as *Myriophyllum spicatum, Hippuris vulgaris, Potamogeton* spp., and *Sparganium* spp. may be present. *Sphagnum* can dominate the substrate, along with other calciphilic mosses; common indicator bryophytes include *Calliergon trifarium, Limprichtia revolvens, Scorpidium scorpioides, Sphagnum girgensohnii, Sphagnum squarrosum, Sphagnum warnstorfii, Tomentypnum nitens*, and *Campylium stellatum*. These fens, distributed across glaciated western and central Canada, develop in open basins where bedrock or other substrate influence creates circumneutral to calcareous conditions. The edge of the basin may be shallow to deep peat over a sloping substrate, where seepage waters provide nutrients. They also occur along streams and lakeshores ("shore fens").

IVC Dynamics:

IVC Environment: These fens, distributed across glaciated western and central Canada, develop in open basins where bedrock or other substrate influence creates circumneutral to calcareous conditions. The edge of the basin may be shallow to deep peat over a sloping substrate, where seepage waters provide nutrients. They also occur along streams and lakeshores as "shore fens," which are peatlands that are occasionally flooded along streams and lakeshores, creating moderately alkaline conditions. They have a thick peat layer that may be floating or, more rarely, occasionally submerged.

DISTRIBUTION

IVC Geographic Range: This medium to rich fen alliance extends across the western boreal regions of North America from Alaska to central Canada.

IVC Nations: CA

IVC States/Provinces: AB, BC, MB, NT, NU, SK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A4301 Buckbean / Northwest Territory Sedge Alkaline Fen Alliance

[ ]

Menyanthes trifoliata / Carex utriculata Alkaline Fen Alliance

Western Boreal Buckbean Fen

IVC Scientific Name: *Menyanthes trifoliata / Carex utriculata* Alkaline Fen Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4302 Sweetgale Alkaline Fen Alliance

[ ]
Myrica gale Alkaline Fen Alliance
Western Boreal Sweetgale Shrub Fen

IVC Scientific Name: *Myrica gale* Alkaline Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G516 Rocky Mountain Alkaline Fen

[ ]

IVC Colloquial Name: Rocky Mountain Alkaline Fen
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group occurs infrequently throughout the Rocky Mountains from Colorado north into Canada. It is confined to specific environments defined by groundwater discharge, soil chemistry (neutral to alkaline), and peat accumulation of at least 40 cm. Vegetation is dominated by graminoids and low shrubs and includes *Carex buxbaumii, Carex cusickii, Carex limosa, Carex saxatilis, Carex utriculata, Kobresia myosuroides*, and *Kobresia simpliciuscula*. Shrubs include *Betula glandulosa* and several *Salix* spp. Fens form at low points in the landscape or on slopes where groundwater intercepts the soil surface. Groundwater inflows maintain a fairly constant water level year-round, with water at or near the surface most of the time. Constant high water levels and cold winter temperatures lead to accumulation of organic material. In addition to peat accumulation and perennially saturated soils, soil chemistry is alkaline to neutral with nutrients high in base cations. Nitrogen (N) and potassium (K) are usually still limiting plant growth in rich fens. Rich fens are strongly influenced by geology and occur where limestone, dolostone, marble or where glacially-derived materials are calcareous. The surrounding landscape may be ringed with other wetland systems, e.g., riparian shrublands, or a variety of upland systems from grasslands to forests.

IVC Dynamics: Mountain fens act as natural filters cleaning ground and surface water. Fens also act as sponges by absorbing heavy precipitation, slowly releasing it downstream, minimizing erosion and recharging groundwater systems (Windell et al. 1986). The persistent groundwater and cold temperatures allow organic matter to accumulate (forming peat) which allows classification of wetlands within this group as fens. Fens produce peat that accumulates at the rate of 20 to 30 cm (8-11 inches) per 1000 years, making peatlands a repository of 10,000 years of post glacial history (Windell et al. 1986).

IVC Environment: It is confined to specific environments defined by groundwater discharge, soil chemistry, and peat accumulation of at least 40 cm. Fens form at low points in the landscape or on slopes where groundwater intercepts the soil surface. Groundwater inflows maintain a fairly constant water level year-round, with water at or near the surface most of the time. Constant high water levels and cold winter temperatures lead to accumulation of organic material. In addition to peat accumulation and perennially saturated soils, soil chemistry is alkaline to neutral and nutrients high in base cations. Nitrogen (N) and potassium (K) are usually still limiting plant growth in rich fens. Rich fens are strongly influenced by geology and occur where limestone, dolostone, marble or where glacially-derived materials are calcareous (Cooper 1986b, Windell et al. 1986, Cooper and Sanderson 1997, Steen and Coupe 1997, Bedford and Godwin 2003).

DISTRIBUTION

IVC Geographic Range: This group occurs infrequently throughout the mountains of the interior west, the Sky Islands of Arizona and high mountains and plateaus of Nevada and Utah, and the Rocky Mountains of Utah, Colorado, Wyoming, Montana, Idaho, the Black Hills of South Dakota, and north into Canada.

IVC Nations: CA,US

IVC States/Provinces: AB, AK?, AZ, BC, CA, CO, ID, MB, MT, NM, NV, OR, SD, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3434 *Betula nana* Alkaline Shrub Fen Alliance** [Dwarf Birch Alkaline Shrub Fen Alliance] []
  This alliance covers shrub-dominated neutral to alkaline pH fens (organic soil wetlands) found at elevations of 1500-3350 m (5000-11,000 feet) within the Rocky Mountains. *Betula nana* is an indicator for the shrubby growth form on these fens; however, other shrub species may be dominant. There is usually herbaceous cover, and dense mosses cover the ground.
- **A3435 *Carex limosa - Carex buxbaumii - Triglochin maritima* Alkaline Graminoid Fen Alliance** [Mud Sedge - Buxbaum's Sedge - Seaside Arrow-grass Alkaline Graminoid Fen Alliance] []
  This alliance covers neutral to alkaline herbaceous fens dominated by one or more *Carex* species. Some well-documented species include *Carex buxbaumii, Carex cusickii, Carex limosa*, and *Carex saxatilis*. *Carex aquatilis* and *Carex utriculata* may be present as well. This alliance occurs in the Rocky Mountains. Fens are seasonally or permanently saturated wetlands with an organic substrate that is at least 30 cm thick.
- **A3436 *Kobresia myosuroides - Kobresia simpliciuscula* Alkaline Graminoid Fen Alliance** [Simple Bog Sedge - Bellardi Bog Sedge Alkaline Graminoid Fen Alliance] []
  This Rocky Mountain alliance contains strongly alkaline fens dominated by herbaceous species; indicators include *Kobresia myosuroides* and *Kobresia simpliciuscula*, the later indicating extremely rich conditions. The water chemistry is distinct in that it contains high levels of calcium and magnesium.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Rocchio, D. Cooper, B. Bedford, in Faber-Langendoen et al. (2011)
IVC Description Author: G. Kittel
IVC Description Date: 2015-11-23
IVC Acknowledgments:

A3434 Dwarf Birch Alkaline Shrub Fen Alliance

[ ]
Betula nana Alkaline Shrub Fen Alliance
Dwarf Birch Alkaline Shrub Fen

IVC Scientific Name: *Betula nana* Alkaline Shrub Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of shrubby wetlands dominated by several different shrub species, often represented by *Betula nana*. These wetlands are neutral to alkaline pH fens found at elevations of 1500-3350 m (5000-11,000 feet) within the Rocky Mountains. *Betula nana* is an indicator for the shrubby growth form on these fens; however, other shrub species may be dominant. There is usually herbaceous cover, and dense mosses cover the ground.
IVC Dynamics: As peatland hummocks develop (become more pronounced), they may become more heavily dominated by *Salix* species (Wendell et al. 1986, as cited in Kittel et al. 1999b). Due to cold temperatures and a short growing season, this process may take several decades to occur (Phillips 1977).
IVC Environment: Elevations range from 900 to 3000 m in the Rocky Mountains. Communities occur on peat soils in seeps, swales, and wet alluvial terraces adjacent to low-gradient meandering streams. They are found in areas where soils are saturated from seeps and springs. Soils are Histosols saturated all year. Quaking mats are typical of many stands.

DISTRIBUTION

IVC Geographic Range: Stands of this alliance are found in the Rocky Mountains of Idaho, Montana, Wyoming, and Colorado. These are likely to occur in Alberta and British Columbia as well.
IVC Nations: CA,US
IVC States/Provinces: AB, BC?, CA?, CO, ID, MT, OR, SD, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002700 *Betula glandulosa / Carex lasiocarpa* Shrub Fen** [Resin Birch / Woolly-fruit Sedge Shrub Fen] []
  G3 (2004-09-28) AB?, BC?, ID, MT, WA
- **CEGL000484 *Vaccinium cespitosum - (Salix farriae) / Danthonia intermedia* Wet Shrubland** [Dwarf Bilberry - (Farr's Willow) / Timber Oatgrass Wet Shrubland] []
  G1G2 (2002-10-17) BC?, WA
- **CEGL001079 *Betula glandulosa / Carex utriculata* Shrub Fen** [Resin Birch / Northwest Territory Sedge Shrub Fen] []
  G4? (1996-02-01) AB, CA?, ID, MT, OR, WA
- **CEGL001188 *Salix candida / Carex utriculata* Shrub Fen** [Sageleaf Willow / Northwest Territory Sedge Shrub Fen] []
  G2 (2002-10-22) BC?, ID, MT, SD, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3435 Mud Sedge - Buxbaum's Sedge - Seaside Arrow-grass Alkaline Graminoid Fen Alliance

[ ]

Carex limosa - Carex buxbaumii - Triglochin maritima Alkaline Graminoid Fen Alliance

Rocky Mountain Alkaline Sedge Graminoid Fen

IVC Scientific Name: *Carex limosa - Carex buxbaumii - Triglochin maritima* Alkaline Graminoid Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of neutral to alkaline herbaceous fens dominated by one or more *Carex* species. Some well-documented species include *Carex buxbaumii, Carex cusickii, Carex limosa*, and *Carex saxatilis*. *Carex aquatilis* and *Carex utriculata* may be present as well. Additional species may include *Caltha leptosepala, Deschampsia cespitosa, Drosera* spp., *Eleocharis quinqueflora, Eriophorum* spp., *Menyanthes trifoliata, Pedicularis groenlandica*, and *Trichophorum cespitosum*. The source and quality of groundwater determine the nutrient content and pH of these fens, which most often occur as basin or depressional wetlands, but can also occur as slope and alluvial wetlands in terms of their hydrogeomorphic setting. These fens are seasonally or permanently saturated wetlands with an organic substrate that is at least 30 cm thick, and occur in the Rocky Mountains.
IVC Dynamics:
IVC Environment: Fens occur from 2400-3900 m in elevation and are located in narrow to broad mountain valleys, on organic substrates, with smooth to concave surface topography. Soils are commonly Histosols consisting of deep, fibric peat and are persistently saturated with standing water in the spring. Saturated conditions retard plant decomposition and favor organic matter accumulation.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the mountains of Utah, Idaho, Montana, Wyoming, Colorado and New Mexico, and likely extends into Alberta and British Columbia, Canada.
IVC Nations: CA,US
IVC States/Provinces: AB, AK?, BC?, CA, CO, ID, MB, MT, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008374 *Carex utriculata* Rocky Mountain Fen** [Northwest Territory Sedge Rocky Mountain Fen] []
  GNR. AB, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
- **CEGL001811 *Carex limosa* Fen** [Mud Sedge Fen] []
  G2 (2000-10-19) AK?, BC?, CA, CO, ID, MT, NM, OR, UT, WA, WY
- **CEGL000230 *Carex cusickii* Fen** [Cusick's Sedge Fen] []
  G3 (2002-10-17) BC?, CA?, ID, OR, WA
- **CEGL001806 *Carex buxbaumii* Fen** [Buxbaum's Sedge Fen] []
  G3 (2000-01-03) AB?, CO, ID, MT, OR, UT, WY
- **CEGL002549 *Carex diandra* Wet Meadow Fen** [Lesser Panicled Sedge Wet Meadow Fen] []
  GNR. CO, MB

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3436 Simple Bog Sedge - Bellardi Bog Sedge Alkaline Graminoid Fen Alliance

[ ]
Kobresia myosuroides - Kobresia simpliciuscula Alkaline Graminoid Fen Alliance
Bog Sedge Alkaline Graminoid Fen

IVC Scientific Name: *Kobresia myosuroides - Kobresia simpliciuscula* Alkaline Graminoid Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of strongly alkaline fens dominated by herbaceous species; indicators include *Kobresia myosuroides* and *Kobresia simpliciuscula*, the later indicating extremely rich conditions. Other species present may include *Carex aquatilis, Carex simulata, Eleocharis quinqueflora, Juncus arcticus, Ptilagrostis porteri, Salix brachycarpa, Salix candida, Thalictrum alpinum*, and *Trichophorum pumilum*. The water chemistry is distinct in that it contains high levels of calcium and magnesium. It is documented to occur in the Rocky Mountains of Colorado, but is likely to occur in Wyoming, Montana, Idaho, Utah, New Mexico, Alberta and British Columbia
IVC Dynamics:
IVC Environment: The water chemistry is distinct in that it contains high levels of calcium and magnesium.

DISTRIBUTION

IVC Geographic Range: This alliance is documented to occur in the Rocky Mountains of Colorado, but is likely to occur in Wyoming, Montana, Idaho, Utah, New Mexico, Alberta and British Columbia.
IVC Nations: CA?,US
IVC States/Provinces: AB?, BC?, CO, ID?, MT?, NM?, UT?, WY?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

M063 North Pacific Bog & Fen

Tourbières oligotrophes et tourbières minérotrophes du nord du Pacifique

IVC Colloquial Name: North Pacific Bog & Fen

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup contains acidic to alkaline peatlands (bogs and fens) with low-growing shrubs, stunted trees, or dense herbaceous structure, or a mosaic of physiognomic types; nearly all have a moss-dominated ground layer. Indicator shrub and herbaceous species include *Betula nana, Carex aquatilis, Carex cusickii, Carex limosa, Carex livida, Carex utriculata, Comarum palustre, Kalmia microphylla, Ledum* spp., *Menyanthes trifoliata, Myrica gale, Salix pulchra, Spiraea douglasii*, and many others. The ground layer is usually very thick with *Sphagnum* moss or "brown mosses" such as *Campylium, Drepanocladus, Scorpidium, Tomentypnum*, and *Warnstorfia*. Stunted tree species present may include *Callitropsis nootkatensis, Pinus contorta var. contorta, Picea sitchensis, Thuja plicata*, and/or *Tsuga heterophylla*. This macrogroup occurs throughout southern Alaska (including the Aleutian Islands), maritime British Columbia, Washington, Oregon, and northern California. This includes lowlands such as the Puget Sound lowlands and higher montane and subalpine elevations in the coastal mountains, the Sierra Nevada, and the Klamath-Siskiyou mountains. The macrogroup is not limited to coastal/maritime areas. Elevations are mostly under 457 m (1500 feet). The macrogroup includes well-developed bogs, raised bogs, "poor" (aka acidic) and "rich" (aka alkaline), as well as neutral fens. Soils are deep (>40 cm) organic, and are usually saturated throughout the growing season. Sites include serpentine- and ultramafic-influenced peatlands in northern California. Water sources include mineral-rich groundwater (fens) to only that of precipitation (bogs).

IVC Geographic Range: This wetland type is relatively abundant in southeastern Alaska and maritime British Columbia but diminishes rapidly in size and number farther south. It includes peatlands along the Pacific coast from the Aleutian Islands, Alaska Peninsula, Kodiak Islands, southern and southeastern coastal Alaska, coastal British Columbia south to northern California. It also includes peatlands found in the Puget Sound lowlands, in the coastal mountains and montane to subalpine elevations of the Cascades and the Klamath-Siskiyou mountains.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA, NT?, NU?, OR, WA, YT?

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments:

Groups in Canada:

- **G285 North Pacific Alkaline Open Fen []**
- **G284 North Pacific Open Bog & Acidic Fen []**
- **G610 North Pacific Maritime Wooded Bog & Poor Fen []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Kittel, M. Reid, K. Boggs, and T. Boucher, in Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel and D. Meidinger

IVC Description Date: 2017-03-29

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by K. Boggs, T. Boucher, and T. Keeler-Wolf.

G285 North Pacific Alkaline Open Fen

[ ]

IVC Colloquial Name: North Pacific Alkaline Open Fen

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This wetland group occurs in peatlands along the Pacific Coast from Alaska south to northern California, in and west of the coastal mountain summits but including the Puget Sound lowlands. This group consists of neutral to alkaline fens (pH

base-rich, neutral or alkaline); the extreme end is found often on calcareous substrates, but this is more the exception. Brown mosses such as *Campylium, Drepanocladus, Scorpidium, Tomentypnum*, and *Warnstorfia* and sedges (*Carex*) characterize rich fens (pH >5.5). Some sites may have high cover of minerotrophic non-hummock-forming *Sphagnum* species. Low shrub or graminoid physiognomy is typical. Groundwater input provides for the high mineral content, and soil saturation in general precludes tall vegetative growth. Shrubs are usually deciduous willows and birch, but evergreen dwarf-shrubs are not uncommon. Indicator species include *Betula nana, Carex aquatilis, Carex cusickii, Carex limosa, Carex livida, Carex utriculata, Comarum palustre, Menyanthes trifoliata, Myrica gale*, and *Spiraea douglasii*. Trees may be present at the edges or on raised hummocks where soils are not anoxic and include *Callitropsis nootkatensis, Picea sitchensis, Pinus contorta, Thuja plicata*, and/or *Tsuga heterophylla*. Elevations range from under 457 m (1500 feet) to over 2100 m (7000 feet), and annual precipitation ranges from 890-3050 mm (35-120 inches). These wetlands are relatively abundant in Alaska and British Columbia but diminish rapidly in size and number farther south. They occur in river valleys, around lakes and marshes or on slopes. The organic soils can be characterized by an abundance of sodium cations from oceanic precipitation when they reside within the hypermaritime zone.

IVC Dynamics: Much literature documents the formation and succession of peatlands in Boreal, Temperate and Pacific Coastal settings (Banner et al. 1988, 2005, Mitsch and Gosselink 2000, and many others). These processes tend to take several hundreds to thousands of years, are well-documented and will not be repeated here. The purpose of this section is to discuss dynamics from disturbance. Natural disturbance events along north coast peatlands play an important role in slowing and reducing organic matter accumulation on specific types of sites. The main types of natural disturbance on the north Pacific coast are landslides, windthrow, and fluvial activity (Banner et al. 2005). Peatlands on steep slopes experience landslides and windthrow events which tend to mix soil and slow the buildup of organic layers. On more gentle terrain, disturbance is less frequent which allows for a deep accumulation of organic matter. Disturbance here is of small and localized scale. Large-scale disturbance such as major blowdown or severe fire are infrequent (>1000 years).

Fire, when it does occur, stimulates growth of mosses that prefer bare substrates, and "re-starts" a successional sequence of different mosses and vascular plants. Fires also increase nutrient availability and may temporarily create a carbon sink. Fire scars on stumps within herbaceous bogs and fens have been observed, pointing to a need for more study (Banner et al. 2005, J. Rocchio pers. comm. 2013). It has been documented that Native Americans burned herbaceous wetlands of the Olympic Peninsula annually to keep trees from invading wetland openings (Anderson 2009). Logging has also been shown to increase *Sphagnum* growth, through increased sunlight availability (Banner et al. 2005).

Landslides, fire and changes to water table depth and water source will alter the amount, composition and competition of peatland moss and higher vascular plant species. Fire can remove surface vegetation in dry seasons and stimulate the growth of *Sphagnum* spp. such that hummocks develop where once a depression occurred (Banner et al. 1988), shifting the small-scale local mosaic of swale and hummock within a peatland occurrence. Lowering the water table can allow trees such as *Pinus contorta, Tsuga heterophylla*, and *Betula papyrifera* to expand into peatland areas. Disturbance may bring the influx of mineral-rich waters from surrounding uplands (particularly along drainage channels), and flora characteristic of bogs is replaced by fen plants such as *Spiraea* spp., *Salix* spp., *Pyrus* spp., *Juncus* spp. and *Carex* spp. (Banner et al. 1988). Succession of mined peatlands depends on the degree of humification of the remaining substrate and hydrology. On unhumified peatmoss *Sphagnum* spp., *Drosera rotundifolia, Rubus chamaemorus*, and *Ledum groenlandicum* can regenerate and new *Sphagnum* peat can accumulate in pits and pools after mining (Banner et al 1988).

In addition to disturbance, there are natural cycles and interplay between the advancement and retreat of peat levels (the buildup of peat that alters depth of rooting zone relative to groundwater, or decrease in in peat depth from an increase decomposition due to drought) and encroachment peat into surrounding uplands (paludification) or the reverse, surrounding upland species that may shade out moss species. Generally, the greatest (annually measurable) change occurs on the edges of fens and bogs and at the tops of hummocks. These small-scale dynamics depend on the type of wetland and specific local site characteristics that cannot be generalized in a group description.

Monitoring peat wetlands is an important source of information as to whether observed changes are due to natural climatic or successional cycles or direct changes of water sources by human hands, or other indirect effects of human activity that may cause sedimentation, draining, flooding, or other changes to peatlands.

IVC Environment: Elevations are mostly under 457 m (1500 feet) but range up into the subalpine to 2100 m (7000 feet)), and annual precipitation ranges from 890-3050 mm (35-120 inches). These wetlands are relatively abundant in Alaska and British Columbia but diminish rapidly in size and number farther south. They occur in river valleys, around lakes and marshes, or on slopes. In Hypermaritime settings, the organic soils are characterized by an abundance of sodium cations from oceanic precipitation. This group consists of mostly circumneutral (ranging from slightly acidic to basic) fens. Some are found often on calcareous substrates, which represent the extreme alkaline range within the group. Environmental information was summarized from the following sources: Shacklette et al. (1969), Eyre (1980), Banner et al. (1986, 1988, 1993), DeMeo et al. (1992), Viereck et al. (1992), Kunze (1994), Talbot and Talbot (1994), Martin et al. (1995), Shephard (1995), DeVelice et al. (1999), Boggs et al. (2003, 2008a, 2008b), MacKenzie and Moran (2004), Talbot et al. (2006), and Fleming and Spencer (2007).

DISTRIBUTION

IVC Geographic Range: This group is found along the Pacific Coast from central coast and southeastern Alaska, British Columbia, Washington, Oregon to northern California, in and west of the coastal mountain summits but including the Puget Sound lowlands.
IVC Nations: CA,US
IVC States/Provinces: AK, BC, CA, NT?, NU?, OR, WA, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, and threats moderate. Rank is uncertain until more is known about the condition and extent of occurrences in British Columbia.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4405 *Carex aquatilis var. dives - Carex cusickii* Intermediate Fen Alliance** [Sitka Sedge - Cusick's Sedge Intermediate Fen Alliance] []
- **A4406 *Festuca rubra - Carex interior - Darlingtonia californica* Serpentine Fen Alliance** [Red Fescue - Inland Sedge - California Pitcherplant Serpentine Fen Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2011)
IVC Description Author: G. Kittel
IVC Description Date: 2015-12-02
IVC Acknowledgments: D. Meidinger, J. Rocchio

A4405 Sitka Sedge - Cusick's Sedge Intermediate Fen Alliance

[ ]
Carex aquatilis var. dives - Carex cusickii Intermediate Fen Alliance
North Pacific Intermediate Fen

IVC Scientific Name: *Carex aquatilis var. dives - Carex cusickii* Intermediate Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, BC, CA, NT?, NU?, OR, WA, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003332** ***Carex cusickii - (Menyanthes trifoliata)*** **Fen** [Cusick's Sedge - (Buckbean) Fen] []
  G2G3 (2002-10-17) WA
- **CEGL001826** ***Carex aquatilis var. dives*** **Fen** [Sitka Sedge Fen] []
  G4 (1996-02-01) AK, BC, CA?, OR, WA
- **CEGL002679** ***Trichophorum cespitosum*** **Pacific Fen** [Tufted Bulrush Pacific Fen] []
  GNR. AK?, BC?, NT?, NU?, OR, WA, YT?
- **CEGL003433** ***Carex aquatilis var. dives - Comarum palustre*** **Fen** [Sitka Sedge - Purple Marshlocks Fen] []
  G2 (2002-10-21) AK?, BC?, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4406 Red Fescue - Inland Sedge - California Pitcherplant Serpentine Fen Alliance

[ ]
Festuca rubra - Carex interior - Darlingtonia californica Serpentine Fen Alliance
North Pacific Serpentine Fen

IVC Scientific Name: *Festuca rubra - Carex interior - Darlingtonia californica* Serpentine Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC?, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001857** ***Carex interior - Hypericum anagalloides*** **Wet Meadow** [Inland Sedge - Tinker's-penny Wet Meadow] []
  G2?Q (2000-04-27) BC?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:

IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G284 North Pacific Open Bog & Acidic Fen

[ ]

IVC Colloquial Name: North Pacific Open Bog & Acidic Fen
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This wetland group consists of acidic (pH <5.5) peatlands along the Pacific coast from the Aleutian Islands, Alaska Peninsula, Kodiak Islands, southern and southeastern coastal Alaska, coastal British Columbia south to northern California, west of the coastal mountain summits and including the Puget Sound lowlands. Mosses such as *Sphagnum* spp. or liverworts characterize the ground cover. Vegetation can be stunted conifer trees, dwarf-shrubs or herbaceous (vascular or nonvascular) plants or a mosaic; nearly all have a moss-dominated ground layer. Peatlands are often interspersed with small lakes and ponds and can be a mosaic with non-peat wetlands such as wet meadows. Shrub species include *Andromeda polifolia, Betula nana, Empetrum nigrum, Kalmia polifolia, Ledum* spp., *Myrica gale, Salix pulchra*, and *Vaccinium* spp. Herbaceous species include *Carex anthoxanthea, Carex aquatilis var. dives, Carex livida, Carex pauciflora, Carex pluriflora, Comarum palustre, Drosera rotundifolia, Equisetum fluviatile, Eriophorum angustifolium, Geum calthifolium, Nephrophyllidium crista-galli, Parnassia kotzebuei, Rubus chamaemorus, Sanguisorba menziesii*, and *Trichophorum cespitosum*. Mosses include *Philonotis fontana var. americana, Sphagnum fuscum*, and other *Sphagnum* spp. Liverworts include *Marsupella* spp., *Nardia* spp., *Scapania* spp., and *Siphula* spp. Tree species include stunted *Callitropsis nootkatensis, Picea sitchensis, Pinus contorta var. contorta*, or *Tsuga mertensiana*. Elevation ranges from sea level to higher than 500 m (1650 feet), and most stands are found under 457 m (1500 feet). The annual precipitation ranges from 890-3050 mm (35-120 inches). These wetlands are relatively abundant in Alaska and British Columbia but diminish rapidly in size and number farther south. They occur in river valleys, in basins, around lakes and marshes, or on gentle to steep slopes. The group includes well-developed bogs, raised bogs and poor fens. Soils are deep (>40 cm), organic, acidic (pH <5.5) and are usually saturated throughout the growing season.

IVC Dynamics: Much literature documents the formation and succession of peatlands in boreal, temperate and Pacific coastal settings (Banner et al. 1988, 2005, Mitsch and Gosselink 2000, and many others). These processes tend to take several hundreds to thousands of years, are well-documented and will not be repeated here. The purpose of this section is to discuss dynamics from disturbance. Natural disturbance events along north coast peatlands play an important role in slowing and reducing organic matter accumulation on specific types of sites. The main types of natural disturbance on the north Pacific coast are landslides, windthrow, and fluvial activity (Banner et al. 2005). Peatlands on steep slopes experience landslides and windthrow events which tend to mix soil and slow the buildup of organic layers. On more gentle terrain, disturbance is less frequent, which allows for a deep accumulation of organic matter. Disturbance here is of small and localized scale. Large-scale disturbance such as major blowdown or severe fire are infrequent (>1000 years).

Fire, when it does occur, stimulates growth of mosses that prefer bare substrates, and "re-starts" a successional sequence of different mosses and vascular plants. Fires also increase nutrient availability and may temporarily create a carbon sink. Fire scars on stumps within herbaceous bogs and fens have been observed, pointing to a need for more study (Banner et al. 2005, J. Rocchio pers. comm. 2013). It has been documented that Native Americans burned herbaceous wetlands of the Olympic Peninsula annually to keep trees from invading wetland openings (Anderson 2009). Logging has also been shown to increase *Sphagnum* growth, through increased sunlight availability (Banner et al. 2005).

Landslides, fire and changes to water table depth and water source will alter the amount, composition and competition of peatland moss and higher vascular plant species. Fire can remove surface vegetation in dry seasons and stimulate the growth of *Sphagnum* spp. such that hummocks develop where once a depression occurred (Banner et al. 1988), shifting the small-scale local mosaic of swale and hummock within peatland occurrences. Lowering the water table can allow trees such as *Pinus contorta, Tsuga heterophylla* and *Betula papyrifera* to expand into peatland areas. Disturbance may bring the influx of mineral-rich waters from surrounding uplands (particularly along drainage channels), and flora characteristic of bogs is replaced by fen plants such as *Spiraea* spp., *Salix* spp., *Pyrus* spp., *Juncus* spp. and *Carex* spp. (Banner et al. 1988). Succession of mined peatlands depends on the degree of humification of the remaining substrate and hydrology. On unhumified peatmoss *Sphagnum* spp., *Drosera rotundifolia, Rubus chamaemorus*, and *Ledum groenlandicum* can regenerate and new *Sphagnum* peat can accumulate in pits and pools after mining (Banner et al 1988).

In addition to disturbance, there are natural cycles and interplay between the advancement and retreat of peat levels (the buildup of peat that alters depth of rooting zone relative to groundwater, or decrease in peat depth from an increase decomposition due to drought) and encroachment peat into surrounding uplands (paludification) or the reverse, surrounding

upland species that may shade out moss species. Generally the greatest (annually measurable) change generally occurs on the edges of fens and bogs and at the tops of hummocks. These small-scale dynamics depend on the type of wetland and specific local site characteristics that cannot be generalized in a group description. Some examples are given here. In Alaska, species that dominate the early stages of succession in newly formed ponded basins include *Equisetum variegatum, Equisetum fluviatile*, and *Comarum palustre*, while *Sphagnum* species invade the surface and help in forming peat. Acidic and nutrient-poor-tolerant vascular species eventually dominate such sites, such as *Myrica gale, Empetrum nigrum, Vaccinium uliginosum, Andromeda polifolia*, and *Vaccinium oxycoccos*. The late-successional stage of a peatland supports various community types, depending on the pH, waterflow, and nutrient status of a site, such as *Myrica gale / Empetrum nigrum* and *Picea sitchensis / Sphagnum* plant associations. Peat buildup, patterned ground, and changes in water table are recurrent aspects of peatland development rather than unidirectional successional events. For this reason it is unlikely that any of the late-seral peatland communities are stable in the sense of climax vegetation (K. Boggs and T. Boucher pers. comm. 2008). In Washington, some fens can be indefinitely maintained by groundwater discharge; sometimes succession from rich fen to poor fen/bog may occur in these situations but often is dependent on water chemistry and level of discharge and fire (J. Rocchio pers. comm. 2012).

Monitoring peat wetlands is an important source of information as to whether observed changes are due to natural climatic or successional cycles or direct changes of water sources by human hands, or other indirect effects of human activity that may cause sedimentation, draining, flooding, or other changes to peatlands.

IVC Environment: Peatland elevations are mostly under 457 m (1500 feet), and annual precipitation ranges from 890-3050 mm (35-120 inches); however, some types occur higher than 500 m (1650 feet). They occur in river valleys, in basins, around lakes and marshes, or on gentle to steep slopes. The group includes well-developed bogs, raised bogs and poor (acidic, pH <5.5) fens, even on reasonable slopes in hypermaritime environments. High-elevation peatlands can occur on sloping terrain and may develop on fairly steep sideslopes in areas with very high rainfall and low permeability. Hypermaritime site organic soils are characterized by an abundance of sodium cations from oceanic spray. Soils are deep (>40 cm), organic, acidic (pH <5.5) and are usually saturated throughout the growing season. Organic soil may overlay mineral soils and may be floating or submerged. Alkaline and acidic fens can be intermixed with bogs. Environmental information was summarized from the following sources: Shacklette et al. (1969), Eyre (1980), Banner et al. (1986, 1988, 1993), DeMeo et al. (1992), Viereck et al. (1992), Kunze (1994), Talbot and Talbot (1994), Martin et al. (1995), Shephard (1995), DeVelice et al. (1999), Boggs et al. (2003, 2008a, 2008b), MacKenzie and Moran (2004), Talbot et al. (2006), and Fleming and Spencer (2007).

DISTRIBUTION

IVC Geographic Range: These wetlands are relatively abundant in Alaska and British Columbia but diminish rapidly in size and number farther south. This group includes acidic peatlands along the Pacific coast from the Aleutian Islands, Alaska Peninsula, Kodiak Islands, southern and southeastern coastal Alaska, and coastal British Columbia south to northern California, in and west of the coastal mountain summits but including the Puget Sound lowlands.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4412 *Kalmia microphylla* - *Caltha leptosepala* - *Sphagnum* spp. Montane Acidic Shrub & Open Fen Alliance** [Alpine Laurel - White Marsh-Marigold - Peat Moss species Montane Acidic Shrub & Open Fen Alliance] []
- **A4409 *Ledum groenlandicum* - *Kalmia microphylla* - *Rhynchospora alba* Shrub & Open Bog Alliance** [Bog Labrador-Tea - Alpine Laurel - White Beaksedge Shrub & Open Bog Alliance] []
- **A4411 *Myrica gale* - *Carex utriculata* - *Sphagnum* spp. Acidic Shrub & Open Fen Alliance** [Sweetgale - Northwest Territory Sedge - Peat Moss species Acidic Shrub & Open Fen Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: Kittel, M. Reid, K. Boggs, and T. Boucher, in Faber-Langendoen et al. (2011)
IVC Description Author: G. Kittel, K. Boggs, T. Boucher, M. Reid
IVC Description Date: 2015-12-02
IVC Acknowledgments: D. Meidinger, J. Rocchio

A4412 Alpine Laurel - White Marsh-Marigold - Peat Moss species Montane Acidic Shrub & Open Fen Alliance

[ ]
Kalmia microphylla - Caltha leptosepala - Sphagnum spp. Montane Acidic Shrub & Open Fen Alliance
[ ]

IVC Scientific Name: *Kalmia microphylla - Caltha leptosepala - Sphagnum* spp. Montane Acidic Shrub & Open Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4409 Bog Labrador-Tea - Alpine Laurel - White Beaksedge Shrub & Open Bog Alliance

[ ]
Ledum groenlandicum - Kalmia microphylla - Rhynchospora alba Shrub & Open Bog Alliance
[ ]

IVC Scientific Name: *Ledum groenlandicum - Kalmia microphylla - Rhynchospora alba* Shrub & Open Bog Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC, OR?, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003414 *Ledum groenlandicum - Kalmia microphylla / Sphagnum* spp. Shrub Bog** [Bog Labrador-tea - Alpine Laurel / Peatmoss species Shrub Bog] []
  G4 (2002-10-01) BC, WA
- **CEGL003338 *Rhynchospora alba* - (*Vaccinium oxycoccos*) / *Sphagnum* spp. Bog & Acidic Fen** [White Beaksedge - (Small Cranberry) / Peat Moss species Bog & Acidic Fen] []
  G3 (2002-10-01) BC?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4411 Sweetgale - Northwest Territory Sedge - Peat Moss species Acidic Shrub & Open Fen Alliance

[ ]
Myrica gale - Carex utriculata - Sphagnum spp. Acidic Shrub & Open Fen Alliance
[ ]

IVC Scientific Name: *Myrica gale - Carex utriculata - Sphagnum* spp. Acidic Shrub & Open Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK?, BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003420** ***Myrica gale - Spiraea douglasii / Sphagnum*** **spp. Fen** [Sweetgale - Rose Spirea / Peatmoss species Fen] []
  G2? (2002-10-17) BC?, WA
- **CEGL003416** ***Spiraea douglasii / Sphagnum*** **spp. Fen** [Rose Spirea / Peatmoss species Fen] []
  G3 (2002-10-21) BC, OR, WA
- **CEGL003422** ***Carex utriculata - Carex aquatilis var. dives - Sanguisorba officinalis / Sphagnum*** **spp. Fen** [Northwest Territory Sedge - Sitka Sedge - Great Burnet / Peatmoss species Fen] []
  G3? (2002-10-17) WA
- **CEGL003423** ***Carex (livida, utriculata) / Sphagnum*** **spp. Fen** [(Livid Sedge, Northwest Territory Sedge) / Peatmoss species Fen] []
  G1G2 (2002-10-17) BC?, WA
- **CEGL003376** ***Myrica gale / Carex (aquatilis var. dives, utriculata)*** **Fen** [Sweetgale - (Sitka Sedge, Northwest Territory Sedge) Fen] []
  G3 (2002-10-01) AK?, BC, OR, WA
- **CEGL003415** ***Spiraea douglasii / Carex aquatilis var. dives*** **Fen** [Rose Spirea / Sitka Sedge Fen] []
  G4 (2002-10-01) BC, WA
- **CEGL003335** ***Ledum groenlandicum - Myrica gale / Sphagnum*** **spp. Shrub Bog** [Bog Labrador-tea - Sweetgale / Peatmoss species Shrub Bog] []
  G2 (2002-10-01) BC, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G610 North Pacific Maritime Wooded Bog & Poor Fen

[ ]

IVC Colloquial Name: North Pacific Maritime Wooded Bog & Poor Fen
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This wetland forested group occurs from southern coastal Alaska (Kenai Fjords), coastal British Columbia south into coastal Washington and Oregon, and west of the coastal mountain summits (not interior). It can be dominated by any one or a number of conifer species (*Callitropsis nootkatensis, Picea sitchensis, Pinus contorta var. contorta, Tsuga heterophylla*, and/or *Tsuga mertensiana*) that are capable of growing on saturated or seasonally flooded soils. Overstory is often less than 50% cover, but shrub understory can have high cover. Common shrubs include *Elliottia pyroliflora, Gaultheria shallon* (southern portion of the Alaska distribution only), and *Vaccinium ovalifolium*. Common understory species include *Carex anthoxanthea, Carex pluriflora, Carex stylosa, Eriophorum* spp., *Lysichiton americanus, Nephrophyllidium crista-galli, Phegopteris connectilis, Thelypteris quelpaertensis, Trichophorum cespitosum*, and *Sphagnum* spp. Treed bogs and fens are common in southeastern Alaska, less so farther south. Forest bogs and fens can be mostly small-patch in size, but can be extensive in the Pacific Northwest. This group is found on poorly drained soils, ranging from organic veneers over wet mineral soils to deeper organics peaty soils; the peat is mostly deep, mossy peat, but can include woody peat. The peat may also be shallow over rock. The water source is stagnant or slowly moving acidic groundwater or direct precipitation.

IVC Dynamics: This group represents forests with soils that have taken hundreds to thousands of years to develop, a topoedaphic climax that is relatively stable over time. Tree regeneration frequently occurs on raised organic microsites on the remains of previous trees. Tree growth is very slow. Longer term succession is probably influenced by paludification and climatic patterns that dictate drainage, either favoring poorer drainage, increased tree mortality, and more open canopy; or improved drainage, greater tree growth, and a more closed canopy. These patterns can also favor individual tree species based on their tolerance or intolerance of wet soils. The widespread yellow-cedar decline, which covers 200,000 ha in southeastern Alaska, is an example of a climate-induced tree death that has resulted in a composition shift away from yellow-cedar due to this mortality (Hennon et al. 2008). Windthrow can cause soil mixing that reverses the paludification processes on a small scale, where productivity may be increased (Banner et al 2005).

IVC Environment: *Climate:* Cool temperate. *Soil/substrate/hydrology:* Forested poor fens and bogs are mostly small-patch size, occurring sporadically in glacial depressions or around the edges of lakes and marshes. However, in the hypermaritime climates, they can be extensive, dominating areas of low slopes that do not shed water easily. These occur primarily on flat to gently sloping lowlands but can be found on steeper slopes and up to 800 m (2500 feet) elevation. This group is found on poorly drained soils, ranging from organic veneers over wet mineral soils to deeper organics peaty soils; the peat is mostly deep, mossy peat, but can include woody peat. The peat may also be shallow over rock. The water source is stagnant or slowly moving acidic groundwater or direct precipitation. Treed bogs and poor fens may grade into drier upland forest on mineral soil, or adjacent shrubland or herbaceous poor fen and bogs, or grade into wetter non-treed fens, which have richer soil water (higher pH). This environmental information was compiled from several sources: for Alaska (DeMeo et al. 1992, Viereck et al. 1992, Martin et al. 1995, Shephard 1995, DeVelice et al. 1999, Boggs 2002, Boggs et al. 2008b); for Washington (Chappell 1999, Chappell et al. 2001); for Oregon and Washington (Franklin and Dyrness 1973); and for British Columbia (Banner et al. 1993, Green and Klinka 1994, MacKenzie and Moran 2004).

DISTRIBUTION

IVC Geographic Range: This group is found in southern coastal Alaska (Kenai Fjords), coastal British Columbia south into coastal Washington and Oregon, mostly west of the coastal mountain summits.
IVC Nations: CA,US
IVC States/Provinces: AK, BC, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, and threats moderate. Rank is uncertain until more is known about the condition and extent of occurrences in British Columbia.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:
- **A4408 *Pinus contorta - Tsuga heterophylla / Ledum groenlandicum / Carex livida* Coastal Bog Woodland Alliance** [Lodgepole Pine - Western Hemlock / Bog Labrador-Tea / Livid Sedge Coastal Bog Woodland Alliance] []
- **A4407 *Pinus contorta - Tsuga heterophylla / Ledum groenlandicum / Sphagnum capillifolium* Bog Woodland Alliance** [Lodgepole Pine - Western Hemlock / Bog Labrador-Tea / Northern Peatmoss Bog Woodland Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, K. Boggs, T. Boucher, and M.S. Reid, in Faber-Langendoen et al. (2011)
IVC Description Author: D. Meidinger, G. Kittel, K. Boggs, T. Boucher, M.S. Reid, D. Faber-Langendoen
IVC Description Date: 2015-12-02
IVC Acknowledgments: Additional contributing authors include C. Chappell, P. Hennon, P. Comer, J. Rocchio, and D. Meidinger.

A4408 Lodgepole Pine - Western Hemlock / Bog Labrador-Tea / Livid Sedge Coastal Bog Woodland Alliance

[ ]
Pinus contorta - Tsuga heterophylla / Ledum groenlandicum / Carex livida Coastal Bog Woodland Alliance
[ ]

IVC Scientific Name: *Pinus contorta - Tsuga heterophylla / Ledum groenlandicum / Carex livida* Coastal Bog Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:

IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001691** ***Pinus contorta var. contorta - Thuja plicata / Myrica gale / Sphagnum*** **spp. Treed Fen** [Beach Pine - Western Red-cedar / Sweetgale / Peatmoss species Treed Fen] []
  G3G4 (2002-10-17) BC?, WA
- **CEGL002779** ***Thuja plicata - Callitropsis nootkatensis - Tsuga heterophylla / Coptis aspleniifolia / Sphagnum*** **spp. Treed Bog** [Western Red-cedar - Alaska-cedar - Western Hemlock / Fernleaf Goldthread / Peatmoss species Treed Bog] []
  G4G5 (2005-09-19) BC
- **CEGL001787** ***Thuja plicata - Tsuga heterophylla / Lysichiton americanus / Sphagnum*** **spp. Treed Fen** [Western Red-cedar - Western Hemlock / American Skunk-cabbage / Peatmoss species Treed Fen] []
  G3G4 (2002-10-17) BC?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4407 Lodgepole Pine - Western Hemlock / Bog Labrador-Tea / Northern Peatmoss Bog Woodland Alliance

[ ]
Pinus contorta - Tsuga heterophylla / *Ledum groenlandicum* / *Sphagnum capillifolium* Bog Woodland Alliance
[ ]

IVC Scientific Name: *Pinus contorta - Tsuga heterophylla* / *Ledum groenlandicum* / *Sphagnum capillifolium* Bog Woodland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003337** ***Pinus contorta var. contorta / Ledum groenlandicum / Sphagnum*** **spp. Treed Bog** [Beach Pine / Bog Labrador-tea / Peatmoss species Treed Bog] []
  G3 (2002-10-01) BC, WA
- **CEGL003339** ***Tsuga heterophylla - (Thuja plicata) / Ledum groenlandicum / Sphagnum*** **spp. Treed Bog** [Western Hemlock - (Western Red-cedar) / Bog Labrador-tea / Peatmoss species Treed Bog] []
  G3 (2002-10-01) BC?, WA
- **CNVC00068 Shore Pine / Black Crowberry / Peat Mosses** [Shore Pine / Black Crowberry / Peat Mosses] []
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

2.C.4. Temperate to Polar Freshwater Marsh, Wet Meadow & Shrubland

Temperate to Polar Freshwater Marsh, Wet Meadow & Shrubland includes wet riparian and swamp shrublands, wet meadows, wet prairies, and shallow and deep emergent marshes. The vegetation comprises seasonal green emergent, hydrophytic shrubs and herbs with at least 10% cover, on mucky, inundated or saturated soils across the mid-latitudes of the Northern and Southern hemispheres from 23° to 70°.

Macrogroups in Canada:

- **M888 Arid West Interior Freshwater Marsh []**
  These arid west freshwater marshes are found at all elevations below alpine throughout the interior basins and mountains of western North America, with dominant species such *Carex pellita, Carex praegracilis, Eleocharis palustris, Juncus arcticus ssp. littoralis, Paspalum distichum, Schoenoplectus americanus, Schoenoplectus pungens, Typha domingensis, Typha latifolia*, and species of *Bidens, Cicuta, Cyperus, Mimulus*, and *Phalaris*.
- **M074 Western North American Vernal Pool [Mares printanières de l'ouest de l'Amérique du Nord]**
  This macrogroup includes herbaceous communities with high diversity and high endemism that form distinct zones or concentric rings within shallow ephemeral pools on hardpan soils with an indurated clay or cemented layer or on shallow soils over unfractured bedrock. It is found throughout intermountain valleys of British Columbia, Oregon, Washington, California and Mexico
- **M073 Vancouverian Lowland Marsh, Wet Meadow & Shrubland [Marais, prairies humides, arbustaies des basses terres de la région de Vancouver]**
  This macrogroup includes freshwater shrublands, meadows, marshes and mudflat wetlands, with mostly mineral soils that are that are poorly to well-drained and seasonally wet to saturated, occurring at low elevations from the Pacific coast and inland to interior wetlands of shallow lakebeds, rivershores of the Columbia River and the Rocky Mountains.
- **M893 Western North American Montane Marsh, Wet Meadow & Shrubland []**
- **M301 Western North American Ruderal Marsh, Wet Meadow & Shrubland []**
  This macrogroup includes disturbed natural wetland habitats of temperate western North America that are now strongly dominated by non-native and sometimes weedy or generalist native species.
- **M069 Eastern North American Marsh, Wet Meadow & Shrubland [Marais, prairies humides et arbustaies de l'est de l'Amérique du Nord]**
  This largely freshwater wetland macrogroup encompasses shrub swamps, marshes, wet meadows and wet prairies of temperate and boreal eastern North America, north of the southern Atlantic and Gulf coastal plains and east of the Great Plains and Yukon Territory. It is dominated by graminoids (e.g., species of the genera *Calamagrostis, Carex, Echinochloa, Glyceria, Juncus, Leersia, Schoenoplectus, Scirpus, Sparganium, Typha, Zizania*), forbs (e.g., species of the genera *Bidens, Eupatorium, Lobelia, Polygonum, Rumex, Sagittaria*), and shrubs (e.g., *Alnus incana, Alnus serrulata, Cornus sericea*, other *Cornus* spp., *Salix* spp., *Spiraea* spp., *Viburnum* spp.) in a widely variable composition and structure. This macrogroup also contains eastern inland saline meadows characterized by *Atriplex patula, Juncus gerardii*, and others.
- **M061 Eastern North American Cool Temperate Seep [Petites sources dans les zones tempérées froides de l'Est]**
  These small-patch herbaceous to shrubby seep and seepage fen wetlands are found on flat to gentle slopes or in shallow depressions, often on peaty soils, predominantly on circumneutral to calcareous or acidic substrates (gravel, limestone, and dolomite), and range from the Appalachians, Interior Low Plateau, and Ozark regions north to New England and the Midwest-Great Lakes region.
- **M880 Eastern North American Wet Shoreline Vegetation [Végétation des rivages humides de l'est de l'Amérique du Nord]**
  This macrogroup comprises highly variable herbaceous and shrub vegetation occurring on the shores of lakes and low-energy rivers in the eastern U.S. and adjacent Canada.
- **M881 Eastern North American Riverscour Vegetation [Végétation des lits de torrents de l'est de l'Amérique du Nord]**
  This macrogroup comprises vegetation that is highly variable in composition and structure, occurring in the eastern U.S. and adjacent Canada on the shores of rivers that are impacted by sediment removal and redeposition as a result of seasonal flood-scour and swift currents.
- **M071 Great Plains Marsh, Wet Meadow, Shrubland & Playa [Marais, prairies humides, arbustaies et bassins endoréiques des Grandes Plaines]**
  This wetland macrogroup is found throughout the Great Plains in riparian and non-riparian settings, dominated by a wide variety of herb or shrub obligate or facultative wetland species.
- **M303 Eastern-Southeastern North American Ruderal Marsh, Wet Meadow & Shrubland []**
  This macrogroup includes disturbed herbaceous or shrub marshes and wet meadows in the eastern and southeastern United States and southeastern Canada, which are dominated by native ruderal or exotic species.
- **M067 Atlantic & Gulf Coastal Plain Wet Prairie & Marsh []**
  Common plants of these herbaceous or shrub wetlands include species of *Eleocharis, Fimbristylis, Panicum, Rhynchospora,*

Sarracenia, and *Xyris*, or shrubs *Cephalanthus occidentalis* or *Vaccinium* spp., which occur in warm-temperate Atlantic and Gulf coastal plains depressions and basins, seepage slopes, interdunal swales and poorly drained wet flats.

- **M066 Atlantic & Gulf Coastal Fresh-Oligohaline Tidal Marsh []**
  These fresh and oligohaline tidal marshes are discontinuous along the Atlantic and Gulf coasts of the United States and adjacent Canada from Newfoundland to Texas. Where found, they are the primary vegetation between outer tidal salt and brackish marshes and inland non-tidally influenced vegetation (upland or wetland).
- **M894 North American Boreal Marsh, Wet Meadow & Shrubland []**
  This sedge wet meadow, marsh and wet shrubland macrogroup is found throughout the boreal regions of North America in low-lying wet areas.
- **M870 Arctic Freshwater Marsh, Wet Meadow, & Shrubland [Marais d'eau douce et prairies humides des zones arctique et subarctique de l'Amérique du Nord]**
  This macrogroup consists of emergent marshes, wet meadows and wet shrublands that occur as small patches throughout arctic and subarctic Alaska and Canada, typically on the margins of ponds, lakes, beaded streams, wide and narrow floodplains and along water tracks within permafrost landscapes.

M888 Arid West Interior Freshwater Marsh

[ ]

IVC Colloquial Name: Arid West Interior Freshwater Marsh

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: These arid west freshwater marshes are found at all elevations below timberline throughout the interior basins and mountains of western North America. Vegetation is characterized by a lush, dense herbaceous layer with low diversity, sometimes occurring as a monoculture. Structure varies from emergent forbs which barely reach the water surface to tall graminoids that reach as tall as 4 m high. Dominant species include *Carex pellita, Carex praegracilis, Eleocharis palustris, Juncus arcticus ssp. littoralis, Paspalum distichum, Schoenoplectus americanus, Schoenoplectus pungens, Typha domingensis, Typha latifolia*, and species of *Bidens, Cicuta, Cyperus, Mimulus*, and *Phalaris*. This macrogroup includes shallow freshwater to brackish waterbodies found in bottomlands along drainages, in river floodplain depressions, cienegas, oxbow lakes, below seeps, frequently flooded gravel bars, low-lying sidebars, in-fill side channels, small ponds, stockponds, ditches and slow-moving streams, perennial streams in valleys and mountain foothills, as well as in small depressions gouged into basalt by Pleistocene floods, channeled scablands of the Columbia Plateau and within dune fields in the intermountain western U.S. These wetlands are mostly small-patch, confined to limited areas in suitable floodplain or basin topography. They are mostly semipermanently flooded, but some marshes have seasonal hydrologic flooding. Water is on or above the surface for most of the growing season. A consistent source of freshwater is essential to the function of these communities. Soils are muck or mineral or muck over a mineral soil, and water is high-nutrient. It is often found along the borders of ponds, lakes or reservoirs that have more open water. Some occurrences are interdunal wetlands in wind deflation areas, where sands are scoured down to the water table. The water table may be perched over an impermeable layer of caliche or clay or, in the case of the Great Sand Dunes of Colorado, a geologic dike that creates a closed basin that traps water.

IVC Geographic Range: This macrogroup is found throughout the temperate western North America interior (Columbia Basin, Great Basin, Colorado Plateau, and higher intermountain basins of western North America). It is also known to occur in dune fields across the intermountain western U.S., including the Great Sand Dunes in southern Colorado and the Pink Coral Dunes in Utah, and may also occur in dune fields in northeastern Arizona and the Great Basin, as well as in southwestern Wyoming in the Killpecker Dunes and Ferris Dunes, and southern Idaho.

IVC Nations: CA,MX,US

IVC States/Provinces: AZ, BC, CA, CO, ID, KS, MT, ND, NE, NM, NV, OK, OR, SD, SON, TX, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G531 Arid West Interior Freshwater Marsh []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M. Reid, in Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel, J. Christy, D. Faber-Langendoen

IVC Description Date: 2015-12-02

IVC Acknowledgments:

G531 Arid West Interior Freshwater Marsh

[ ]

IVC Colloquial Name: Arid West Interior Freshwater Marsh

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These arid west freshwater marshes are found at all elevations below timberline throughout the western interior basins and mountains of western North America. Vegetation is characterized by a lush, dense herbaceous layer with low

diversity, sometimes occurring as a monoculture. Structure varies from emergent forbs which barely reach the water surface to tall graminoids that reach as tall as 4 m high. Dominant species include *Carex pellita, Carex praegracilis, Eleocharis palustris, Juncus arcticus ssp. littoralis, Paspalum distichum, Schoenoplectus americanus, Schoenoplectus pungens, Typha domingensis, Typha latifolia*, and species of *Bidens, Cicuta, Cyperus, Mimulus*, and *Phalaris*. This group includes shallow freshwater to brackish waterbodies found in bottomlands along drainages, in river floodplain depressions, cienegas, oxbow lakes, below seeps, frequently flooded gravel bars, low-lying sidebars, in-fill side channels, small ponds, stockponds, ditches and slow-moving streams, perennial streams in valleys and mountain foothills, as well as in small depressions gouged into basalt by Pleistocene floods, channeled scablands of the Columbia Plateau and within dune fields in the intermountain western U.S. These wetlands are mostly small-patch, confined to limited areas in suitable floodplain or basin topography. They are mostly semipermanently flooded, but some marshes have seasonal hydrologic flooding. Water is on or above the surface for most of the growing season. A consistent source of freshwater is essential to the function of these communities. Soils are muck or mineral or muck over a mineral soil, and water is high-nutrient. It is often found along the borders of ponds, lakes or reservoirs that have more open water. Some occurrences are interdunal wetlands in wind deflation areas, where sands are scoured down to the water table. The water table may be perched over an impermeable layer of caliche or clay or, in the case of the Great Sand Dunes of Colorado, a geologic dike that creates a closed basin that traps water.

IVC Dynamics: Sites are depressions, ponds, springs, and riparian areas that are heavily inundated for at least part of the growing season which impedes the establishment of woody species. Isolated marshes in dune systems are subject to changes in size and location of the wet swales as the sand dunes shift, due to active dune migration. Dune "blowouts" and subsequent stabilization through succession are characteristic processes of the active dunes which surround the interdunal swales.

IVC Environment: *Climate:* Temperate Continental climate. Environmental settings include bottomlands along drainages, in river floodplain depressions, cienegas, oxbow lakes, below seeps, frequently flooded gravel bars, low-lying sidebars, infilled side channels, small ponds, stockponds, ditches and slow-moving streams, perennial streams in valleys and mountain foothills. Elevations range from 890 to 1560 m (2930-5120 feet). *Soil/substrate/hydrology:* Substrates are variable but are generally fine-textured, alkaline, alluvial soil, coarse loam, sandy loam, sand, silt or peat. Hydrologic regimes vary from seasonal inundation followed by complete soil desiccation to year-round standing water. Water may be poorly oxygenated and nitrogen-rich. They are mostly semipermanently flooded, but some marshes have seasonal hydrologic flooding. Water is at or above the surface for most of the growing season. A consistent source of freshwater is essential to the function of these systems. Soils are muck or mineral or muck over a mineral soil, and water is high-nutrient. Environmental information compiled from Bowers (1982, 1984, 1986), Banner et al. (1986, 1993), Lloyd et al. (1990), MacKinnon et al. (1990), Cooper and Severn (1992), Viereck et al. (1992), Shiflet (1994), Holland and Keil (1995), Shephard (1995), Steen and Coupe (1997), Hammond (1998), Pineada et al. (1999), Boggs (2000), Pineda (2000), Rondeau (2001), Brand and Sanderson (2002), and Chappell and Christy (2004).

DISTRIBUTION

IVC Geographic Range: This group is found throughout the temperate western North America interior (Columbia Basin, Great Basin, Colorado Plateau, and higher intermountain basins of western North America). It is also know to occur in dune fields across the intermountain western U.S., including the Great Sand Dunes in southern Colorado and the Pink Coral Dunes in Utah, and may also occur in dune fields in northeastern Arizona and the Great Basin, as well as in southwestern Wyoming in the Killpecker Dunes and Ferris Dunes, and southern Idaho.

IVC Nations: CA,MX,US

IVC States/Provinces: AZ, BC, CA, CO, ID, KS, MT, ND, NE, NM, NV, OK, OR, SD, SON, TX, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 9.4.1.25:P, 9.4.3.26:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.1.14:P, 10.2.2.81:P, 10.2.4.24:P, 11.1.1a.6:P, 11.1.1b.85:P, 11.1.2.7:P, 11.1.3.8:P, 12.1.1.79:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate. Effects of invasive species needs further review.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3892 *Equisetum fluviatile - Equisetum x ferrissii* Marsh Alliance** [Water Horsetail - Ferriss' Horsetail Marsh Alliance] []
  This alliance contains marshes dominated by emergent *Equisetum fluviatile, Equisetum laevigatum*, and/or *Equisetum x ferrissii* all of which can form monotypic stands. The water is shallow (<1 m) over mineral soils, usually sand/or silt, along wave-washed shores and stream channels of the western U.S. and Canada.
- **A3895 *Schoenoplectus americanus - Schoenoplectus acutus - Schoenoplectus californicus* Marsh Alliance** [Chairmaker's Bulrush - Hardstem Bulrush - California Bulrush Marsh Alliance] []
  This alliance covers western freshwater marshes where the most abundant species are *Schoenoplectus acutus, Schoenoplectus americanus, Schoenoplectus californicus, Bolboschoenus fluviatilis, Bolboschoenus maritimus, Schoenoplectus pungens, Schoenoplectus tabernaemontani*, and/or *Scirpus microcarpus*. Stands are found throughout the central midwestern and western U.S. and Canada on sites flooded (on average 1 m deep) for most of the growing season.
- **A3896 *Typha domingensis - Typha latifolia - Phragmites australis ssp. americanus* Western Marsh Alliance** [Southern Cattail - Broadleaf Cattail - American Common Reed Western Marsh Alliance] []
  This native alliance contains freshwater cattail marshes dominated by *Typha domingensis, Typha latifolia*, and/or *Phragmites australis ssp. americanus*, which can be monotypic stands or codominated by bulrush species such as *Schoenoplectus acutus, Schoenoplectus americanus*, or *Schoenoplectus pungens*. It is found most commonly along lake margins and in shallow basins, and occasionally in river backwaters in the semi-arid western U.S., including the semi-arid western Great Plains, and adjacent Canada, and possibly Mexico.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: C. Chappell, R. Crawford, K.A. Schulz, in D. Faber-Langendoen et al. (2011)
IVC Description Author: M.E. Hall, G. Kittel and J. Christy
IVC Description Date: 2015-12-02
IVC Acknowledgments: J. Christy

A3892 Water Horsetail - Ferriss' Horsetail Marsh Alliance

[ ]
Equisetum fluviatile - Equisetum x ferrissii Marsh Alliance
Western Horsetail Marsh

IVC Scientific Name: *Equisetum fluviatile - Equisetum x ferrissii* Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This herbaceous alliance of shallow emergent marshes is dominated by *Equisetum fluviatile, Equisetum laevigatum*, and/or *Equisetum x ferrissii* as the most abundant species, which can form monotypic stands. In mixed stands, the graminoids *Agrostis gigantea, Alopecurus aequalis, Carex aquatilis, Carex rostrata, Carex utriculata, Eleocharis palustris, Glyceria grandis, Juncus arcticus ssp. littoralis, Muhlenbergia asperifolia, Scirpus* and/or *Schoenoplectus* spp., and the forbs *Bidens cernua, Epilobium leptophyllum, Galium trifidum, Mentha arvensis*, and *Scutellaria galericulata* may be present. Ponds are shallow (<1 m in depth), over mineral soils, usually sand or silt, located along wave-washed shores or lakes or stream channels, including the tidal reaches of the Columbia River. The water is nearly fresh with a very low salt content. In Montana, British Columbia and Alberta, stands occur in still water and on wet ground along the margins of ponds or protected bays in lakes and backwater areas of streams.

IVC Dynamics: Clonal growth by means of rhizomes is a feature of the genus *Equisetum* and is very important to its ability to utilize groundwater and tolerate disturbance. A single rhizome system may cover hundreds of square feet (Hauke 1993). The rhizomes can penetrate to soil depths of 4 m in some circumstances (Page 1997). This deep rhizome growth gives the plants the ability to survive environmental disturbances such as plowing, burial, flooding, fire, and drought. *Equisetum* species have a remarkable ability to reproduce vegetatively. An extensive rhizome system allows *Equisetum* species to rapidly colonize disturbed areas (Hauke 1993). This ability gives *Equisetum* a distinct advantage over species requiring seed establishment or which have slow-growing rhizomes. The ability of *Equisetum* to survive and spread in areas of heavy sediment accumulation was dramatically demonstrated after the eruption of Mount St. Helens in 1980 when *Equisetum* formed almost monotypic stands in the newly deposited tephra (Rothwell 1996). The deep rhizome system of *Equisetum* also allows these plants to survive fire and rapidly recolonize burned-over sites (Sullivan 1993). It is probable that the vigorous and extensive rhizomatous habit of

Equisetum has been very important to the long-term survival and spread of the genus (Hauke 1993). Fragmentation of rhizomes and stems allows *Equisetum* to disperse readily in suitable habitats where there is sufficient moisture. Even the aerial stem fragments can sprout and form new colonies (Wagner and Hammitt 1970). Hence, vegetative reproduction allows *Equisetum* clones to persist and spread even in the absence of sexual reproduction (Hauke 1993).

IVC Environment: Stands are typically found in shallow (<1 m) water over mineral soils, usually sand or silt. Stands are often located along wave-washed shores and stream channels (Harris et al. 1996), along the tidal reaches of the Columbia River, in still water and wet ground along the margins of ponds or protected bays in lakes and backwater areas of streams (Hansen et al. 1995), or within narrow valley floors and low alluvial terraces of small perennial streams subject to periodic scouring from flooding. Elevations range from sea level to 1785 m (0-5855 feet), slopes generally do not exceed 8%, and aspect varies. Soils are alluvium derived from shales, sandstones or igneous rocks. The soil surface may be bare if flooding has occurred recently, or covered by a mat of older *Equisetum* stems. The water is nearly fresh with a very low salt content (Kunze 1994).

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout the western U.S. and Canada.
IVC Nations: CA,US
IVC States/Provinces: AZ, BC, ID, MT, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel, M. Damm, L. Allen, J. Coles, M. Reid
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3895 Chairmaker's Bulrush - Hardstem Bulrush - California Bulrush Marsh Alliance

[ ]

Schoenoplectus americanus - Schoenoplectus acutus - Schoenoplectus californicus Marsh Alliance

Western Emergent Bulrush Marsh

IVC Scientific Name: *Schoenoplectus americanus - Schoenoplectus acutus - Schoenoplectus californicus* Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance contains freshwater marshes dominated by one or two species of *Schoenoplectus, Scirpus*, and/or *Bolboschoenus*, such as *Schoenoplectus acutus, Schoenoplectus americanus, Bolboschoenus fluviatilis, Bolboschoenus maritimus, Schoenoplectus pungens, Schoenoplectus tabernaemontani*, and/or *Scirpus microcarpus*. *Phragmites australis* may be present. This alliance occurs throughout the central midwestern and western U.S. and Canada. Stands are flooded for most of the growing season up to 1.5 m deep and often drain completely in the winter, exposing bare ground.

IVC Dynamics:

IVC Environment: Stands of this alliance are flooded for most or all of the growing season and can have water levels from completely drained (exposed soil) to approximately 1.5 m deep, but are usually is less than 1 m. Within a stand, water levels can vary by up to 1 m during the year. The water is fresh to mildly saline. Some species are quite tolerant of saline conditions, but generally the salinity is mild or if strong than only seasonally so. Soils are deep, poorly drained muck, peat, or mineral.

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout the central midwestern and western U.S. and Canada.

IVC Nations: CA,US
IVC States/Provinces: AZ, BC, CA, CO, ID, KS, MT, ND, NM, NV, OK, OR, SD, TX, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002623 *Schoenoplectus tabernaemontani* Temperate Marsh** [Softstem Bulrush Temperate Marsh] []
  G5 (2000-05-03) AB, BC, CA, CO, ID, MT, OR, WA, WY
- **CEGL001587 *Schoenoplectus pungens* Marsh** [Common Threesquare Marsh] []
  G3G4 (1998-04-09) AB, AZ, BC, CO, ID, KS, MT, ND, NM, NV, SD, UT, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel and M.S. Reid
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3896 Southern Cattail - Broadleaf Cattail - American Common Reed Western Marsh Alliance

[ ]
Typha domingensis - Typha latifolia - Phragmites australis ssp. americanus Western Marsh Alliance
Western Emergent Cattail - Common Reed Marsh

IVC Scientific Name: *Typha domingensis - Typha latifolia - Phragmites australis ssp. americanus* Western Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance contains stands dominated by native species *Typha angustifolia, Typha domingensis*, and/or *Phragmites australis ssp. americanus* either alone as monotypic stands or in combination with other tall emergent freshwater marsh species. Associated species vary widely; they include many sedges such as *Carex aquatilis, Carex pellita, Carex rostrata*, bulrushes such as *Schoenoplectus acutus, Schoenoplectus americanus*, and *Schoenoplectus heterochaetus*, and broad-leaved herbs such as *Asclepias incarnata, Impatiens capensis, Sagittaria latifolia, Scutellaria lateriflora, Sparganium eurycarpum*, and *Verbena hastata*. It is found most commonly along lake margins and in shallow basins, and occasionally in river backwaters and other deepwater habitats of the semi-arid western U.S., including the semi-arid western Great Plains, and adjacent Canada and possibly Mexico.

IVC Dynamics: *Typha* species are prolific seed producers, spreading rapidly to become the early colonizers of wet mineral soil and will persist under wet conditions (Hansen et al. 1995). Roots and lower stems are well-adapted to prolonged submergence, but periods of draw-down are required for seed germination to occur (Hansen et al. 1995). Haase (1972) reported that *Typha domingensis* communities have expanded their distribution in the lower Gila River basin, due to increased irrigation runoff. *Typha angustifolia* occupies inundated and disturbed ground and can tolerate deeper water and higher alkalinity levels than *Typha latifolia* (Great Plains Flora Association 1986). These are important wetland communities for many species of birds and waterfowl. Hansen et al. (1995) report that in Montana heavy livestock use may convert stands to *Carex nebrascensis*-dominated communities.

IVC Environment: These are palustrine and lacustrine non- tidal cattail marshes. Elevations range from near sea level to around 2000 m. Many have a muck-bottom zone bordering the shoreline, where cattails are rooted in the bottom substrate, and a floating mat zone, where the roots grow suspended in a buoyant peaty mat. This alliance occurs on hydric soils in wetlands, ditches, ponds, lakes, and rivers, as well as on shorelines and streambanks. Inundation is commonly 3-6 dm (1-2 feet) in depth but can be as deep as 1.5 m for a significant part of the growing season. Occurrences may display areas of open water, but emergent vegetation dominates (80% cover). Seasonal flooding during winter and spring or flooding during heavy rains help maintain

these marshes by causing water exchange which replenishes freshwater and circulates nutrients and organic debris. Soils which support this community can be mineral or organic but are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. Sites can be inter-dune ponds, mainland ponds, impoundments and tanks with brackish water from storm flooding, storm tides, or island overwash, adjacent to shallow lakes or ponds (Bundy et al. 1996), in areas of standing water or subirrigation along major stream bottoms (Baker 1982b), or in old oxbows (Haase 1972). Running water is uncommon, except during periods of extensive irrigation runoff or because of high precipitation. Usually if the water table is below the surface, capillary action will keep the soil saturated to the surface. In Nevada, soils were described by Bundy et al. (1996) to be very deep, somewhat poorly drained and composed of fine-grained alluvium. They may be slightly saline, but not strongly so. *Typha domingensis* is more tolerant of alkaline conditions than *Typha latifolia*. Soils are characterized by accumulations of organic matter over deposits of fine silt and clay (Hansen et al. 1995), or loams, sandy loams, or coarse sand (Jones and Walford 1995, Bundy et al. 1996). *Typha* often occurs in pure stands, and can colonize areas recently exposed by either natural or human causes.

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout interior non-tidal marshes of the western U.S., including the semi-arid western Great Plains, and adjacent Canada, and possibly Mexico.
IVC Nations: CA,MX?,US
IVC States/Provinces: AZ, BC, CA, CO, ID, MT, NE, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002010 *Typha (latifolia, angustifolia)* Western Marsh** [(Broadleaf Cattail, Narrowleaf Cattail) Western Marsh] []
  G5 (1994-02-23) AB, AZ, BC, CA, CO, ID, MT, NE, NM, NV, OR, UT, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel, M.S. Reid and K.A. Schulz
IVC Description Date: 2017-08-14
IVC Acknowledgments:

M074 Western North American Vernal Pool

Mares printanières de l'ouest de l'Amérique du Nord

IVC Colloquial Name: Western North American Vernal Pool

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup includes herbaceous communities that form distinct zones or concentric rings around shallow ephemeral pools from sea level to 2600 m (7800 feet) elevation. The number of species is high and changes from north to south, so there are no particularly characteristic species, although there are characteristic plant genera that can be described at the macrogroup level. These include species of *Callitriche, Downingia, Eryngium, Hemizonia, Lasthenia, Navarretia, Orcuttia, Plagiobothrys, Pogogyne, Psilocarphus, Sedella, Spergularia*, and *Trichostema*. Pools occur on shallow soils over volcanic bedrock, in scablands, on hardpan soils with an indurated clay or cemented layer that retains water throughout some portion of the spring, and that typically dry down completely into early summer months. These occur in British Columbia, Oregon, Washington, California and Mexico.

IVC Geographic Range: This macrogroup is found throughout intermountain valleys of British Columbia, Oregon, Washington, California and Mexico, from sea level to 2600 m (7800 feet) elevation. It is found on the Gulf and San Juan islands of Washington; in the northern Columbia Basin and perhaps the Okanagan Valley in British Columbia; the western portion of the Great Basin in Nevada; in the Lassen, Klamath, and upper Pit river drainages, and the Devils Garden area, the northern Central Valley, in the foothills of the southern Cascades and Sierra Nevada of northern California; and in southern California where they range from Baja Norte, Mexico, north through Santa Barbara County, California (Bjork 1997, Chappell and Christy 2004, Barbour et al. 2007a).

IVC Nations: CA,MX,US

IVC States/Provinces: BC, BCN, CA, NV, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G529 Oregon-Washington-British Columbia Vernal Pool []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: C.W. Witham et al. (1998)

IVC Description Author: G. Kittel, C. Chappell, R. Crawford, J. Morefield, P. Comer, T. Keeler-Wolf

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G529 Oregon-Washington-British Columbia Vernal Pool

[ ]

IVC Colloquial Name: Oregon-Washington-British Columbia Vernal Pool

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group includes herbaceous wetlands that surround and occur within shallow ephemeral water bodies found in depressions among grasslands, shrub-steppe and open woodlands throughout intermountain valleys of Oregon, the San Juan and Gulf islands of Washington and British Columbia, and exposed volcanic scablands of the Columbia Plateau in Washington, Oregon, and northern Nevada. Due to drawdown characteristics, vernal pools typically form concentric rings of similar vegetation. Given their relative isolation in upland-dominated landscapes, many endemic plant species are found in vernal pools. Characteristic species are predominantly annual and diverse. Northern scabland vernal pools share about a third of the species found in northern California vernal pools, but they do not share many of the more common dominant species. Currently very little quantitative plot data have been made available. *Eryngium petiolatum* and *Plagiobothrys figuratus* are known dominants that do not occur in California; however, it is assumed many more species could be used to differentiate between

these similar groups. Characteristic species in these communities include *Callitriche marginata, Callitriche* spp., *Camissonia tanacetifolia, Deschampsia danthonioides, Downingia elegans, Elatine* spp., *Eleocharis* spp., *Epilobium densiflorum, Eryngium petiolatum, Eryngium vaseyi, Grindelia nana, Isoetes orcuttii, Juncus uncialis, Myosurus minimus, Navarretia leucocephala ssp. diffusa, Pilularia americana, Plagiobothrys* spp., *Plagiobothrys figuratus, Plagiobothrys scouleri, Polyctenium williamsiae, Polygonum polygaloides ssp. confertiflorum, Polygonum polygaloides ssp. polygaloides, Psilocarphus brevissimus, Psilocarphus elatior, Psilocarphus oregonus, Trifolium cyathiferum, Triteleia hyacinthina*, and *Veronica peregrina*. In northern Nevada, most of the species by biomass are perennials and include *Carex douglasii, Juncus arcticus ssp. littoralis, Muhlenbergia richardsonis*, and species of *Eleocharis, Polygonum, Rumex*, and *Polyctenium*. Hardpan vernal pools occur on soils with an indurated clay or cemented (Si or Fe) layer that retains water inputs throughout some portion of the spring, and that typically dry down completely into early summer months. In the Sand Juan and Gulf islands, they are created in small depressions in bedrock. Thus this group only occurs where there is hummocky micro-relief. These wetlands tend to be acidic wetlands. On the Columbia Plateau many pools are located on massive basalt flows, andesite or rhyodacite caprock. Inundation is highly irregular, sometimes not occurring for several years. Depressions usually (but not always) fill with water during winter and spring. They are generally dry again within nine months, though in exceptional times they can remain inundated for two years in a row. Water is from rainfall and snowmelt in relatively small closed basins, on average probably no more than 5-15 times the area of the ponds themselves. Pools are depressions with no outflows. Soils when present are typically silty clay, sometimes with sandy margins. Ponds range from very small (3 sqm) to large depressions (1600 sqm).

IVC Dynamics: Pools fill up during winter and spring rains and dry completely by fall.

IVC Environment: *Climate:* Mediterranean climate with mild winters and dry summers; interior Washington vernal pools have colder winters. *Soil/substrate/hydrology:* Vernal pools form in areas with a hummocky micro-relief, within bedrock or soil underlain by a hardpan restricting water drainage. Hardpan vernal pools can have an indurated clay or cemented (Si or Fe) hardpan that retains water inputs throughout some portion of the spring, and typically the depression dries down entirely into early summer months. In the Sand Juan and Gulf islands, they are created in small depressions in bedrock. These wetlands tend to be acidic. In the interior of Washington and Oregon, many pools are located on massive basalt flows, andesite or rhyodacite caprock. Inundation is highly irregular, sometimes not occurring for several years. Depressions usually (but not always) fill with water during winter and spring. They are generally dry again within nine months, though in exceptional times they can remain inundated for two years in a row. Water is from rainfall and snowmelt in relatively small closed basins, on average probably no more than 5-15 times the area of the ponds themselves. Soils are silty clay, sometimes with sandy margins. Environmental information compiled from Chappell and Christy (1994), Bjork (1997), and Bjork and Dunwiddie (2004).

DISTRIBUTION

IVC Geographic Range: Vernal pools occur in grasslands and open woodlands throughout intermountain valleys of Oregon and the Gulf and San Juan islands of Washington, and in the northern Columbia Basin and perhaps the Okanagan Valley, up to British Columbia, and into the western portion of the Great Basin in Nevada.

IVC Nations: CA,US

IVC States/Provinces: BC, NV, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G2 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G2G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately restricted, long-term decline moderate to high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2627 *Plagiobothrys figuratus - Plagiobothrys scouleri* Vernal Pool Alliance** [Fragrant Popcorn-flower - Scouler's Popcorn-flower Vernal Pool Alliance] []
  This alliance covers herbaceous vernal pools dominated by forbs, predominantly *Plagiobothrys figuratus* or *Plagiobothrys scouleri*, along with many other species such as *Plantago bigelovii*. They occur along the interior valleys of Oregon, Washington and British Columbia.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: C. Chappell and R. Crawford, in Faber-Langendoen et al. (2011)
IVC Description Author: C. Chappell, R. Crawford, J. Morefield, G. Kittel
IVC Description Date: 2015-12-02
IVC Acknowledgments:

A2627 Fragrant Popcorn-flower - Scouler's Popcorn-flower Vernal Pool Alliance

[ ]
Plagiobothrys figuratus - Plagiobothrys scouleri Vernal Pool Alliance
Popcorn-flower Vernal Pool

IVC Scientific Name: *Plagiobothrys figuratus - Plagiobothrys scouleri* Vernal Pool Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance covers herbaceous vernal pools dominated by forbs, predominantly *Plagiobothrys figuratus* or *Plagiobothrys scouleri*, along with many other species such as *Plantago bigelovii*. They occur along the interior valleys of Oregon, Washington and British Columbia. These seasonally flooded depressional wetlands dry up completely by the end of the season or sooner and may not be wetted for several years. Waters are fresh but may become increasingly alkaline as they dry up. They occur on a clay pan or other substrate that impedes drainage.
IVC Dynamics:
IVC Environment: These seasonally flooded depressional wetlands dry up completely by the end of the season or sooner and may not be wetted for several years. Waters are fresh but may become increasingly alkaline as they dry up. They occur on a clay pan or other substrate that impedes drainage.

DISTRIBUTION

IVC Geographic Range: This alliance occurs along the interior valleys of Oregon, Washington and British Columbia.
IVC Nations: CA,US
IVC States/Provinces: BC, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL003459 *Plagiobothrys scouleri - Plantago bigelovii* Vernal Pool** [Scouler's Popcorn-flower - Coast Plantain Vernal Pool] [] G2 (2002-10-28) BC?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.S. Reid, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M073 Vancouverian Lowland Marsh, Wet Meadow & Shrubland

Marais, prairies humides, arbustaies des basses terres de la région de Vancouver

IVC Colloquial Name: Vancouverian Lowland Marsh, Wet Meadow & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup includes freshwater shrublands, meadows, marshes and mudflat wetlands. Stands include riparian shrublands, herbaceous meadows, emergent marshes and sparse mudflats dominated by low forbs. Dominant shrubs include *Acer glabrum, Alnus incana ssp. tenuifolia, Alnus viridis ssp. crispa, Alnus viridis ssp. sinuata, Artemisia cana, Cornus sericea, Crataegus douglasii, Crataegus rivularis, Dasiphora fruticosa ssp. floribunda, Malus fusca, Philadelphus lewisii, Prunus virginiana, Rhus trilobata, Rosa nutkana, Rosa woodsii, Rubus spectabilis*, many *Salix* spp., *Shepherdia argentea, Spiraea douglasii*, and *Symphoricarpos* spp. Herbaceous species are quite varied and include graminoids *Calamagrostis canadensis, Carex aquatilis var. dives, Carex flava, Carex lyngbyei, Carex mackenziei, Carex obnupta, Carex pellita, Carex praegracilis, Carex utriculata, Cyperus* spp., *Deschampsia beringensis, Deschampsia cespitosa, Eleocharis obtusa, Eleocharis palustris, Elymus trachycaulus, Eragrostis hypnoides, Glyceria striata, Juncus arcticus ssp. littoralis, Juncus lesueurii, Juncus nevadensis, Leymus cinereus, Leymus mollis, Muhlenbergia filiformis, Muhlenbergia richardsonis, Pascopyrum smithii, Paspalum distichum, Phalaris* spp., *Poa cusickii, Poa secunda, Schoenoplectus americanus, Schoenoplectus pungens, Typha domingensis*, and *Typha latifolia*; forbs *Achillea millefolium var. borealis, Angelica lucida, Argentina anserina, Argentina egedii, Bidens* spp., *Castilleja* spp., *Cicuta* spp., *Crassula aquatica, Euthamia occidentalis, Galium triflorum, Gnaphalium palustre, Heracleum maximum, Hydrocotyle umbellata, Iris missouriensis, Lathyrus japonicus var. maritimus, Lilaeopsis occidentalis, Limosella aquatica, Ludwigia palustris, Lupinus nootkatensis, Lysichiton americanus, Maianthemum stellatum, Mimulus* spp., *Parnassia palustris*, and *Rorippa curvisiliqua*; ferns and fern allies *Athyrium filix-femina, Equisetum arvense, Equisetum fluviatile, Equisetum variegatum*, and *Gymnocarpium dryopteris*; and mosses *Sphagnum* spp. These species are associated with wetlands that occur on poorly drained or well-drained seasonally wet to saturated soils that may dry out completely during the growing season, and are mostly on mineral or shallow (<30 cm) organic or muck soils over mineral substrates. This type ranges from southern Alaska to northern New Mexico, and includes only freshwater, non-saline wetlands that occur in lowland elevations, from sea level to about 1830 m (6000 feet) (generally below the transition from montane forests to lowland grasslands and shrublands).

IVC Geographic Range: This macrogroup is found from the northernmost Aleutian Islands to Cook Inlet Basin and Prince William Sound, Alaska, south along the Pacific Coast to California, into the temperate western North American interior (interior British Columbia, Columbia Basin, Great Basin, Colorado Plateau, and higher intermountain basins) and in dune wetlands across the intermountain western U.S.

IVC Nations: CA,MX?,US

IVC States/Provinces: AB, AK, AZ, BC, CA, CO, ID, MT, NM, NV, OR, TX, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G525 Temperate Pacific Freshwater Wet Mudflat []**
- **G517 Vancouverian Freshwater Wet Meadow & Marsh []**
- **G322 Vancouverian Wet Shrubland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel, K. Boggs, C. Chappell, P. Comer, M.S. Reid, M.E. Hall, J. Christy

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G525 Temperate Pacific Freshwater Wet Mudflat

[ ]

IVC Colloquial Name: Temperate Pacific Freshwater Wet Mudflat

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group consists of communities that occur on freshwater mudflats found scattered throughout the temperate regions of the western U.S. and Canada. They are dominated mainly by low-statured annual plants and range in physiognomy from sparsely vegetated mud to extensive sods of herbaceous vegetation. The predominant species include *Crassula aquatica, Eleocharis obtusa, Eragrostis hypnoides, Gnaphalium palustre, Lilaeopsis occidentalis, Limosella aquatica*, and/or *Ludwigia palustris*. In the Pacific Northwest, they occur primarily in seasonally or tidally flooded shallow lakebeds and on floodplains, especially along the lower Columbia River. During any one year, they may be absent because of year-to-year variation in river water levels. Mudflats must be exposed before the vegetation develops from the seedbank.

IVC Dynamics: Stands may be absent because of year-to-year variation in river water levels. Mudflat vegetation develops from the seedbank only after water has receded and the mudflat is exposed to air.

IVC Environment: *Climate:* Temperate. *Soil/substrate/hydrology:* Seasonally flooded shallow lakebeds and on floodplains.

DISTRIBUTION

IVC Geographic Range: This group is found throughout the temperate regions of the western U.S. and Canada, from Alaska south into California, east into Idaho, Montana, Wyoming, Utah, Nevada and Colorado. It is best known and described from along the Columbia River, but occurs in similar habitats throughout the temperate west.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA, CO, ID, MT, NV, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low to moderate, and threats moderate. However, threats from development, modified hydrology, and invasive species are of concern.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3851 *Eleocharis obtusa* - *Eragrostis hypnoides* Intertidal Mudflat Alliance** [Blunt Spikerush - Teal Lovegrass Intertidal Mudflat Alliance] []
  This is an herbaceous alliance dominated by graminoid species such as *Eleocharis obtusa* and *Eragrostis hypnoides*. The alliance is strictly herbaceous and dominated by low and prostrate graminoids, i.e., species that tolerate early-season flooding and summer drying that exposes mudflats with subirrigation. These occur on mudflats around wetlands that are seasonally flooded and subirrigated in the western U.S. These low-elevation (<1000 m [3280 feet]) marshes and mudflats occur along low-gradient streams, shallow ponds, and depressional wetlands. Soil is seasonally flooded to perennially saturated silt loam to clay.
- **A3901 *Lilaeopsis occidentalis* Freshwater Tidal Mudflat Alliance** [Western Grasswort Freshwater Tidal Mudflat Alliance] []
  This alliance of herbaceous ephemeral vegetation is dominated by *Lilaeopsis occidentalis* and several other forb species on freshwater mudflats of seasonal ponds and freshwater tidal zone of large tidal rivers. It ranges from California to British Columbia.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: C. Chappell, in Faber-Langendoen et al. (2011)

IVC Description Author: C. Chappell and G. Kittel

IVC Description Date: 2015-12-02

IVC Acknowledgments:

A3851 Blunt Spikerush - Teal Lovegrass Intertidal Mudflat Alliance

[ ]

Eleocharis obtusa - Eragrostis hypnoides Intertidal Mudflat Alliance

Western Graminoid Intertidal Mudflat

IVC Scientific Name: *Eleocharis obtusa - Eragrostis hypnoides* Intertidal Mudflat Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This is an herbaceous alliance dominated by graminoid species such as *Eleocharis obtusa* and *Eragrostis hypnoides*. The alliance is strictly herbaceous and dominated by low and prostrate graminoids, i.e., species that tolerate early-season flooding and summer drying that exposes mudflats with subirrigation. These occur on mudflats around wetlands that are seasonally flooded and subirrigated in the western U.S. These low-elevation (<1000 m [3280 feet]) marshes and mudflats occur along low-gradient streams, shallow ponds, and depressional wetlands. Soil is seasonally flooded to perennially saturated silt loam to clay.

IVC Dynamics:

IVC Environment: Stands occur on mudflats around wetlands that are seasonally flooded and subirrigated in the western U.S. These low-elevation (<1000 m [3280 feet]) marshes and mudflats occur along low-gradient streams, shallow ponds, and depressional wetlands. Soil is seasonally flooded to perennially saturated silt loam to clay.

DISTRIBUTION

IVC Geographic Range: This alliance is currently reported for Oregon and Washington but is likely to occur throughout the western U.S. and possibly adjacent Canada in low-lying places.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003327 *Eragrostis hypnoides - Gnaphalium palustre* Mudflat** [Teal Lovegrass - Western Marsh Cudweed Mudflat] [] G2 (2002-10-01) BC, CA, OR, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A3901 Western Grasswort Freshwater Tidal Mudflat Alliance

[ ]

Lilaeopsis occidentalis Freshwater Tidal Mudflat Alliance

Western Grasswort Freshwater Tidal Mudflat

IVC Scientific Name: *Lilaeopsis occidentalis* Freshwater Tidal Mudflat Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This is an herbaceous mudflat alliance dominated by *Lilaeopsis occidentalis*, which usually occurs with *Crassula aquatica, Callitriche* spp., *Crassula aquatica, Elatine* spp., *Eleocharis acicularis, Eleocharis palustris*, and/or *Limosella aquatica*. The vegetation consists of annual and perennial species that shift in time and space, a highly dynamic environment of a ephemerally flooded mudflats. Stands occur on mudflats of seasonal ponds and just above freshwater tidal zone of large tidal rivers from California to British Columbia.

IVC Dynamics:

IVC Environment: Stands occur on mudflats of seasonal ponds and just above freshwater tidal zone of large tidal rivers. The vegetation consists of annual and perennial species that shift in time and space, a highly dynamic environment of a ephemerally flooded mudflats.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from California to British Columbia.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003329 *Lilaeopsis occidentalis* Mudflat** [Western Grasswort Mudflat] []
  G4 (2002-10-01) BC?, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G517 Vancouverian Freshwater Wet Meadow & Marsh

[ ]

IVC Colloquial Name: Vancouverian Freshwater Wet Meadow & Marsh
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These coastal freshwater wet meadows and marshes range from southern California to the northern Aleutian Islands of Alaska. Wet meadows are dominated by a wide variety of graminoids and forbs, including *Achillea millefolium var. borealis, Angelica lucida, Argentina anserina, Argentina egedii, Carex lyngbyei, Carex mackenziei, Carex obnupta, Castilleja* spp., *Deschampsia beringensis, Equisetum variegatum, Euthamia occidentalis, Festuca rubra, Heracleum maximum, Hydrocotyle umbellata, Juncus lesueurii, Juncus nevadensis, Juncus* spp., *Lathyrus japonicus var. maritimus, Leymus mollis, Lupinus nootkatensis, Parnassia palustris*, and *Sparganium* species. Shrubs include *Myrica gale, Salix commutata, Salix hookeriana*, and *Salix sitchensis*. Coastal freshwater wetlands are found in interdunal areas, on delta deposits, uplifted marshes, or beach deposits. They occur inland of tidal marshes and are common along sloughs and levees. Within dune areas, freshwater wetlands are often part of larger active and stabilized coastal barrier islands, spits, and coastal dunes, where they can be referred to as "slack dune ponds" when associated with larger and deeper water or "coastal dune swales" when water is shallow. They typically occur behind active foredunes, especially where the base of the dunes are at or near groundwater levels.

IVC Dynamics: This group is subject to flooding, burial by sand, scour by wind, and tidal pluses of freshwater.

IVC Environment: *Climate:* Winter precipitation elevates the water table and inundates some communities to a depth of 1 m (3 feet). *Soil/substrate/hydrology:* In Oregon and Washington, habitat ranges from small interdunal depressions to extensive deflation plains behind stabilized foredunes. The seasonal rise in water table also causes vernal pools to form in forested sites

on old deflation plains. These pools are teeming with invertebrates and are temporary sources of food and breeding grounds for amphibians and waterfowl. Some wetlands are perched on an iron-cemented duripan, and groundwater may be charged with iron. pH ranges from 5.0-6.3 (6.9), with low conductivity. Moist and wet meadows associated with delta deposits, uplifted marshes, or beach deposits occur inland of tidal marshes and are also common along sloughs and levees. Environmental information compiled from Sparks et al. (1977), Barbour and Major (1988), Viereck et al. (1992), Stone (1993), Shiflet (1994), Holland and Keil (1995), Sawyer and Keeler-Wolf (1995), and Boggs (2000).

DISTRIBUTION

IVC Geographic Range: This group occurs along the coast from San Luis Obispo County, California, north through Oregon, Washington, British Columbia, and Alaska, including Kodiak Island, and continues to the northernmost Aleutian Islands.
IVC Nations: CA,US
IVC States/Provinces: AK, BC, CA, ID, MT, NV, OR, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5* rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low to moderate, and threats moderate. However, the current ecological condition is low in most occurrences, both short and long-term trends have been negative, and threats continue. Further consideration of these factors could raise the rank.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4414 *Carex obnupta - Carex exsiccata - Typha latifolia* Basin Marsh & Wet Meadow Alliance** [Slough Sedge - Western Inflated Sedge - Broadleaf Cattail Basin Marsh & Wet Meadow Alliance] []
- **A4243 *Carex pansa - Carex praegracilis* Wet Meadow Alliance** [Sand-dune Sedge - Clustered Field Sedge Wet Meadow Alliance] []
  This alliance is a wet meadow of tidally flooded sand dune swales. Dominant herbs include *Carex pansa* and/or *Carex praegracilis*. It occurs on the borders of estuaries on the Channel Islands and mainland coastal estuarine areas of California, Oregon and Washington and may occur as far north as British Columbia.
- **A4423 *Deschampsia cespitosa - Carex unilateralis - Danthonia californica* Wet Prairie Alliance** [Tufted Hairgrass - Lateral Sedge - California Oatgrass Wet Prairie Alliance] []
- **A4415 *Mimulus guttatus - Claytonia sibirica - Triteleia hyacinthina* Seep, Spring & Wet Bedrock Alliance** [Seep Monkeyflower - Siberian Springbeauty - White Triteleia Seep, Spring & Wet Bedrock Alliance] []
- **A4413 *Petasites frigidus - Stachys chamissonis var. cooleyae* Streamside Marsh Alliance** [Arctic Sweet-Colt's-Foot - Cooley's Hedge-nettle Streamside Marsh Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Boggs, J. Christy, T. Keeler-Wolf, in Faber-Langendoen et al. (2011)
IVC Description Author: G. Kittel
IVC Description Date: 2015-12-02
IVC Acknowledgments: K. Boggs, T. Boucher, J. Christy, P. Comer, T. Keeler-Wolf

A4414 Slough Sedge - Western Inflated Sedge - Broadleaf Cattail Basin Marsh & Wet Meadow Alliance

[ ]
Carex obnupta - Carex exsiccata - Typha latifolia Basin Marsh & Wet Meadow Alliance
[ ]

IVC Scientific Name: *Carex obnupta - Carex exsiccata - Typha latifolia* Basin Marsh & Wet Meadow Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC, CA, ID?, MT, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL003312 *Carex exsiccata* Wet Meadow** [Western Inflated Sedge Wet Meadow] []
  G2G3 (2002-10-01) BC?, OR, WA
- **CEGL003313 *Carex obnupta* Wet Meadow** [Slough Sedge Wet Meadow] []
  G4 (2002-10-01) OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4243 Sand-dune Sedge - Clustered Field Sedge Wet Meadow Alliance

[ ]
Carex pansa - Carex praegracilis Wet Meadow Alliance
Sand-dune Sedge Meadow

IVC Scientific Name: *Carex pansa - Carex praegracilis* Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is a wet meadow of tidally flooded sand dune swales, where the vegetation forms a patchy to dense herbaceous layer (cover ranges from 40-90%). Woody cover and nonvascular plants are typically absent. Dominant herbs include *Carex pansa* and/or *Carex praegracilis* and with associate herbs such as *Bromus diandrus, Distichlis spicata, Juncus breweri*, and/or *Juncus textilis*. This alliance occurs in coastal interdune swales that are seasonally and tidally flooded in drifting sands and on the borders of estuaries on the Channel Islands and mainland coastal estuarine areas of California, Oregon and Washington and may occur as far north as British Columbia.
IVC Dynamics:
IVC Environment: The alliance is found in coastal interdune swales, in drifting sands and on the borders of estuaries with primarily flat or north-facing aspects, but can be found on a variety of slope positions. Soils are seasonally and tidally flooded, with textures such as sand, silt loam or fine clay, and are derived from older alluvium, lake, playa, and terrace deposits. Elevations range from approximately sea level to 230 m.

DISTRIBUTION

IVC Geographic Range: This alliance occurs on the Channel Islands and coastal estuarine areas of California, Oregon, and Washington and may occur as far north as British Columbia.
IVC Nations: CA?,US
IVC States/Provinces: BC?, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4? (2016-09-08)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEPP005713 *Carex (pansa, praegracilis)* Wet Meadow** [(Sand-dune Sedge, Clustered Field Sedge) Wet Meadow] []
  This association is a wet meadow of tidally flooded sand dune swales, where the vegetation forms a patchy to dense herbaceous layer. Dominant herbs include *Carex pansa* and/or *Carex praegracilis*. It occurs on the Channel Islands and mainland coastal estuarine areas of California, Oregon and Washington and may occur as far north as British Columbia. GNR. BC?, CA, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Rodriguez et al. (2017)
IVC Description Author: G. Kittel
IVC Description Date: 2016-11-10
IVC Acknowledgments:

A4423 Tufted Hairgrass - Lateral Sedge - California Oatgrass Wet Prairie Alliance

[ ]
Deschampsia cespitosa - Carex unilateralis - Danthonia californica Wet Prairie Alliance
[ ]

IVC Scientific Name: *Deschampsia cespitosa - Carex unilateralis - Danthonia californica* Wet Prairie Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: BC?, CA?, ID, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003343 *Isoetes nuttallii* Wet Meadow** [Nuttall's Quillwort Wet Meadow] []
  G3 (2002-10-28) BC?, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4415 Seep Monkeyflower - Siberian Springbeauty - White Triteleia Seep, Spring & Wet Bedrock Alliance

[ ]
Mimulus guttatus - Claytonia sibirica - Triteleia hyacinthina Seep, Spring & Wet Bedrock Alliance
[ ]

IVC Scientific Name: *Mimulus guttatus - Claytonia sibirica - Triteleia hyacinthina* Seep, Spring & Wet Bedrock Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4413 Arctic Sweet-Colt's-Foot - Cooley's Hedge-nettle Streamside Marsh Alliance

[ ]
Petasites frigidus - Stachys chamissonis var. cooleyae Streamside Marsh Alliance
[ ]

IVC Scientific Name: *Petasites frigidus - Stachys chamissonis var. cooleyae* Streamside Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G322 Vancouverian Wet Shrubland

[ ]

IVC Colloquial Name: Vancouverian Wet Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group includes shrublands that occur on poorly drained or well-drained seasonally wet to saturated soils that may dry out completely during the growing season, mostly on mineral or shallow (<30 cm) organic or muck soils over mineral substrates. Stands may be dominated by *Alnus viridis ssp. sinuata, Cornus sericea, Malus fusca, Rubus spectabilis, Salix hookeriana, Salix sitchensis, Spiraea douglasii*, and/or *Vaccinium uliginosum*, singly or in various combinations. They may occur in mosaics with marshes or forested swamps, being on average more wet than forested swamps and more dry than marshes. However, it is also frequent for them to dominate entire wetland systems. Wetland species, including *Carex aquatilis var. dives, Carex utriculata, Equisetum fluviatile*, and *Lysichiton americanus*, dominate the understory. On some sites, *Sphagnum* spp. are common in the understory. This group includes wet shrublands found throughout the Pacific Northwest coast, from Cook Inlet and Prince William Sound, Alaska, to the northern coast of California. These are deciduous broadleaf tall shrublands that are located in depressions, around lakes or ponds, or river terraces where water tables fluctuate seasonally (mostly seasonally flooded regime), in areas that receive nutrient-rich waters. These depressions are poorly drained with fine-textured organic, muck or mineral soils and standing water common throughout the growing season.
IVC Dynamics:
IVC Environment: Stands that belong to this group are located in depressions, around lakes or ponds, or river terraces where water tables fluctuate seasonally (mostly seasonally flooded regime), in areas that receive nutrient-rich waters. These depressions are poorly drained with fine-textured organic, muck or mineral soils and standing water common throughout the growing season. Environmental information was compiled from Franklin and Dyrness (1973), Eyre (1980), Meidinger et al. (1988), Lloyd et al. (1990), MacKinnon et al. (1990), Viereck et al. (1992), Banner et al. (1993), DeLong et al. (1993, 1994), Steen and Coupe (1997), Ecosystems Working Group (1998), DeVelice et al. (1999), Boggs (2002), DeLong (2003), Chappell and Christy (2004), and Boggs et al. (2008b).

DISTRIBUTION

IVC Geographic Range: This group occurs throughout the Pacific Northwest coast, from Cook Inlet basin and Prince William Sound, Alaska, to the northern coast of California.
IVC Nations: CA,US
IVC States/Provinces: AK, BC, CA, ID, MT, OR, WA
IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.11.78:P, 7.1.7.2:P, 7.1.8.1:P, 7.1.9.3:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5* rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low to moderate, and threats moderate. However, current ecological condition is low in many occurrences, both short and long-term trends have been negative, and threats continue. Further consideration of these factors could raise the rank.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4418 *Alnus viridis* - *Acer circinatum* - *Salix sitchensis* Montane Wet Shrubland Alliance** [Green Alder - Vine Maple - Sitka Willow Montane Wet Shrubland Alliance] []
- **A4419 *Spiraea douglasii* - *Malus fusca* - *Salix sitchensis* Lowland Wet Shrubland Alliance** [Rose Spirea - Oregon Crabapple - Sitka Willow Lowland Wet Shrubland Alliance] []
- **A1123 *Vaccinium uliginosum* - *Vaccinium cespitosum* Wet Shrubland Alliance** [Bog Blueberry - Dwarf Bilberry Wet Shrubland Alliance] []
  These wetlands are dominated by the cold-deciduous dwarf-shrub *Vaccinium uliginosum* or *Vaccinium cespitosum* along the maritime-influenced coastal and montane areas in the Pacific Northwest.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2011)
IVC Description Author: G. Kittel, K. Boggs, C. Chappell, P. Comer, M.S. Reid
IVC Description Date: 2015-12-02
IVC Acknowledgments:

A4418 Green Alder - Vine Maple - Sitka Willow Montane Wet Shrubland Alliance

[ ]
Alnus viridis - Acer circinatum - Salix sitchensis Montane Wet Shrubland Alliance
[ ]

IVC Scientific Name: *Alnus viridis - Acer circinatum - Salix sitchensis* Montane Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001157** ***Alnus viridis ssp. sinuata / Oplopanax horridus*** **Shrub Swamp** [Sitka Alder / Devil's-club Shrub Swamp] []
  G4G5 (1996-02-01) BC, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4419 Rose Spirea - Oregon Crabapple - Sitka Willow Lowland Wet Shrubland Alliance

[ ]
Spiraea douglasii - Malus fusca - Salix sitchensis Lowland Wet Shrubland Alliance
[ ]

IVC Scientific Name: *Spiraea douglasii - Malus fusca - Salix sitchensis* Lowland Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK?, BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001129** ***Spiraea douglasii*** **Wet Shrubland** [Rose Spirea Wet Shrubland] []
  G5 (1996-02-01) AK?, BC, OR, WA
- **CEGL003386** ***Salix hookeriana - Spiraea douglasii*** **Shrub Swamp** [Dune Willow - Rose Spirea Shrub Swamp] []
  G3G4 (2002-10-01) BC?, OR, WA
- **CEGL003294** ***Malus fusca - (Salix hookeriana) / Carex obnupta*** **Shrub Swamp** [Oregon Crabapple - (Dune Willow) / Slough Sedge Shrub Swamp] []
  G3 (2002-10-29) BC, OR, WA
- **CEGL003432** ***Salix hookeriana - (Malus fusca) / Carex obnupta - Lysichiton americanus*** **Wet Shrubland** [Dune Willow - (Oregon Crabapple) / Slough Sedge - American Skunk-cabbage Wet Shrubland] []
  G3 (2002-10-21) BC?, OR, WA

- **CEGL003292 *Cornus sericea - Salix (hookeriana, sitchensis)* Shrub Swamp** [Red-osier Dogwood - (Dune Willow, Sitka Willow) Shrub Swamp] []
  G3 (2002-10-01) BC?, OR, WA
- **CEGL003385 *Malus fusca* Shrub Swamp** [Oregon Crabapple Shrub Swamp] []
  G3 (2002-10-01) BC?, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A1123 Bog Blueberry - Dwarf Bilberry Wet Shrubland Alliance

[ ]
Vaccinium uliginosum - Vaccinium cespitosum Wet Shrubland Alliance
Pacific Northwest Blueberry Wet Shrubland

IVC Scientific Name: *Vaccinium uliginosum - Vaccinium cespitosum* Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These wetlands have a moderately dense to dense woody layer dominated by the cold-deciduous dwarf-shrub *Vaccinium uliginosum* or *Vaccinium cespitosum*. Other tall shrubs may be present and include *Salix farriae, Salix planifolia*, or *Betula glandulosa*. The ground cover is primarily *Danthonia intermedia* with scattered *Calamagrostis canadensis* and *Achillea millefolium*. This alliance occurs in saturated sites in coastal and montane areas in the Pacific Northwest from sea level to 1770 m elevation.
IVC Dynamics: Winter flooding and summer drought are critical for this community. Stands in frost pockets and high-elevation stands have frequent frost and saturated soils that slow tree invasion and establishment (Hemstrom et al. 1987).
IVC Environment: Sites include saturated depressions in deflation plains in coastal dune complexes, on the margins of lakes and streams, in swales, near seeps, and in basins underlain by hardpan (often iron-cemented), which cause a perched water table. These sites are flooded during the winter, then dry out by midsummer, but still have a shallow water table. Winter flooding and summer droughts are critical for this community. Soils are shallow to deep, relatively cold and poorly drained. Soil texture ranges from sand in the dune stands to finer-textured, organic muck. Elevations range from sea level to 1770 m. The climate is maritime-influenced. Stands are never extensive where it occurs, and it was probably always a small and unusual component of the landscape.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in California, Oregon, and Washington.
IVC Nations: CA,US
IVC States/Provinces: BC?, CA, OR
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-01-08
IVC Acknowledgments:

M893 Western North American Montane Marsh, Wet Meadow & Shrubland

[ ]

IVC Colloquial Name: Western North American Montane Marsh, Wet Meadow & Shrubland
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:
IVC Concept:
IVC Geographic Range:
IVC Nations: CA,MX,US
IVC States/Provinces: AB, AK, AZ, BC, CA, CO, ID, MT, ND, NE, NM, NV, ON, OR, QC?, SD, SK?, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional
CNVC Classification Comments:
Groups in Canada:

- **G526 Rocky Mountain-Great Basin Lowland-Foothill Riparian Shrubland []**
- **G521 Vancouverian-Rocky Mountain Montane Wet Meadow & Marsh []**
- **G520 Vancouverian-Rocky Mountain Subalpine-Alpine Snowbed, Wet Meadow & Dwarf-shrubland []**
- **G527 Western Montane-Subalpine Riparian & Seep Shrubland []**

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G526 Rocky Mountain-Great Basin Lowland-Foothill Riparian Shrubland

[ ]

IVC Colloquial Name: Rocky Mountain-Great Basin Lowland-Foothill Riparian Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These short to tall shrublands (0.5-5 m in height) occur along streams at and below lower treeline, that is, not up in the mountains, but in between mountain valleys and lowlands of the Interior West. Dominant shrubs include *Acer glabrum, Artemisia cana, Artemisia cana ssp. bolanderi, Artemisia cana ssp. viscidula, Artemisia tridentata ssp. tridentata, Cornus sericea, Crataegus douglasii, Crataegus rivularis, Dasiphora fruticosa ssp. floribunda, Forestiera pubescens, Oplopanax horridus, Philadelphus lewisii, Prunus virginiana, Rhus trilobata, Rosa nutkana, Rosa woodsii, Salix exigua, Salix irrorata, Salix melanopsis, Shepherdia argentea*, and *Symphoricarpos* spp. Herbaceous layers are often dominated by *Athyrium filix-femina, Carex flava, Carex* spp., *Elymus trachycaulus, Equisetum arvense, Deschampsia cespitosa, Festuca idahoensis, Galium triflorum, Glyceria striata, Gymnocarpium dryopteris, Heracleum maximum, Iris missouriensis, Juncus arcticus ssp. littoralis, Juncus* spp., *Leymus cinereus, Maianthemum stellatum, Muhlenbergia filiformis, Muhlenbergia richardsonis, Pascopyrum smithii, Poa cusickii*, and *Poa secunda*. Introduced forage species such as *Agrostis stolonifera, Poa pratensis, Phleum pratense*, and the invasive annual *Bromus tectorum* are often present in disturbed stands. Streams are permanent, intermittent and ephemeral. Stands occur in steep-sided canyons or in broad flat valleys. They can be large, wide occurrences on mid-channel islands in larger rivers or narrow bands on small, rocky canyon tributaries and well-drained benches. They also are typically found in backwater channels and other perennially wet but less scoured sites, such as floodplain swales and irrigation ditches, and they can occur in depressional wetlands and non-alkaline playas. Stands may also occur on upper benches away from active channel movement. Willow-dominated shrublands require flooding and bare gravels for reestablishment. Stands are maintained by annual flooding and hydric soils throughout the growing season. Sites are subject to temporary flooding during spring runoff. The water table is often just below the ground surface. Occurrences are found within the flood zone of rivers, on islands, sand or cobble bars, and immediate streambanks and upper benches, and occasionally on hillslope springs. This group occurs throughout the Rocky

Mountain and Colorado Plateau regions from approximately 780 to 1850 m (2560-6000 feet) in elevation, around the edges and between the mountain ranges of the Great Basin and along the lower eastern slope of the Sierra Nevada at about 1220 m (4000 feet) in elevation, at lowland and montane elevations in the Columbia Plateau, on the periphery of the mountains surrounding the Columbia River Basin, and along major tributaries and the main stem of the Columbia at relatively low elevations. It also occurs in the foothills of the northern Rocky Mountains and the east slopes of the Cascades in the lower montane and foothill zones. Climate is generally semi-arid.

IVC Dynamics: Willow-dominated associations are disturbance-driven systems that require flooding, scour and deposition for germination and maintenance. Livestock grazing is a major influence in altering structure, composition, and function of the community (Baker 1988, 1989a, Padgett et al. 1989).

IVC Environment: *Climate:* Climate is generally semi-arid continental with typically cold winters and hot summers. *Soil/substrate/hydrology:* These shrublands occur along all streams at and below lower treeline, that is, not up in the mountains, but in the between- mountain valleys and lowlands of the interior west. Streams are permanent, intermittent and ephemeral. Stands occur in steep-sided canyons or in broad flat valleys. They can be large, wide occurrences on mid-channel islands in larger rivers or narrow bands on small, rocky canyon tributaries and well-drained benches. They also are typically found in backwater channels and other perennially wet but less scoured sites, such as floodplain swales and irrigation ditches, and they can occur in depressional wetlands and non-alkaline playas, on hillside seeps and springs. These shrublands require flooding and bare gravels for reestablishment. Willow-dominated stands are maintained by annual flooding and hydric soils throughout the growing season. Sites are subject to temporary flooding during spring runoff. The water table is often just below the ground surface. Occurrences are found within the flood zone of rivers, on islands, sand or cobble bars, immediate streambanks and upper benches. Soils are typically alluvial deposits of sand, clays, silts and cobbles that are highly stratified with depth due to flood scour and deposition. Highly stratified profiles consist of alternating layers of clay loam and organic material with coarser sand or thin layers of sandy loam over very coarse alluvium. Soils are fine-textured with organic material over coarser alluvium. Some soils are more developed due to a slightly more stable environment and greater input of organic matter. Environmental information was compiled from the following sources: Daubenmire (1952), Johnson and Simon (1985), Kovalchik (1987, 1992), Hansen et al. (1989), Manning and Padgett (1989, 1995), Padgett et al. (1989), Szaro (1989), MacKinnon et al. (1990), Banner et al. (1993), Delong et al. (1993), Sawyer and Keeler-Wolf (1995), Walford (1996), Crowe and Clausnitzer (1997), Steen and Coupe (1997), Walford et al. (1997, 2001), Kittel et al. (1999b), Muldavin et al. (2000a), Delong (2003), MacKenzie and Moran (2004), and Sawyer et al. (2009).

DISTRIBUTION

IVC Geographic Range: This group is found throughout the Rocky Mountain and Colorado Plateau regions from approximately 900 to 1850 m (3000-6000 feet) in elevation, in the mountain ranges of the Great Basin and along the eastern slope of the Sierra Nevada from about 1220 m (4000 feet) in elevation, at lowland and montane elevations in the Columbia Plateau, on the periphery of the mountains surrounding the Columbia River Basin, and along major tributaries and the main stem of the Columbia at relatively low elevations. It also occurs in the northern Rocky Mountains and the east slopes of the Cascades in the lower montane and foothill zones.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, NM, NV, OR, SD, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.11.78:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 9.4.1.25:P, 9.4.3.26:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.1.14:P, 10.2.4.24:P, 12.1.1.79:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G4* rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3772 *Betula occidentalis* Wet Shrubland Alliance** [Water Birch Wet Shrubland Alliance] []
  This riparian shrubland alliance occurs on moderately wide stream benches and floodplains. It may also occur on hillside seeps in the mountains and foothills. Sites are relatively flat (1-5% slope) stream benches and often extend away from the channel edge. The substrate is usually exposed, but surface water can be present for variable periods without detectable seasonal periodicity.

Betula occidentalis forms a dense, closed canopy with cover up to 95%. It occurs in the Rocky Mountains, intermountain ranges of Nevada and Sierra Nevada of California.

- **A3799 *Rhus trilobata - Crataegus rivularis - Forestiera pubescens* Shrubland Alliance** [Skunkbush Sumac - River Hawthorn - Stretchberry Shrubland Alliance] []
  This shrubland alliance is dominated by *Corylus cornuta, Crataegus rivularis, Elaeagnus commutata, Forestiera pubescens, Rhamnus alnifolia, Shepherdia argentea*, and/or *Rhus trilobata*. Usually these are single-species shrublands, but all occupy similar environments. It is an eclectic mix of mesic shrubs that form small, narrow stands at the base of steep hills and cliffs and along washes and upper benches and terraces of riparian areas in the Rocky Mountains and throughout the cool interior western U.S. These are "fringe" riparian shrublands that occur on upper benches and terraces, dry washes and areas near but not necessarily in the wettest part of riparian areas, but receive more moisture than surrounding upland slopes.
- **A3800 *Salix exigua - Salix irrorata* Shrubland Alliance** [Narrowleaf Willow - Dewystem Willow Shrubland Alliance] []
  This riparian shrubland alliance is dominated by *Salix exigua, Salix irrorata*, and/or *Salix melanopsis*. The canopy is tall (2-5 m), and typically many-branched with continuous cover of 60-100%. Communities occur along streams throughout the western U.S. They are found in streamsides, marshes and wet ditches.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2011)
IVC Description Author: G. Kittel
IVC Description Date: 2015-12-02
IVC Acknowledgments: J. Nachlinger, K. Schulz, J. Kagan, M.S. Reid

A3772 Water Birch Wet Shrubland Alliance

[ ]
Betula occidentalis Wet Shrubland Alliance
Western Water Birch Wet Shrubland

IVC Scientific Name: *Betula occidentalis* Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: In this alliance, *Betula occidentalis* forms a dense, closed canopy with cover up to 95%. The shrub layer may also include *Alnus incana, Artemisia tridentata ssp. vaseyana, Cornus sericea, Crataegus douglasii, Dasiphora fruticosa ssp. floribunda, Juniperus horizontalis, Purshia tridentata, Purshia tridentata, Rosa woodsii*, and *Salix* spp. Due to the dense shrub canopy, herbaceous undergrowth is usually limited. Forb species include *Aquilegia formosa, Maianthemum stellatum*, and *Urtica dioica*. Graminoid cover is usually low and is typically composed of introduced hay grasses. This riparian shrubland alliance occurs in the Rocky Mountains, intermountain ranges of Nevada and Sierra Nevada of California on moderately wide stream benches and floodplains. It may also occur on hillside seeps in the mountains and foothills. Sites are relatively flat (1-5% slope) stream benches and often extend away from the channel edge. The substrate is usually exposed, but surface water can be present for variable periods without detectable seasonal periodicity. Inundation is not predictable to a given season and is dependent upon highly localized rainstorms (e.g., summer thunderstorms in eastern Oregon and Idaho). Soils are derived from alluvium and are fairly shallow, ranging from 30 cm to greater than 60 cm. Substrates are typically alluvial and range from fairly shallow, finer-textured soils to gravel and boulders. Soils usually have signs of saturation (mottles).
IVC Dynamics: *Betula occidentalis* is highly adapted to most forms of disturbance. However, heavy grazing may eliminate the more palatable native graminoids, thereby replacing them with introduced species or nonpalatable native species in the understory (Hansen et al. 1995).
IVC Environment: Plant associations within this alliance occupy moderately wide stream benches and floodplains in moderately wide valleys and on hillside seeps in the mountains and foothills. Sites are relatively flat (1-5% slope) stream benches and often extend away from the channel edge. Elevation ranges up to 2700 m in Idaho. The substrate is usually exposed, but surface water can be present for variable periods without detectable seasonal periodicity. Inundation is not predictable to a given season and is dependent upon highly localized rainstorms e.g., summer thunderstorms in eastern Oregon and Idaho. Soils derived from alluvium are fairly shallow, ranging from 30 to greater than 60 cm.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Rocky Mountains of eastern Oregon and Washington, Idaho, British Columbia, Alberta, Montana, Wyoming, Colorado, New Mexico, and Utah, as well as intermountain ranges of Nevada and Sierra Nevada of California.
IVC Nations: CA,US
IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, NM, NV, OR, SD, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL001080 *Betula occidentalis* Wet Shrubland** [Water Birch Wet Shrubland] []
  G3G4 (2004-05-26) AB, CO, ID, MT, NV, OR, UT, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3799 Skunkbush Sumac - River Hawthorn - Stretchberry Shrubland Alliance

[ ]
Rhus trilobata - Crataegus rivularis - Forestiera pubescens Shrubland Alliance
Skunkbush Sumac - River Hawthorn - Stretchberry Shrubland

IVC Scientific Name: *Rhus trilobata - Crataegus rivularis - Forestiera pubescens* Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This semi-riparian shrubland alliance is dominated by *Corylus cornuta, Crataegus rivularis, Elaeagnus commutata, Forestiera pubescens, Rhamnus alnifolia, Shepherdia argentea*, and/or *Rhus trilobata*, generally in monotypic stands, but they can be mixed as well. Other shrub associates may include *Prunus virginiana*. It is an eclectic mix of mesic shrubs that form small, narrow stands at the base of steep hills and cliffs and along washes and upper benches and terraces of riparian areas. These are "fringe" riparian shrublands that occur on upper benches and terraces, dry washes and areas near but not necessarily in the wettest part of riparian areas, but which receive more moisture than surrounding upland slopes. Often these are single-species shrublands, but all occupy similar environments. The alliance has a broad north to south range in the Rocky Mountains and throughout the cool interior western U.S.
IVC Dynamics:
IVC Environment: Stands are generally found on elevated benches along streams, on floodplains, adjacent to seeps and can form narrow stringers on stream terraces. Elevations range from approximately 700 to 2400 m. Sites are gently sloping and are temporarily flooded during spring runoff and high-intensity rainstorms. Soils are alluvial or may be well-developed Mollisols.

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout the Rocky Mountains and other areas of the cool interior western U.S. and is documented from eastern Oregon and Washington, Idaho, Alberta, Montana, Wyoming, Colorado, New Mexico, Utah and the highlands of northern Arizona.
IVC Nations: CA,US
IVC States/Provinces: AB, AZ, CA, CO, ID, MT, NM, NV, OR, SD, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001132 *Rhamnus alnifolia* Riparian Wet Shrubland** [Alderleaf Buckthorn Riparian Wet Shrubland] []
  G3 (2002-10-22) AB, ID, MT, OR, WA, WY
- **CEGL001098 *Elaeagnus commutata* Wet Shrubland** [Silverberry Wet Shrubland] []
  G2Q (1996-02-01) AB, ID, MT, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2016-10-17
IVC Acknowledgments:

A3800 Narrowleaf Willow - Dewystem Willow Shrubland Alliance

[ ]
Salix exigua - Salix irrorata Shrubland Alliance
Narrowleaf Willow - Dewystem Willow Shrubland

IVC Scientific Name: *Salix exigua - Salix irrorata* Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Dominant species are *Salix exigua, Salix interior, Salix irrorata*, and/or *Salix melanopsis*. It is typically a monotypic stand with some herbaceous understory; however, other shrubs and trees can be present. The herbaceous stratum can have sparse to moderate cover, including a variety of pioneer species. Other codominants may include *Populus fremontii, Populus deltoides, Populus angustifolia*, and *Acer negundo*. Other shrubs within this alliance consist of *Alnus incana, Cornus sericea, Rosa* spp., *Rubus idaeus ssp. strigosus, Ribes aureum, Ribes inerme*, and other *Salix* species. Common herbaceous species include *Artemisia ludoviciana, Epilobium* spp., *Equisetum* spp., *Fragaria virginiana ssp. glauca, Geranium* spp., *Hackelia* spp., *Maianthemum stellatum, Mertensia ciliata, Osmorhiza occidentalis, Thalictrum fendleri*, and *Urtica dioica*. Non-native species can be abundant, such as *Poa pratensis, Bromus inermis, Taraxacum officinale*, and *Cirsium arvense*. Elevation ranges from 0 to 2950 m (0-9680 feet). These shrublands are found on open sand and gravel bars without tree canopy shading, on a wide variety of streams and rivers and even ditches. *Salix exigua* is one of the most common willows found throughout the western U.S. *Salix irrorata* has similar habitat, but a much more limited range of distribution. Stands are associated with annual flooding and inundation and will grow well into the active stream channel, where it is flooded, even in drier years. Even though flooding is frequent, surface water may not be present for much of the growing season, and the water table is well below the surface, especially in the warmer and hotter parts of the western U.S. Some stands form large, wide stands on mid-channel islands on larger rivers, or narrow stringer bands on small, rocky tributaries. Streams range widely from moderately sinuous and moderate-gradient reaches to broad, meandering rivers with wide floodplains or broad, braided channels. Many stands also occur within highly entrenched or eroding gullies.

IVC Dynamics: This alliance represents an early-seral primary successional stage on newly deposited sediments that may persist under a regime of repeated fluvial disturbance. *Salix exigua, Salix interior*, and *Salix irrorata* are highly adapted to most forms of disturbance, are prolific sprouters, and will re-establish themselves on sites dominated by other disturbance-associated species, e.g., *Glycyrrhiza lepidota* and *Pascopyrum smithii*.

IVC Environment: Plant associations within this alliance are located on floodplains and gravel bars at an elevational range between 0 and 2950 m (0-9680 feet) in the western U.S. These shrublands are found on open sandbars without canopy shading on large or small streams and rivers with sandy or cobble substrates. They are associated with annual flooding and inundation and will grow well into the active river channel, where it is flooded even in drier years. Even though flooding is frequent, surface water is not present for much of the growing season, and the water table is well below the surface, especially in warmer and drier parts of

the western U.S. Some stands form large, wide stands on mid-channel islands on larger rivers, or narrow stringer bands on small, rocky tributaries. Stream reaches range widely from moderately sinuous and moderate-gradient reaches to broad, meandering rivers with wide floodplains or broad, braided channels. Many stands also occur within highly entrenched or eroding gullies. It can be found along wet ditches as well.

Soils of this alliance are typically coarse alluvial deposits of sand, silt and cobbles that are highly stratified with depth from flooding scour and deposition. The stratified profiles consist of alternating layers of clay loam and organic material with coarser sand or thin layers of sandy loam over very coarse alluvium. Occasionally, stands may occur on deep pockets of sand. The pH of the substrate ranges from 6.0-6.8 (Johnston 1987).

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout the lower elevations of the Interior West from Arizona to Alberta west to California and Washington.
IVC Nations: CA,US
IVC States/Provinces: AB, AZ, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL001197 *Salix exigua* Riparian Wet Shrubland** [Narrowleaf Willow Riparian Wet Shrubland] []
  Riparian shrublands dominated by *Salix exigua* with very little understory, very common throughout the western U.S. G5 (1999-05-06) AB, CA, CO, ID, NM, OR, UT, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2016-10-17
IVC Acknowledgments:

G521 Vancouverian-Rocky Mountain Montane Wet Meadow & Marsh

[ ]

IVC Colloquial Name: Vancouverian-Rocky Mountain Montane Wet Meadow & Marsh
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group contains the wet meadows found in low and high montane and subalpine elevations, occasionally reaching into the lower edges of the alpine elevations (about 1000-3600 m), from California's Transverse and Peninsular ranges north to British Columbia's Coastal Mountains and from throughout the Rocky Mountains of Canada and the U.S. (including the Black Hills of South Dakota) and mountain ranges of the intermountain Interior West. Varying dominant herbaceous species include graminoids *Calamagrostis canadensis, Calamagrostis stricta, Carex bolanderi, Carex exsiccata, Carex illota, Carex microptera, Carex scopulorum, Carex utriculata, Carex vernacula, Deschampsia cespitosa, Eleocharis quinqueflora, Glyceria striata, Juncus drummondii, Juncus nevadensis*, and *Scirpus* and/or *Schoenoplectus* spp. Forb species include *Camassia quamash, Cardamine cordifolia, Dodecatheon jeffreyi, Phippsia algida, Rorippa alpina, Senecio triangularis, Trifolium parryi*, and *Veratrum californicum*. Common but sparse shrubs may include *Betula glandulosa, Salix* spp., *Vaccinium macrocarpon*, and *Vaccinium uliginosum*. Wet meadows occur in open wet depressions, basins and flats with low-velocity surface and subsurface flows. They can be large meadows in montane or subalpine valleys, or occur as narrow strips bordering ponds, lakes and streams, and along toeslope seeps. They are typically found on flat areas or gentle slopes, but may also occur on subirrigated sites with slopes up to 10%. In alpine regions, sites typically are small depressions located below late-melting snow patches. Sites are usually seasonally wet, often drying by late summer, and many occur in a tension zone between perennial wetlands and uplands, where water

tables fluctuate in response to long-term climatic cycles. They may have surface water for part of the year, but depths rarely exceed a few centimeters. Wet meadows can be tightly associated with snowmelt and typically are not subjected to high velocity disturbance, but can be flooded by slow-moving waters. Soils are mostly mineral and show typical hydric soil characteristics such as low chroma and redoximorphic features; some areas may have high organic content as inclusions or pockets. Vegetation of this group can manifest as a mosaic of several plant associations, or be a monotypic stand of a single association which is dominated by graminoids or forbs.

IVC Dynamics: This group has soils that may be flooded or saturated throughout the growing season. It may also occur on areas with soils that are only saturated early in the growing season, or intermittently. Typically these associations are tolerant of moderate-intensity surface fires and late-season livestock grazing (Kovalchik 1987). Most appear to be relatively stable types, although in some areas these may be impacted by intensive livestock grazing.

IVC Environment: *Soil/substrate/hydrology:* Wet meadows are typically found on flat areas or gentle slopes, but may also occur on subirrigated sites with slopes up to 10%. In alpine regions, sites typically are small depressions located below late-melting snow patches. Sites are usually seasonally wet, often drying by late summer, and many occur in a tension zone between perennial wetlands and uplands, where water tables fluctuate in response to long-term climatic cycles. They may have surface water for part of the year, but depths rarely exceed a few centimeters. Wet meadows can be tightly associated with snowmelt and typically are not subjected to high velocity disturbance, but can be flooded by slow-moving waters. Moisture for these wet meadow community types is acquired from groundwater, stream discharge, overland flow, overbank flow, and on-site precipitation. Salinity and alkalinity are generally low due to the frequent flushing of moisture through the meadow. Depending on the slope, topography, hydrology, soils and substrate, intermittent, ephemeral, or permanent pools may be present.

These areas may support species more representative of purely aquatic environments. Standing water may be present during some or all of the growing season, with water tables typically remaining at or near the soil surface. Fluctuations of the water table throughout the growing season are not uncommon, however. On drier sites supporting the less mesic types, the late-season water table may be 1 m or more below the surface.

Soils are mostly mineral and show typical hydric soil characteristics such as low chroma and redoximorphic features; some areas may have high organic content as inclusions or pockets. Soils may have organic soils inclusions. The presence and amount of organic matter may vary considerably depending on the frequency and magnitude of alluvial deposition (Kittel et. al. 1999b). Organic composition of the soil may include a thin layer near the soil surface or accumulations of highly sapric material of up to 120 cm thick. Soils may exhibit gleying and/or mottling throughout the profile. Wet meadows provide important water filtration, flow attenuation, and wildlife habitat functions. Environmental information compiled from Komarkova (1976, 1986), Nachlinger (1985), Kovalchik (1987, 1993), Barbour and Major (1988), Meidinger et al. (1988), Padgett et al. (1988a), Lloyd et al. (1990), Banner et al. (1993), DeLong et al. (1993), Manning and Padgett (1995), Sawyer and Keeler-Wolf (1995), Sanderson and Kettler (1996), Crowe and Clausnitzer (1997), Steen and Coupe (1997), Kittel et al. (1999b), and MacKenzie and Moran (2004).

DISTRIBUTION

IVC Geographic Range: This group occurs in the mountains in California's Transverse and Peninsular ranges north to British Columbia's coastal ranges and is found throughout the Rocky Mountains (including the Black Hills of South Dakota) of the U.S. and Canada as well as the intermountain ranges of the interior west, ranging in elevation from montane to alpine (1000-3600 m).

IVC Nations: CA,MX,US

IVC States/Provinces: AB, AK, AZ, BC, CA, CO, ID, MT, ND, NE, NM, NV, ON, OR, QC?, SD, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.11.78:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 7.1.8.1:P, 7.1.9.3:P, 9.3.1.42:P, 9.3.3.43:P, 9.4.1.25:P, 9.4.3.26:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.1.14:P, 10.2.2.81:P, 10.2.4.24:P, 11.1.1a.6:P, 11.1.1b.85:P, 11.1.2.7:P, 11.1.3.8:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5* rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate. Grazing has severely impacted and transformed stands in parts of the type's range.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4425 *Carex utriculata - Calamagrostis canadensis* Basin Marsh & Wet Meadow Alliance** [Northwest Territory Sedge - Bluejoint Basin Marsh & Wet Meadow Alliance] []
- **A4426 *Danthonia californica - Deschampsia cespitosa - Camassia quamash* Wet Grassland Alliance** [California Oatgrass - Tufted Hairgrass - Small Camas Wet Grassland Alliance] []
- **A4427 *Heracleum maximum - Carex scopulorum var. bracteosa - Veratrum viride* Wet Meadow Alliance** [Common Cow-Parsnip - Mountain Sedge - Green False Hellebore Wet Meadow Alliance] []
- **A4424 *Senecio triangularis - Saxifraga* spp. - *Mimulus* spp. Streamside Wet Meadow Alliance** [Arrowleaf Ragwort - Saxifrage species - Monkeyflower species Streamside Wet Meadow Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: P. Comer and G. Kittel, in Faber-Langendoen et al. (2011)
IVC Description Author: P. Comer, G. Kittel and C. Chappell
IVC Description Date: 2015-12-02
IVC Acknowledgments:

A4425 Northwest Territory Sedge - Bluejoint Basin Marsh & Wet Meadow Alliance

[ ]
Carex utriculata - Calamagrostis canadensis Basin Marsh & Wet Meadow Alliance
[ ]

IVC Scientific Name: *Carex utriculata - Calamagrostis canadensis* Basin Marsh & Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, AZ, BC, CA, CO, ID, MT, ND, NE, NM, NV, ON, OR, SD, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001803 *Carex aquatilis - Carex utriculata* Wet Meadow** [Water Sedge - Northwest Territory Sedge Wet Meadow] []
  G4 (1998-04-09) AB, CO, MT
- **CEGL001809 *Carex pellita* Wet Meadow** [Woolly Sedge Wet Meadow] []
  G3 (2000-10-17) BC, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
- **CEGL001802 *Carex aquatilis* Wet Meadow** [Water Sedge Wet Meadow] []
  G5 (1996-02-01) AB, AZ?, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
- **CEGL005825 *Argentina anserina* Wet Meadow** [Silverweed Cinquefoil Wet Meadow] []
  GNR (2015-12-18) AB, MT
- **CEGL001838 *Juncus arcticus ssp. littoralis* Wet Meadow** [Baltic Rush Wet Meadow] []
  G5 (1996-02-01) AB, AZ, BC, CA, CO, ID, MT, NE, NM, NV, OR, SD, UT, WA, WY

- **CEGL001833** ***Eleocharis palustris*** **Marsh** [Common Spikerush Marsh] []
  G5 (1996-02-01) AB, AK, AZ, BC, CA?, CO, ID, MT, NM, NV, OR, UT, WA, WY
- **CEGL005148** ***Equisetum (arvense, variegatum)*** **Wet Meadow** [(Field Horsetail, Variegated Scouring-rush) Wet Meadow] []
  GNR. ON, UT
- **CEGL001813** ***Carex nebrascensis*** **Wet Meadow** [Nebraska Sedge Wet Meadow] []
  G4 (1996-02-01) AB, AZ, CA, CO, ID, MT, NE, NM?, NV, OR, SD, UT, WA?, WY
- **CEGL001562** ***Carex utriculata*** **Marsh** [Northwest Territory Sedge Marsh] []
  G5 (1996-02-01) AB, AZ?, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
- **CEGL001599** ***Deschampsia cespitosa*** **Wet Meadow** [Tufted Hairgrass Wet Meadow] []
  G4 (1998-04-09) AB, AZ, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
- **CEGL002746** ***Equisetum fluviatile*** **Marsh** [Water Horsetail Marsh] []
  G4 (1996-02-01) AB, BC, ID, MT, OR, WA
- **CEGL001559** ***Calamagrostis canadensis*** **Western Wet Meadow** [Bluejoint Western Wet Meadow] []
  G4 (2000-04-26) AB, BC, CA, CO, ID, MT, ND, OR, SD, UT, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4426 California Oatgrass - Tufted Hairgrass - Small Camas Wet Grassland Alliance

[ ]
Danthonia californica - Deschampsia cespitosa - Camassia quamash Wet Grassland Alliance
[ ]

IVC Scientific Name: *Danthonia californica - Deschampsia cespitosa - Camassia quamash* Wet Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AZ, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)

IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4427 Common Cow-Parsnip - Mountain Sedge - Green False Hellebore Wet Meadow Alliance

[ ]

Heracleum maximum - Carex scopulorum var. bracteosa - Veratrum viride Wet Meadow Alliance

[ ]

IVC Scientific Name: *Heracleum maximum - Carex scopulorum var. bracteosa - Veratrum viride* Wet Meadow Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, BC?, CA, CO, ID, MT, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001822 *Carex scopulorum* Wet Meadow** [Mountain Sedge Wet Meadow] []
  G5 (1996-02-01) BC?, CA, CO, ID, MT, NV, OR, UT?, WA, WY?
- **CEGL005857 *Heracleum maximum* Wet Meadow** [Common Cow-parsnip Wet Meadow] []
  G3G4 (2004-01-12) AB, MT, WA?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4424 Arrowleaf Ragwort - Saxifrage species - Monkeyflower species Streamside Wet Meadow Alliance

[ ]

Senecio triangularis - Saxifraga spp. - *Mimulus* spp. Streamside Wet Meadow Alliance

[ ]

IVC Scientific Name: *Senecio triangularis - Saxifraga* spp. - *Mimulus* spp. Streamside Wet Meadow Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK?, AZ, CA, CO, ID, MT, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001987 *Senecio triangularis* Wet Meadow** [Arrowleaf Ragwort Wet Meadow] []
  G5? (2000-05-03) AB, AK?, CA?, ID, MT, OR, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G520 Vancouverian-Rocky Mountain Subalpine-Alpine Snowbed, Wet Meadow & Dwarf-shrubland

[ ]

IVC Colloquial Name: Vancouverian-Rocky Mountain Subalpine-Alpine Snowbed, Wet Meadow & Dwarf-shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These are high-elevation communities found throughout the Rocky Mountains, Pacific Northwest and Intermountain West regions, dominated by herbaceous species found on wetter sites with very low-velocity surface and subsurface flows. They range in elevation from upper subalpine to alpine (1500-3600 m) depending on latitude. These types occur as large meadows in subalpine valleys, as narrow strips bordering ponds, lakes and streams, and along toeslope seeps. They are typically found on flat areas or gentle slopes, but may also occur on subirrigated sites with slopes up to 10%. In alpine regions, sites typically are small depressions located below late-melting snow patches or on snowbeds. Soils of this group are mineral or with a thin (<40 cm) organic layer over mineral layers (aka not peatland). Soils show hydric soil characteristics, including high organic content and/or low chroma and redoximorphic features. This group often occurs as a mosaic of several plant associations, often dominated by graminoids such as *Carex illota, Carex lachenalii, Carex nigricans, Carex vernacula, Deschampsia cespitosa, Juncus drummondii*, and forbs *Caltha leptosepala, Trollius laxus, Phippsia algida, Rorippa alpina, Sibbaldia procumbens*, and *Trifolium parryi*. Often scattered to moderately dense dwarf-shrubs are present, especially *Dasiphora, Kalmia, Salix* or *Vaccinium*, which when present form alpine dwarf-shrublands. Wet meadows are tightly associated with snowmelt and typically not subjected to high disturbance events such as flooding.

IVC Dynamics: Associations in this group are adapted to soils that may be flooded or saturated throughout the growing season. They may also occur on areas with soils that are only saturated early in the growing season or intermittently. Typically these associations are tolerant of moderate-intensity surface fires and late-season livestock grazing (Kovalchik 1987). Most appear to be relatively stable types, although in some areas these may be impacted by intensive livestock grazing.

IVC Environment: These are high-elevation communities found throughout the Rocky Mountains, Pacific Northwest and Intermountain West regions, dominated by herbaceous species found on wetter sites with very low-velocity surface and subsurface flows. They range in elevation from upper subalpine to alpine (1500-3600 m) depending on latitude. These types occur as large meadows in subalpine valleys, as narrow strips bordering ponds, lakes and streams, and along toeslope seeps. They are typically found on flat areas or gentle slopes, but may also occur on subirrigated sites with slopes up to 10%. In alpine

regions, sites typically are small depressions located below late-melting snow patches or on snowbeds. Soils of this group are mineral or with a thin (<40 cm) organic layer over mineral layers (aka not peatland).

Moisture for these wet meadow community types is acquired from groundwater, stream discharge, overland flow, overbank flow, and on-site precipitation. Salinity and alkalinity are generally low due to the frequent flushing of moisture through the meadow. Depending on the slope, topography, hydrology, soils and substrate, intermittent, ephemeral or permanent pools may be present. These areas may support species more representative of purely aquatic environments. Standing water may be present during some or all of the growing season, with water tables typically remaining at or near the soil surface. Fluctuations of the water table throughout the growing season are not uncommon, however. On drier sites supporting the less mesic types, the late-season water table may be 1 m or more below the surface.

Soil/substrate/hydrology: Soils typically possess a high proportion of organic matter, but this may vary considerably depending on the frequency and magnitude of alluvial deposition (Kittel et. al. 1999b). Organic composition of the soil may include a thin layer near the soil surface or accumulations of highly sapric material up to 30 cm thick (aka not peatland). Soils may exhibit gleying and/or mottling throughout the profile. Wet meadow ecological systems provide important water filtration, flow attenuation, and wildlife habitat functions. Environmental information was compiled from Willard (1963), Komarkova (1976, 1986), Nachlinger (1985), Cooper (1986b), Kovalchik (1987, 1993), Padgett et al. (1988a), Reed (1988), Meidinger and Pojar (1991), Shiflet (1994), Manning and Padgett (1995), Sanderson and Kettler (1996), Zwinger and Willard (1996), Cooper et al. (1997), Crowe and Clausnitzer (1997), and Kittel et al. (1999b).

DISTRIBUTION

IVC Geographic Range: This group is found throughout the Rocky Mountains, Pacific Northwest and Intermountain West regions, ranging in elevation from upper subalpine to alpine (1500-3600 m) depending on latitude.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, NM, NV, OR, SD, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.11.78:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 7.1.8.1:P, 9.3.1.42:P, 9.3.3.43:P, 9.4.1.25:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.1.14:P, 11.1.1a.6:P, 11.1.2.7:P, 11.1.3.8:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, long-term decline moderate, and threats high from climate change.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3832 *Carex nigricans - Sibbaldia procumbens - Trollius laxus* Wet Meadow Alliance** [Black Alpine Sedge - Creeping Sibbaldia - American Globeflower Wet Meadow Alliance] []
  This alliance consists of *Carex nigricans, Sibbaldia procumbens*, or *Trollius laxus* that form low mats with an abundance of other forbs such as *Parnassia fimbriata, Phippsia algida, Polygonum bistortoides*, and *Potentilla flabellifolia* in moist to wet meadows, streambanks and depressions at subalpine and alpine elevations of the Cascade Range and Rocky Mountains.
- **A0958 *Dasiphora fruticosa* Wet Shrubland Alliance** [Shrubby-cinquefoil Wet Shrubland Alliance] []
  This alliance consists of shrublands dominated by *Dasiphora fruticosa ssp. floribunda* which occur on moist to very wet sites that can be dry by the end of the growing season at montane and subalpine elevations of the Rocky Mountains.
- **A3831 *Kalmia microphylla - Cassiope mertensiana - Dryas drummondii* Wet Dwarf-shrubland Alliance** [Alpine Laurel - Western Moss-heather - Drummond's Mountain-avens Wet Dwarf-shrubland Alliance] []
  This alliance includes dwarf-shrubland wetlands dominated by *Kalmia microphylla, Cassiope mertensiana*, and/or *Dryas drummondii* in the subalpine and alpine elevations of western North American mountains.
- **A4417 *Mimulus lewisii - Philonotis fontana* Seep & Streambank Alliance** [Great Purple Monkeyflower - Fountain Apple Moss Seep & Streambank Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2011)
IVC Description Author: K.A. Schulz
IVC Description Date: 2015-12-02
IVC Acknowledgments:

A3832 Black Alpine Sedge - Creeping Sibbaldia - American Globeflower Wet Meadow Alliance

[ ]
Carex nigricans - Sibbaldia procumbens - Trollius laxus Wet Meadow Alliance
Black Alpine Sedge - Sibbaldia - Globeflower Wet Meadow

IVC Scientific Name: *Carex nigricans - Sibbaldia procumbens - Trollius laxus* Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: In this alliance, *Carex nigricans, Sibbaldia procumbens*, or *Trollius laxus* form a low dominant mat with high average cover and frequency, and occasionally with codominance and even dominance of other forbs such as *Parnassia fimbriata, Phippsia algida, Polygonum bistortoides*, and *Potentilla flabellifolia*. Other prominent species are *Luetkea pectinata, Polytrichum lyallii, Pseudoleskea radicosa, Vahlodea atropurpurea*, and the lichen *Lepraria neglecta*. *Phleum alpinum, Deschampsia cespitosa*, and *Juncus drummondii* may also be abundant. Stands occur from 1750 m to 3540 m in elevation in snowbed habitats, where snow accumulates in the winter and melts late in summer and are found adjacent to melting snowbanks, in wet meadows, streambanks, and depressions in subalpine and alpine areas of the Cascade Range and Rocky Mountains.
IVC Dynamics: None known at this time.
IVC Environment: Moisture of stands varies from meadows where soils dry fairly early in the growing season, to stands located in areas with late-lying snowpatches that remain moist throughout the growing season. Stands occur in meadows, on streambanks, and in depressions in subalpine and alpine areas. Elevations range from 1750 to 2150 m in the Cascade Range, and from 3210 to 3540 m in Colorado and Wyoming. Sites typically are small depressions located below late-melting snowpatches, gently inclined (0-22%), and snow-free for 3-4 months. Soils are poorly drained and may have some peat development. Soil pH levels range from 4.2-5.1. In Wyoming, parent material is granite or quartzite and the soils are poorly developed Inceptisols (Cryochrepts).

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the Rocky Mountains of Idaho, Montana, Wyoming, Colorado, New Mexico, Utah and Alberta, Canada, and the Cascade Range of Oregon and Washington.
IVC Nations: CA,US
IVC States/Provinces: AB, BC, CA?, CO, ID, MT, NM, OR, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005824 *Carex nigricans - Sibbaldia procumbens* Wet Meadow** [Black Alpine Sedge - Creeping Sibbaldia Wet Meadow] []
  G4G5 (2004-04-16) AB, MT
- **CEGL001816 *Carex nigricans* Wet Meadow** [Black Alpine Sedge Wet Meadow] []
  G4 (1996-02-01) BC, CA?, ID, MT, OR, WA
- **CEGL001829 *Carex spectabilis - Potentilla flabellifolia* Wet Meadow** [Showy Sedge - High Mountain Cinquefoil Wet Meadow] []
  G4Q (1996-02-01) WA
- **CEGL005858 *Trollius laxus - Parnassia fimbriata* Wet Meadow** [American Globeflower - Fringed Grass-of-Parnassus Wet Meadow] []
  G3? (2004-01-12) AB, MT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A0958 Shrubby-cinquefoil Wet Shrubland Alliance

[ ]
Dasiphora fruticosa Wet Shrubland Alliance
Rocky Mountain Shrubby-cinquefoil Wet Shrubland

IVC Scientific Name: *Dasiphora fruticosa* Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is dominated by *Dasiphora fruticosa ssp. floribunda*. Associated species on wetter sites include the shrub *Artemisia cana*; graminoids *Carex aquatilis, Carex buxbaumii, Carex microptera, Carex pachystachya, Deschampsia cespitosa, Festuca rubra, Juncus arcticus ssp. littoralis, Muhlenbergia filiformis*, and *Poa secunda*; and forbs such as *Trifolium longipes*. The drier sites typically are composed of a dense graminoid layer that includes *Andropogon gerardii, Festuca campestris, Festuca idahoensis*, and *Schizachyrium scoparium*. It is found on a wide variety of landforms at montane and subalpine elevations in the Rocky Mountains. Sites include glacial depressions, terraces along meandering streams, slopes near springs and seeps, steep scree slopes, or broad mountain meadows.
IVC Dynamics: *Dasiphora fruticosa ssp. floribunda* is an opportunistic species and as such occurs on a variety of habitats. Many of the communities dominated by this species appear to be controlled by disturbance. Komarkova (1986) reports stands on subalpine scree slopes that have relatively rapidly moving fine materials or snow. Heavily grazed sites may support *Dasiphora*-dominated communities as well (Komarkova 1986, Padgett et. al. 1989). With improper grazing, *Dasiphora fruticosa ssp. floribunda* will increase in abundance because it is unpalatable to livestock. Other species that increase with grazing are *Poa pratensis, Juncus arcticus ssp. littoralis*, and *Taraxacum officinale* (Padgett et al. 1989).
IVC Environment: Plant associations within this alliance are highly variable, occupying various landforms in the foothills, montane, and subalpine regions. They range in elevation from 860 m in Montana to 3000 m in Colorado. These communities can occupy sites adjacent to glacial depressions, terraces along meandering streams, slopes near springs and seeps, steep scree slopes, or broad mountain meadows. Typically, stands occur on broad, gently sloping valley bottoms and floodplains or along the drier edges of isolated wetlands and fens. Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface. Parent materials for sites supporting stands of this alliance are either alluvial-glacial or organic. The soils are typically sandy loams over sand and gravel layers. Peat accumulation is common in stands located on fens. Soil texture can be fine-textured with occasional mottling and gleying. *Salix wolfii, Salix boothii*, or *Betula nana* communities can be in the adjacent riparian areas.

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout the western montane U.S. and Canada.
IVC Nations: CA,US
IVC States/Provinces: AB, BC, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:

IVC Primary Concept Source: D. Culver, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3831 Alpine Laurel - Western Moss-heather - Drummond's Mountain-avens Wet Dwarf-shrubland Alliance

[ ]

Kalmia microphylla - Cassiope mertensiana - Dryas drummondii Wet Dwarf-shrubland Alliance

Alpine Laurel - Moss-heather - Mountain-avens Wet Dwarf-shrubland

IVC Scientific Name: *Kalmia microphylla - Cassiope mertensiana - Dryas drummondii* Wet Dwarf-shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These dwarf-shrubland wetlands are dominated by *Kalmia microphylla, Cassiope mertensiana*, and/or *Dryas drummondii*. Other ericaceous shrubs are usually present. The herbaceous layer is typically dominated by graminoids, of which Carices usually predominate. Mesic forbs are usually scattered through the graminoid matrix. This alliance is found at subalpine and alpine elevations (1700-4000 m) of western North American mountains. Stands occur in cold and snowy places such as meadows, snowbeds, lake margins, low-gradient depressions, and areas with hummocky topography. Soils are frigid. Water tables are often at or near the surface for much of the growing season. Some stands occur on point bars and stream terraces having well- to rapidly drained cobbly soils.

IVC Dynamics: Frost heaving tends to create subtle changes in microtopography that allow coexistence of various wetland species. Livestock trampling can cause rutting and headcut erosion in these habitats, leading to drying and invasion of upland species. *Kalmia microphylla* is poisonous to livestock and is probably not grazed, but the forb and graminoid components of these communities may be heavily utilized.

IVC Environment: This dwarf-shrub alliance occurs on alpine tundra and is also found in the montane to lower subalpine zones, ranging in elevation from 1000 m in the northern mountains to 4000 m in the southern extent. The alliance occurs in snowbed habitats, or areas that accumulate snow in the winter and release snow slowly during the growing season. The vegetation is often located on solifluction lobes, which receive moisture from upslope, subsurface drainage. Consequently, soils are cold and nearly saturated for most of the growing season, derived from bedrock, aggraded alluvium, from metamorphic or igneous rock, usually high in organic matter, and strongly acidic. Soils can be well- to rapidly drained cobbly soils or on acidic peat soils but are usually saturated with water most of the year, with pH ranging from 5.8-6.2. Soil texture tends to be variable. These communities can be associated with hummocky topography, which provides a juxtaposition of saturated and somewhat drained microhabitats. The water table is often at or near the surface for much of the growing season and due to the cold, soil organic decomposition is slow.

DISTRIBUTION

IVC Geographic Range: This alliance is found through high elevations of western North American mountains.
IVC Nations: CA,US
IVC States/Provinces: AB, BC, CA, CO, ID, MT, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005834 *Dryas drummondii / Chamerion latifolium* Wet Dwarf-shrubland** [Drummond's Mountain-avens / Dwarf Fireweed Wet Dwarf-shrubland] []
  G3? (2004-01-28) AB, MT
- **CEGL001402 *Kalmia microphylla / Carex nigricans* Wet Dwarf-shrubland** [Alpine Laurel / Black Alpine Sedge Wet Dwarf-shrubland] []
  G3G4 (1996-02-01) AB?, BC?, CA, CO, MT, OR, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A4417 Great Purple Monkeyflower - Fountain Apple Moss Seep & Streambank Alliance

[ ]
Mimulus lewisii - Philonotis fontana Seep & Streambank Alliance
[ ]

IVC Scientific Name: *Mimulus lewisii - Philonotis fontana* Seep & Streambank Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: BC, ID?, MT?, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G527 Western Montane-Subalpine Riparian & Seep Shrubland

[ ]

IVC Colloquial Name: Western Montane-Subalpine Riparian & Seep Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These are montane to subalpine riparian shrublands occurring as narrow bands or broad shrublands and are found throughout the Rocky Mountain cordillera from New Mexico north into Montana and northwestern Alberta. They also occur in mountainous areas of the interior Intermountain West and on the Colorado Plateau. This group often occurs as part of a mosaic of multiple communities that are shrub- and herb-dominated and includes above-treeline, willow-dominated, snowmelt-fed

basins that feed into streams. Shrubs range from short to tall (0.5-15 m). The shrub species that can be dominant reflect the large elevational gradient of this group and include *Alnus incana, Alnus oblongifolia, Alnus viridis, Betula occidentalis, Betula glandulosa, Betula occidentalis, Cornus sericea, Salix bebbiana, Salix boothii, Salix brachycarpa, Salix drummondiana, Salix eriocephala, Salix geyeriana, Salix monticola, Salix planifolia*, and *Salix wolfii*. Generally the upland vegetation surrounding these wet shrublands is either conifer or aspen forest. Stands occur on streambanks, stream benches and alluvial terraces in steep narrow to wide, low-gradient valley bottoms and floodplains with sinuous stream channels, as well as steep moist avalanche chutes. This group is generally found at higher elevations, but can be found anywhere from 1500-3475 m, and may occur at even lower elevations in the Canadian Rockies. Occurrences can also be found around seeps, fens, and isolated springs on hillslopes away from valley bottoms. Many of the plant associations found within this group are associated with beaver activity.

IVC Dynamics: These shrublands are very tolerant of soil saturation, flooding and flooding disturbance. They require moist to saturated soils throughout the growing season, and regrow quickly after damage to tissue from flood and debris flows or avalanches.

IVC Environment: *Soil/substrate/hydrology:* These are montane to subalpine riparian shrublands occurring as narrow bands lining streambanks and alluvial terraces in narrow to wide, low-gradient valley bottoms and floodplains with sinuous stream channels. Generally, the group is found at higher elevations, but can be found anywhere from 1500-3475 m, and may occur at even lower elevations in the Canadian Rockies. Occurrences can also be found around seeps, fens, and isolated springs on hillslopes away from valley bottoms. They occur on mineral soils or, if on organic soil, these are not deep (not >30-40 cm). Environmental information was compiled from Padgett (1982), Kovalchik (1987, 1993, 2001), Baker (1988, 1989a, 1989b, 1990), Padgett et al. (1988a, 1988b), Kittel (1993, 1994), Manning and Padgett (1995), Kittel et al. (1996, 1999a, 1999b), Walford (1996), Crowe and Clausnitzer (1997), Steen and Coupe (1997), and Muldavin et al. (2000a).

DISTRIBUTION

IVC Geographic Range: This group is found throughout the Rocky Mountain cordillera from New Mexico north into Montana and the Canadian Rockies of Alberta and British Columbia (including the isolated "island" mountain ranges of central and eastern Montana), and in mountainous areas of the Intermountain West and on the Colorado Plateau.

IVC Nations: CA,US

IVC States/Provinces: AB, AK, AZ, BC, CA, CO, ID, MT, NM, NV, OR, SD, SK?, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.11.78:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.1.14:P, 12.1.1.79:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5* rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low to moderate, and threats moderate. Threats from grazing are of particular concern.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3771 *Alnus incana - Alnus viridis* Wet Shrubland Alliance** [Gray Alder - Green Alder Wet Shrubland Alliance] []
  Vegetation types within this riparian tall (>1.5 m) shrubland alliance typically occur adjacent to streams and in mountain meadows at moderate to high-elevation (1200-3000 m) riparian habitats of the northern Rocky Mountains and Cascade Range where deep snow accumulations are common. Landforms associated with this alliance are streambanks, alluvial bars, and floodplains. *Alnus incana* or *Alnus viridis ssp. sinuata* forms a dense canopy with at least 90% cover. *Acer circinatum* may be codominant in the tall-shrub layer in some stands.
- **A4421 *Alnus incana - Cornus sericea* Riparian Shrubland Alliance** [Gray Alder - Red-Osier Dogwood Riparian Shrubland Alliance] []
- **A4416 *Alnus viridis ssp. sinuata* Riparian Shrubland Alliance** [Sitka Alder Riparian Shrubland Alliance] []
- **A3773 *Cornus sericea - Dasiphora fruticosa - Ribes* spp. Wet Shrubland Alliance** [Red-osier Dogwood - Shrubby-cinquefoil - Currant species Wet Shrubland Alliance] []
  This western alliance comprises short-statured to medium-tall (usually <1.5 m, but can be up to 3 m) shrublands dominated by *Cornus sericea, Dasiphora fruticosa ssp. floribunda, Rosa woodsii, Ribes lacustre*, and/or *Ribes hudsonianum*. Understories are graminoid- or forb-dominated. Environments are riparian areas, wet valley bottoms and lower slopes that have seasonal subirrigation.

- **A3769 *Salix boothii - Salix geyeriana - Salix lutea* Montane Wet Shrubland Alliance** [Booth's Willow - Geyer's Willow - Yellow Willow Montane Wet Shrubland Alliance] []
  This alliance contains tall (>1.5 m) *Salix*-dominated shrublands in riparian and wetland settings. It is dominated by single or multiple *Salix* species, including *Salix bebbiana, Salix boothii, Salix drummondiana, Salix eriocephala, Salix geyeriana, Salix ligulifolia, Salix lucida ssp. caudata, Salix lucida ssp. lasiandra, Salix lutea, Salix planifolia*, and *Salix prolixa*. These shrub species occur in the same broad geographic region, spreading from eastern Oregon and Washington, Idaho, Montana, Wyoming, Colorado, Utah, Nevada, New Mexico, and Arizona.
- **A1003 *Salix commutata* Wet Shrubland Alliance** [Undergreen Willow Wet Shrubland Alliance] []
  These are short-statured (<1.5 m) willow-dominated communities found at subalpine elevations. *Salix commutata* dominates the shrub canopy with cover of >25%. Stands are confined to narrow riparian zones along upper reaches of streams and to elongated openings in higher elevation forests. Stands are typically found at moderate to high elevations between 2065 and 2220 m in British Columbia, Oregon, Washington, Idaho, western Montana and just into northern California and possibly as far east as Wyoming.
- **A4420 *Salix drummondiana - Alnus incana* Shrub Carr & Swamp Alliance** [Drummond's Willow - Gray Alder Shrub Carr & Swamp Alliance] []
- **A3770 *Salix wolfii - Salix brachycarpa - Betula glandulosa* Wet Shrubland Alliance** [Wolf's Willow - Short-fruit Willow - Resin Birch Wet Shrubland Alliance] []
  These are short (<1.5 m) *Salix*- or *Betula*-dominated shrublands of Intermountain West and Rocky Mountain high subalpine altitudes dominated by *Betula nana, Salix brachycarpa, Salix farriae, Salix planifolia*, and/or *Salix wolfii*. Canopy can be closed to open. Understory is usually fairly dense, graminoid-dominated herbaceous cover and occasionally forb-dominated, including several *Carex* spp. (e.g., *Carex aquatilis, Carex microptera, Carex scopulorum, Carex utriculata*), *Deschampsia cespitosa*, and others. Forb species may include *Caltha leptosepala, Fragaria virginiana, Pedicularis groenlandica, Swertia perennis*, and others.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2011)
IVC Description Author: G. Kittel
IVC Description Date: 2015-12-02
IVC Acknowledgments:

A3771 Gray Alder - Green Alder Wet Shrubland Alliance

[ ]
Alnus incana - Alnus viridis Wet Shrubland Alliance
Western Alder Wet Shrubland

IVC Scientific Name: *Alnus incana - Alnus viridis* Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: *Alnus incana* or *Alnus viridis ssp. sinuata* forms a dense canopy with at least 90% cover. *Acer circinatum* may be codominant in the tall-shrub layer in some stands. The diverse understory shrub layer may include *Acer glabrum, Ribes lacustre*, and *Sorbus scopulina*. In the northern Rocky Mountains, *Abies lasiocarpa* colonizes these communities, and scattered seedlings or saplings may be present. Low cold-deciduous or ericaceous shrubs may be abundant, including *Betula occidentalis, Cornus sericea, Oplopanax horridus, Paxistima myrsinites, Ribes hudsonianum, Rubus parviflorus, Rubus spectabilis, Salix drummondiana, Sambucus racemosa, Symphoricarpos albus*, and *Vaccinium* spp. The forb layer is sparse and may include *Achillea millefolium, Aconitum columbianum, Canadanthus modestus, Galium triflorum, Heracleum maximum, Osmorhiza berteroi, Polystichum munitum, Senecio triangularis, Symphyotrichum spathulatum, Thalictrum occidentale, Urtica dioica*, and *Veratrum viride*. The graminoid layer is usually dominated by 1 or 2 species that include *Agrostis stolonifera* and *Calamagrostis canadensis*. The fern and fern allies layer is generally dense with at least 40% cover. The dominant species typically are *Gymnocarpium dryopteris* and *Athyrium filix-femina*. This alliance is found in the Rocky Mountains, the highlands of Arizona, intermountain ranges of Nevada, and montane areas of California. Stands occur adjacent to streams and in mountain meadows at moderate to high-elevation (1200-3000 m) riparian habitats. Landforms associated with this alliance are streambanks, alluvial bars, and floodplains. Soils are shallow, skeletal alluvium over water-worked cobbles and gravels.
IVC Dynamics:

IVC Environment: Vegetation types within this riparian tall (>1.5 m) shrubland alliance typically occur adjacent to streams and in mountain meadows at moderate to high-elevation (1200-3000 m) riparian habitats of the northern Rocky Mountains and Cascade Range where deep snow accumulations are common. Landforms associated with this alliance are streambanks, alluvial bars, and floodplains. Sites are young, active channel shelves that lie between active and flood-stage streambanks along second-order and larger streams in moderately graded (3-5%) valleys. Soils are shallow, skeletal alluvium over water-worked cobbles and gravels. Active channel shelves have surface soil textures that are loamy sands, while older sites are silts and loam. Available water-holding capacity is low; surface water is present briefly during the growing season. The water table usually lies well below the ground surface.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Rocky Mountains of eastern Oregon, Washington, Idaho, Montana, British Columbia, Alberta, Wyoming, Colorado, Utah, and New Mexico, the highlands of Arizona, intermountain ranges of Nevada, and montane areas of California.
IVC Nations: CA,US
IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002633 *Alnus viridis ssp. sinuata* / Mesic Forbs Wet Shrubland** [Sitka Alder / Mesic Forbs Wet Shrubland] []
  G3G4 (1996-02-01) AB?, ID?, MT, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A4421 Gray Alder - Red-Osier Dogwood Riparian Shrubland Alliance

[ ]
Alnus incana - Cornus sericea Riparian Shrubland Alliance
[ ]

IVC Scientific Name: *Alnus incana - Cornus sericea* Riparian Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AZ?, BC?, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001151** ***Alnus incana / Ribes (inerme, hudsonianum, lacustre)*** **Wet Shrubland** [Gray Alder / (White-stem Gooseberry, Northern Black Currant, Prickly Currant) Wet Shrubland] []
  G3 (2000-10-13) BC?, ID, OR, WA
- **CEGL002628** ***Alnus incana / Athyrium filix-femina*** **Wet Shrubland** [Gray Alder / Common Ladyfern Wet Shrubland] []
  G3 (2002-10-18) BC?, CA?, ID, MT?, OR, WA
- **CEGL001146** ***Alnus incana / Equisetum arvense*** **Wet Shrubland** [Gray Alder / Field Horsetail Wet Shrubland] []
  G3 (1999-10-05) BC?, CA?, CO, ID, OR, UT, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4416 Sitka Alder Riparian Shrubland Alliance

[ ]
Alnus viridis ssp. sinuata Riparian Shrubland Alliance
[ ]

IVC Scientific Name: *Alnus viridis ssp. sinuata* Riparian Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC?, CA, ID, MT, OR, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001156** ***Alnus viridis ssp. sinuata / Athyrium filix-femina - Cinna latifolia*** **Wet Shrubland** [Sitka Alder / Common Ladyfern - Drooping Woodreed Wet Shrubland] []
  G4 (2002-10-18) BC?, CA, ID, MT, OR, WA
- **CEGL006657** ***Alnus viridis ssp. sinuata*** **/ Mesic Forbs Wet Shrubland** [Sitka Alder / Mesic Forbs Wet Shrubland] []
  GNR. AB?, AK, ID?, MT, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Ramm-Granberg et al. (2021)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3773 Red-osier Dogwood - Shrubby-cinquefoil - Currant species Wet Shrubland Alliance

[ ]
Cornus sericea - Dasiphora fruticosa - Ribes spp. Wet Shrubland Alliance
Western Non-willow Wet Shrubland

IVC Scientific Name: *Cornus sericea - Dasiphora fruticosa - Ribes* spp. Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This western alliance comprises short-statured to medium-tall (usually <1.5 m, but can be up to 3 m) shrublands dominated by *Cornus sericea, Dasiphora fruticosa ssp. floribunda, Rosa woodsii, Ribes lacustre*, and/or *Ribes hudsonianum*. Understories are graminoid- or forb-dominated. Environments are riparian areas, wet valley bottoms and lower slopes that have seasonal subirrigation.
IVC Dynamics: Heavily grazed sites may support *Dasiphora*-dominated communities (Komarkova 1986, Padgett et. al. 1989). With continuous heavy grazing, *Dasiphora fruticosa ssp. floribunda* will increase in abundance because it is unpalatable to livestock. Other species that increase with grazing are *Poa pratensis, Juncus arcticus ssp. littoralis* and *Taraxacum officinale* (Padgett et al. 1989). Stands dominated by *Cornus sericea* forms a relatively stable community because of its strong rhizomes and stolons (Hansen et al. 1988b).
IVC Environment: Plant associations within this alliance occur adjacent to glacial depressions, terraces along meandering streams, slopes near springs and seeps, steep scree slopes, or broad mountain meadows. They may occur in foothill canyons, on intermittent streams with beds of limestone cobbles and boulders, or near springs at the base of limestone talus or limestone bedrock. They typically occur on alluvial terraces adjacent to stream channels and near seeps on moist toeslopes (slope 0-10%) of canyon walls. They also occur on narrow stream benches in ravines and on narrow terraces of wider valleys. They range in elevation from 860 to 3000 m. Surface water is present for brief periods during the growing season, but the water table usually lies well below the soil surface. Parent materials for sites supporting stands of this alliance are either alluvial-glacial or organic. The soils are typically sandy loams over sand and gravel layers.

DISTRIBUTION

IVC Geographic Range: This western alliance is found in eastern Oregon and Washington, Idaho, Montana, Wyoming, Colorado, Nevada and Utah.
IVC Nations: CA?,US
IVC States/Provinces: CA, CO, ID, MT, NV, OR, SK?, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL001126 *Rosa woodsii* Wet Shrubland** [Woods' Rose Wet Shrubland] []
  G5 (1996-02-01) CA, ID, MT, NV, OR, SK?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel

IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3769 Booth's Willow - Geyer's Willow - Yellow Willow Montane Wet Shrubland Alliance

[ ]
Salix boothii - Salix geyeriana - Salix lutea Montane Wet Shrubland Alliance
Western Montane Tall Willow Wet Shrubland

IVC Scientific Name: *Salix boothii - Salix geyeriana - Salix lutea* Montane Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance contains tall (>1.5 m) *Salix*-dominated shrublands in riparian and wetland settings. It is dominated by single or multiple *Salix* species including *Salix bebbiana, Salix boothii, Salix drummondiana, Salix eriocephala, Salix geyeriana, Salix ligulifolia, Salix lucida ssp. caudata, Salix lucida ssp. lasiandra, Salix lutea, Salix planifolia*, and *Salix prolixa*. *Salix monticola* may also be present but is not a dominant species. These shrub species occur in the same broad geographic region, spreading from eastern Oregon and Washington, Idaho, Montana, Wyoming, Colorado, Utah, Nevada, New Mexico, and Arizona. Understories range from thick graminoids or forbs to very sparse cover depending on the degree of overstory shading. Common dominant graminoid species include *Calamagrostis canadensis, Carex aquatilis, Carex utriculata, Carex nebrascensis*, and *Deschampsia cespitosa*. Forb species are often mixed. These are generally subirrigated soils that are mineral with some degree of organic layers, but not deep peat soils.
IVC Dynamics: Stands within this alliance are generally highly productive. Understory production varies, depending on the density of overstory shrubs. Characteristics of the herbaceous layer and soils suggest that many of the vegetation types within this alliance are stable (Youngblood et al. 1985b). However, livestock or wildlife grazing pressure will cause a decrease in the native graminoids (Hansen et al. 1995), and an opening of the overstory canopy, especially if browsing pressure is heavy. Beavers can increase the amount of surface water and decrease willow density.
IVC Environment: Vegetation types in this alliance occur in valley bottoms on swales, banks, and occasionally terraces of stream channels, areas which may have surface water in wet years. The ground surface is often uneven and hummocky. Soils are typically highly stratified with alternating layers of sandy loam and clay loam and are mottled within the top 10 cm. Other soils are finely textured, dark-colored, highly organic soils with silty clay loam. Lower profiles typically contain a gravel or cobble layer which may indicate that the soil section is a silted-in beaver pond (Kittel et al. 1999b).

DISTRIBUTION

IVC Geographic Range: Montane elevations in eastern Oregon and Washington, Idaho, Montana, Wyoming, Colorado, Utah, Nevada, New Mexico, and Arizona.
IVC Nations: CA,US
IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, NM, NV, OR, SD, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL001192 *Salix drummondiana* / Mesic Forbs Wet Shrubland** [Drummond's Willow / Mesic Forbs Wet Shrubland] []
  G4 (1998-04-07) AB, CO, MT, WY
- **CEGL001173 *Salix bebbiana* Wet Shrubland** [Bebb's Willow Wet Shrubland] []
  G3? (1996-02-01) AB, CO, ID, MT, NM, NV, SD, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel

IVC Description Date: 2014-09-26
IVC Acknowledgments:

A1003 Undergreen Willow Wet Shrubland Alliance

[ ]
Salix commutata Wet Shrubland Alliance
Cascadian Undergreen Willow Wet Shrubland

IVC Scientific Name: *Salix commutata* Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These are short-statured (<1.5 m) willow-dominated communities found at subalpine elevations. Stands within this alliance are classified as seasonally flooded, cold-deciduous shrublands. *Salix commutata* dominates the shrub canopy with cover of >25%. *Salix planifolia* and *Lonicera caerulea* may also be present. *Carex scopulorum* dominates the herbaceous layer with *Calamagrostis canadensis*. *Galium trifidum* has high constancy, and some stands contain a complement of wet-site forbs such as *Aconitum columbianum* and *Caltha leptosepala ssp. howellii*. Adjacent communities may be herbaceous bogs dominated by *Eleocharis quinqueflora*. In some stands, a fringe of *Vaccinium uliginosum* separates the bog from the willow stands. Stands are confined to narrow riparian zones along upper reaches of streams and to elongated openings in higher elevation forests. Stands are typically found at moderate to high elevations between 2065 and 2220 m in British Columbia, Oregon, Washington, Idaho, western Montana and just into northern California and possibly as far east as Wyoming. Microtopography is usually hummocky to undulating. Slopes range from 2-4%. Soils in Idaho stands are wet to saturated at the surface by flowing groundwater for most or all of the growing season. Soils are poorly to very poorly drained due to accumulation of organic material.
IVC Dynamics:
IVC Environment: Communities found within this alliance are found in the subalpine zone. Stands are confined to narrow riparian zones along upper reaches of streams and to elongated openings in higher elevation forests. Stands are typically found at moderate to high elevations between 2065 and 2220 m. Microtopography is usually hummocky to undulating. Slopes range from 2-4%. Soils in Idaho stands are wet to saturated to the surface by flowing groundwater for most or all of the growing season. Soils are poorly to very poorly drained due to accumulation of organic material.

DISTRIBUTION

IVC Geographic Range: This alliance is found in British Columbia, Oregon, Washington, Idaho, western Montana and just into northern California and possibly as far east as Wyoming.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, ID, MT, OR, WA, WY?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Culver, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A4420 Drummond's Willow - Gray Alder Shrub Carr & Swamp Alliance

[ ]

Salix drummondiana - Alnus incana Shrub Carr & Swamp Alliance

[ ]

IVC Scientific Name: *Salix drummondiana - Alnus incana* Shrub Carr & Swamp Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA?, CO, ID, MT, NM, NV, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000122** ***Alnus incana / Carex scopulorum var. prionophylla*** **Wet Shrubland** [Gray Alder / Fire-thread Sedge Wet Shrubland] []
  G1 (2002-10-16) WA
- **CEGL002631** ***Salix drummondiana / Carex utriculata*** **Wet Shrubland** [Drummond's Willow / Northwest Territory Sedge Wet Shrubland] []
  G4 (2000-01-29) BC, CO, ID, MT, UT?, WA, WY
- **CEGL002667** ***Salix drummondiana / Calamagrostis canadensis*** **Wet Shrubland** [Drummond's Willow / Bluejoint Wet Shrubland] []
  G3 (1997-11-14) AB, BC?, CO, ID, MT, WA
- **CEGL002629** ***Alnus incana / Lysichiton americanus*** **Wet Shrubland** [Gray Alder / Yellow Skunk-cabbage Wet Shrubland] []
  G3 (2002-10-18) BC?, ID, MT?, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Ramm-Granberg et al. (2021)

IVC Description Author:

IVC Description Date:

IVC Acknowledgments:

A3770 Wolf's Willow - Short-fruit Willow - Resin Birch Wet Shrubland Alliance

[ ]

Salix wolfii - Salix brachycarpa - Betula glandulosa Wet Shrubland Alliance

Rocky Mountain Short Willow Wet Shrubland

IVC Scientific Name: *Salix wolfii - Salix brachycarpa - Betula glandulosa* Wet Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These are short (<1.5 m) *Salix*- or *Betula*-dominated shrublands of Intermountain West and Rocky Mountain high subalpine altitudes dominated by *Betula nana, Salix brachycarpa, Salix farriae, Salix planifolia*, and/or *Salix wolfii*. Canopy can be closed to open. Understory is usually fairly dense, graminoid-dominated herbaceous cover and occasionally forb-dominated, including several *Carex* spp. (e.g., *Carex aquatilis, Carex microptera, Carex scopulorum, Carex utriculata*), *Deschampsia cespitosa*, and others. Forb species may include *Caltha leptosepala, Fragaria virginiana, Pedicularis groenlandica, Swertia perennis*, and others. Communities within this alliance occur in moderately narrow to wide valleys and glacial basins on floodplains with lateral seepage of groundwater. Valley slopes range from 3-7%, and stream channels that run through the valleys vary from deep, narrow, and sinuous to shallow, broad, and gently meandering. Beavers are often active within the stands. Some stands occur on sideslope seeps, which remain wet throughout the growing season. Elevation ranges from 1950-3350 m. Soils are mineral. Soil textures include silty clay loams, silty loams, and sandy clay loams with mottling. Some stands occur on deep sandy clays, often with a high organic content, while other stands occur on shallow silty clays over gravels and rocks.

IVC Dynamics: Browsing may weaken or eventually eliminate some willow species. With increasing levels of grazing, *Deschampsia cespitosa* will be replaced by *Juncus arcticus ssp. littoralis, Poa pratensis*, and *Taraxacum officinale*.

IVC Environment: Communities within this alliance occur in moderately narrow to wide valleys and glacial basins on floodplains with lateral seepage of groundwater. Valley slopes range from 3-7%, and stream channels that run through the valleys vary from deep, narrow, and sinuous to shallow, broad, and gently meandering. Beavers are often active within the stands. Some stands occur on sideslope seeps, which remain wet throughout the growing season. Elevation ranges from 1950-3350 m. Soils are mineral. Soil textures include silty clay loams, silty loams, and sandy clay loams with mottling. Some stands occur on deep sandy clays, often with a high organic content, while other stands occur on shallow silty clays over gravels and rocks.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Intermountain West and Rocky Mountains of Idaho, Montana, Wyoming, Colorado, Utah, and New Mexico, extending into eastern Oregon and Washington.

IVC Nations: CA,US

IVC States/Provinces: AB, CA, CO, ID, MT, NM, OR, UT, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001136 *Salix glauca* Wet Shrubland** [Grayleaf Willow Wet Shrubland] []
  G3? (1996-02-01) AB, MT, WY
- **CEGL005887 *Betula glandulosa / Carex* spp. Wet Shrubland** [Resin Birch / Sedge species Wet Shrubland] []
  GNR. AB, MT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-09-26

IVC Acknowledgments:

M301 Western North American Ruderal Marsh, Wet Meadow & Shrubland

[ ]

IVC Colloquial Name: Western North American Ruderal Marsh, Wet Meadow & Shrubland
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup contains disturbed natural habitats such as wet meadows, emergent marshes, coastal backwater dunes, and sloughs as well as waste areas that were once wetlands and are now dominated by non-native species. Dominant non-native species include *Agrostis gigantea, Agrostis stolonifera, Alopecurus pratensis, Arundo donax, Cirsium arvense, Conyza canadensis, Schedonorus arundinaceus, Lactuca serriola, Phalaris arundinacea, Phragmites australis, Poa palustris, Poa pratensis*, and *Sonchus* spp. Native species may be present but are so low in abundance that they are insufficient to identify the native macrogroup or lower units. This macrogroup occurs from sea level up to the subalpine throughout the western U.S. Due to disturbance, soils may be compacted, missing upper horizons, or unnaturally enriched or depleted. Disturbance can be from activities such as severe continuous heavy grazing, abandoned building sites, industry, and road beds, areas that have been logged, or chained and cleared that occur where wetlands once stood.

IVC Geographic Range: This macrogroup is found throughout the entire western U.S., from Alaska to New Mexico and throughout western Canada.

IVC Nations: CA,MX,US

IVC States/Provinces: AB, AZ, BC, CA, CHH, CO, COA, ID, MB, MT, ND, NE, NLE, NM, NV, OK, ON, OR, SD, SK, SON, TAM, TX, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G524 Western North American Ruderal Marsh, Wet Meadow & Shrubland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel and J. Triepke

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G524 Western North American Ruderal Marsh, Wet Meadow & Shrubland

[ ]

IVC Colloquial Name: Western North American Ruderal Marsh, Wet Meadow & Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group contains disturbed wet meadows found in lowland, montane and subalpine elevations, occasionally reaching into the lower edges of the alpine elevations (sea level to 3600 m) throughout the western U.S., Canada and Mexico. Vegetation is dominated by non-native species such as *Agrostis gigantea, Agrostis stolonifera, Alopecurus pratensis, Bromus inermis, Conyza canadensis, Cirsium arvense, Sonchus* spp., *Lactuca serriola, Phalaris arundinacea, Phragmites australis ssp. australis, Poa bulbosa, Poa palustris*, and *Poa pratensis*. Native species may be present but are so low in abundance that the original native plant association is impossible to determine. These can be wet meadows, wet emergent marshes, coastal backwater dunes, sloughs, open wet depressions, basins and flats with low-velocity surface and subsurface flows. They can be large meadows in montane or subalpine valleys, or occur as narrow strips bordering ponds, lakes, and streams, and along toeslope seeps. They are typically found on flat areas or gentle slopes, but may also occur on subirrigated sites with slopes up to 10%. Sites are usually seasonally wet, often drying by late summer, and many occur in a tension zone between perennial wetlands and uplands, where water tables fluctuate in response to long-term climatic cycles. They may have surface water for part of the year, but depths rarely exceed a few centimeters. Soils are mostly mineral and show typical hydric soil characteristics

such as low chroma and redoximorphic features; some areas may have high organic content as inclusions or pockets. Due to disturbance, soils may be compacted.

IVC Dynamics: This group is a product of disturbance such as continuous heavy grazing by domestic livestock, soil disturbance/compactions, significant change in hydrologic regime, invasion after natural disturbance such as fire, floods or landslides, and are a combination of infestation by non-native invasive plants, and by diminished or lack of competition by native plants.

IVC Environment: *Soil/substrate/hydrology:* These wet meadows occur in open wet depressions, basins and flats with low-velocity surface and subsurface flows. They can be large meadows in montane or subalpine valleys, or occur as narrow strips bordering ponds, lakes, and streams, and along toeslope seeps. They are typically found on flat areas or gentle slopes, but may also occur on subirrigated sites with slopes up to 10%. Sites are usually seasonally wet, often drying by late summer, and many occur in a tension zone between perennial wetlands and uplands, where water tables fluctuate in response to long-term climatic cycles. Some sites occur under an agricultural management regime of seasonal sheet irrigation for grazing or haying purposes, and may bear no resemblance to historical types of the area. They may have surface water for part of the year, but depths rarely exceed a few centimeters. Soils are mostly mineral and show typical hydric soil characteristics such as low chroma and redoximorphic features; some areas may have high organic content as inclusions or pockets. Due to disturbance, soils may be compacted.

This group occurs in the same environmental settings as Vancouverian-Rocky Mountain Montane Wet Meadow & Marsh Group (G521), Vancouverian Freshwater Wet Meadow & Marsh Group (G517), and Arid West Interior Freshwater Marsh Group (G531).

DISTRIBUTION

IVC Geographic Range: This group is found throughout the entire western U.S., Canada and Mexico.

IVC Nations: CA,MX,US

IVC States/Provinces: AB, AZ, BC, CA, CHH, CO, COA, ID, MB, MT, ND, NE, NLE, NM, NV, OK, ON, OR, SD, SK, SON, TAM, TX, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.7.4:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.11.78:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 7.1.8.1:P, 9.3.3.43:P, 9.4.1.25:P, 9.4.3.26:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 11.1.1a.6:P, 11.1.2.7:P, 11.1.3.8:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2010-12-09)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3846 *Phalaris arundinacea* Western Ruderal Marsh Alliance** [Reed Canarygrass Western Ruderal Marsh Alliance] []
  Stands are dominated by *Phalaris arundinacea*, which tends to occur in monocultures and is known to occur in mesic to wet disturbed areas and along rivers that no longer flood throughout the western U.S.
- **A3847 *Phragmites australis ssp. australis - Arundo donax - Typha angustifolia* Ruderal Marsh Alliance** [European Common Reed - Giant Reed - Narrowleaf Cattail Ruderal Marsh Alliance] []
  This common reed marsh alliance is dominated by introduced *Phragmites australis ssp. australis, Arundo donax, Typha angustifolia* or other invasive wetland graminoid species, and is found across the west-temperate regions of the United States, Canada and Mexico.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2011)

IVC Description Author: G. Kittel

IVC Description Date: 2016-09-29

IVC Acknowledgments: Associate Editor: F.J. Triepke. Peer review by J. Rocchio.

A3846 Reed Canarygrass Western Ruderal Marsh Alliance

[ ]

Phalaris arundinacea Western Ruderal Marsh Alliance

Western Ruderal Reed Canarygrass Marsh

IVC Scientific Name: *Phalaris arundinacea* Western Ruderal Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This herbaceous alliance covers stands dominated by *Phalaris arundinacea*, which tends to occur in monocultures. Stands are found along riparian areas, pond and lake margins, wet meadows, and intermittent drainages, and is known from throughout the western U.S.
IVC Dynamics:
IVC Environment: This alliance occurs in wet areas, primarily riparian, occurring along rivers and streams, as well as shallow lakeshores (MacKenzie and Moran 2004, Willoughby et al. 2004). Elevations range from near sea level to 2307 m. The poorly drained alluvial soils are commonly fine-textured (occasionally coarse-textured) and may be flooded for brief to extended periods.

DISTRIBUTION

IVC Geographic Range: This herbaceous alliance occurs throughout the western U.S. It also occurs in Canada, in the southern two-thirds of British Columbia, in areas with warm and relatively dry summers and in Alberta. Its distribution as a natural type is complicated because this native species is widely cultivated as a forage crop and has escaped and established in wetlands and riparian areas, displacing the local flora.
IVC Nations: CA,US
IVC States/Provinces: AB, BC, CA, CO, ID, MT, ND, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2015-12-11)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL001474 *Phalaris arundinacea* Western Marsh** [Reed Canarygrass Western Marsh] []
  G5 (1999-03-03) AB, CA, CO, ID, MT, ND, NM, OR, UT, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A3847 European Common Reed - Giant Reed - Narrowleaf Cattail Ruderal Marsh Alliance

[ ]
Phragmites australis ssp. australis - Arundo donax - Typha angustifolia Ruderal Marsh Alliance
Western Ruderal Common Reed Marsh

IVC Scientific Name: *Phragmites australis ssp. australis - Arundo donax - Typha angustifolia* Ruderal Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This common reed-dominated marsh alliance is found across the west-temperate regions of the United States, Canada and Mexico. *Phragmites australis ssp. australis, Arundo donax*, or *Typha angustifolia* will often invade into existing natural or semi-natural communities present on the site, and once established, this alliance is usually strongly dominated with few or no other vascular plants present. Stands occur in semipermanently flooded marshes, ditches, impoundments, etc. that have often been disturbed by human activity.

IVC Dynamics: Stands are generally a product of human-induced disturbance, either through direct habitat manipulation or through passive introduction of reproductive material to naturally disturbed substrates (Marks et al. 1994).

IVC Environment: This alliance is found in non-tidal marshes with semipermanently or, rarely, seasonally flooded hydrology, either in depressions or along rivers with seasonal fluctuation in water level throughout the western United States and adjacent Canada and Mexico. This includes semipermanently flooded marshes, ditches, impoundments, etc.

DISTRIBUTION

IVC Geographic Range: West-temperate regions of the United States, Canada and Mexico.
IVC Nations: CA,MX,US
IVC States/Provinces: AB, AZ, CA, CHH, CO, COA, ID, MB, MT, ND, NE, NLE, NM, NV, OK, ON, OR, SD, SK, TAM, TX, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2015-12-11)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001475** ***Phragmites australis ssp. australis*** **Western Ruderal Wet Meadow** [European Common Reed Western Ruderal Wet Meadow] []
  GNA (2015-02-18) AB, AZ, CA, CO, ID, MB, MT, ND, NE, NM, NV, OK, ON, OR, SD, SK, TX, UT, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2019-03-23
IVC Acknowledgments:

M069 Eastern North American Marsh, Wet Meadow & Shrubland

Marais, prairies humides et arbustaies de l'est de l'Amérique du Nord

IVC Colloquial Name: Eastern North American Marsh, Wet Meadow & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This largely freshwater wetland macrogroup encompasses shrub swamps, marshes, wet meadows and wet prairies of temperate and boreal eastern North America, north of the southern Atlantic and Gulf coastal plains and east of the Great Plains and Yukon Territory. It is dominated by graminoids (e.g., species of the genera *Calamagrostis, Carex, Echinochloa, Glyceria, Juncus, Leersia, Schoenoplectus, Scirpus, Sparganium, Typha, Zizania)*, forbs (e.g., species of the genera *Bidens, Eupatorium, Lobelia, Polygonum, Rumex, Sagittaria*), and shrubs (e.g., species of *Alnus, Cornus, Salix, Spiraea, Viburnum*) in a widely variable composition and structure. This macrogroup also contains eastern inland saline meadows characterized by *Atriplex patula, Juncus gerardii*, and others. Freshwater marshes and shrub swamps occur in closed or open basins that are generally flat and shallow and are frequently to nearly always flooded. Water depths during high water periods range from a few centimeters to approximately 1 m. Stands assigned to this macrogroup are associated with lakes, ponds, slow-moving streams, non-forested seepages, and/or impoundments or ditches on mineral soils with or without a well-decomposed muck layer. This vegetation spans a wide range, from southeastern and south-central Canada southwest to the Great Lakes states and provinces, south to the Ozarks in Arkansas and east through the northern regions of the Gulf coast states to the southern Appalachian Mountains in Tennessee. It includes the Appalachian Mountain, Piedmont, and Interior Plateau regions, but not the Atlantic or Gulf coastal plains.

IVC Geographic Range: This freshwater marsh macrogroup is found across temperate and boreal eastern North America, north of the southern Atlantic and Gulf coastal plains and east of the Great Plains and Yukon Territory. It stretches from eastern to central boreal Canada, from New England and New Brunswick, excluding the Atlantic Coastal Plain, west through the Great Lakes area to eastern North Dakota and northwestern Ontario, south to Missouri and east to the Southern Blue Ridge and Southern and Central Appalachians.

IVC Nations: CA,US

IVC States/Provinces: AB, AL, AR, CT, DC, DE, FL?, GA, IA, IL, IN, KS, KY, LA, MA, MB, MD, ME, MI, MN, MO, MS, NB, NC, ND, NE, NF, NH, NJ, NM, NS, NY, OH, OK, ON, PA, PE, QC, RI, SC, SD, SK, TN, TX, VA, VT, WI, WV, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G903 Appalachian-Northeast Wet Meadow & Shrub Swamp []**
- **G770 Midwest Wet Prairie, Wet Meadow & Shrub Swamp []**
- **G904 Laurentian-Acadian Wet Meadow & Shrub Swamp []**
- **G125 Eastern North American Freshwater Marsh []**
- **G773 Eastern North American Inland Saline Marsh []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J.T. Curtis (1959); F.C. Golet (1973)

IVC Description Author: J. Drake, S.C. Gawler, L. Sneddon

IVC Description Date: 2016-01-11

IVC Acknowledgments:

G903 Appalachian-Northeast Wet Meadow & Shrub Swamp

[ ]

IVC Colloquial Name: Appalachian-Northeast Wet Meadow & Shrub Swamp

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is found in the Laurentian region of the Great Lakes and the northeastern United States and adjacent Canada north from West Virginia. It is characterized by wet-mesic to wet sites and can be dominated by a variety of graminoids and forbs. Common abundant species include the graminoids *Calamagrostis canadensis, Carex lacustris, Carex stricta, Carex vesicaria, Carex utriculata, Glyceria striata, Leersia oryzoides*, and *Scirpus cyperinus*. Forbs that may be common or dominant include *Boltonia asteroides var. asteroides, Eutrochium fistulosum, Eupatorium perfoliatum, Impatiens capensis, Impatiens pallida, Mentha arvensis, Sagittaria latifolia, Solidago canadensis, Solidago rugosa, Symphyotrichum racemosum*, and *Verbesina alternifolia*. Sites are found in basins or along slow-moving rivers and streams and are flooded or saturated for at least some of the growing season but rarely more than 0.3 m deep.

IVC Dynamics: Stands are flooded or saturated for at least a few weeks each year and can remain saturated for most of the growing season in some stands. Prolonged changes in hydrologic regime, either wetter or drier, often result in a change to a different group. This group is common behind beaver dams.

IVC Environment: This group occurs in basins or along the edges of slow-moving rivers or streams. Sites are saturated or flooded by shallow water for at least a few weeks during the growing season. Water is usually less than 0.3 m deep. Soils are alluvial, muck, or sometimes peaty. This group occurs from low elevations near the coast in New England and New Jersey to the high Allegheny Mountains in West Virginia.

DISTRIBUTION

IVC Geographic Range: This group is common in the Laurentian region of the Great Lakes and in the northeastern United States and adjacent Canada but does not extend into the Mid-Atlantic Coastal Plain.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC, DE, GA, IA, IL, KY, MA, MB?, MD, ME, MI, MN, MS, NC, NH, NJ, NY, OH, ON, PA, QC, RI, SC, TN, VA, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate to high, long-term decline moderate, and threats moderate to high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3685 *Alnus* spp. - *Salix* spp. - *Cornus sericea* Shrub Swamp Alliance** [Alder species - Willow species - Red-osier Dogwood Shrub Swamp Alliance] []
  This alliance contains tall-shrub swamps in the northeastern and north-central United States and eastern temperate Canada in a variety of non-alluvial topographic depressions, and dominated by *Alnus incana, Alnus serrulata, Salix sericea*, or *Hypericum densiflorum*. Associates may include *Cornus sericea, Rosa palustris, Spiraea alba var. latifolia, Spiraea alba, Viburnum nudum var. cassinoides*, and others.
- **A4681 *Carex* spp. - *Leersia oryzoides* - *Eupatorium* spp. Wet Meadow Alliance** [Sedge species - Rice Cutgrass - Thoroughwort species Wet Meadow Alliance] []
  This alliance is known from the Central Appalachians-Northeast region and is characterized by wet or wet-mesic sites flooded for part of the growing season, dominated by sedge meadows, forb meadows, and shallow marshes.
- **A3670 *Cephalanthus occidentalis - Decodon verticillatus* Shrub Swamp Alliance** [Common Buttonbush - Swamp-loosestrife Shrub Swamp Alliance] []
  This buttonbush swamp shrubland occurs in wetlands throughout the Central Appalachian region, northeastern United States, and adjacent Canada. *Cephalanthus occidentalis* or *Decodon verticillatus* typically comprises nearly 90% of the shrub layer in waters 1-2 m deep.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author: J. Drake
IVC Description Date: 2015-05-19
IVC Acknowledgments:

A3685 Alder species - Willow species - Red-osier Dogwood Shrub Swamp Alliance

[ ]
Alnus spp. - *Salix* spp. - *Cornus sericea* Shrub Swamp Alliance
Appalachian-Northeast Alder - Willow - Dogwood Shrub Swamp

IVC Scientific Name: *Alnus* spp. - *Salix* spp. - *Cornus sericea* Shrub Swamp Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance contains tall-shrub swamps in the northeastern and north-central United States and eastern temperate Canada in a variety of non-alluvial topographic depressions. The vegetation is dominated by *Alnus incana, Alnus serrulata, Salix sericea*, or *Hypericum densiflorum*. Associates may include *Cornus sericea, Rosa palustris, Spiraea alba var. alba, Spiraea alba var. latifolia, Viburnum nudum var. cassinoides*, and others. These wetlands are often successional following disturbance. They are found in beaver meadows, lakeshores, headwater wetlands, and basin wetlands, as well as backwater floodplains of streams and rivers. Soils vary from deep organic mucks to mineral soils with high organic content (muck), and are saturated for much of the year.
IVC Dynamics: These wetlands are often successional following disturbance, including hydrological disturbances caused by beaver.
IVC Environment: Stands are found in beaver meadows, lakeshores, headwater wetlands, and basin wetlands, as well as backwater floodplains of streams and rivers. Soils vary from deep organic mucks to mineral soils with high organic content (muck), and are saturated for much of the year.

DISTRIBUTION

IVC Geographic Range: This alliance contains tall-shrub swamps in the northeastern and north-central United States and eastern temperate Canada.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, GA, IA, IL, KY, MA, MB?, MD, ME, MI, MN, NH, NJ, NY, OH, ON, PA, QC, RI, TN, VA, VT, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005082 *Alnus serrulata / Calamagrostis canadensis* Shrub Swamp** [Hazel Alder / Bluejoint Shrub Swamp] []
  G4G5 (1999-03-22) CT, DE, MA, MD, ME, NH, NJ, NY, OH, PA, RI, WV
- **CEGL005086 Mixed Deciduous Shrub Swamp** [Mixed Deciduous Shrub Swamp] []
  GNR. ON
- **CEGL005077 *Myrica gale* Organic Shrub Swamp** [Sweetgale Organic Shrub Swamp] []
  GNR. ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L. Sneddon, in Faber-Langendoen et al. (2013)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A4681 Sedge species - Rice Cutgrass - Thoroughwort species Wet Meadow Alliance

[ ]

Carex spp. - *Leersia oryzoides* - *Eupatorium* spp. Wet Meadow Alliance

Appalachian-Northeast Wet Meadow

IVC Scientific Name: *Carex* spp. - *Leersia oryzoides* - *Eupatorium* spp. Wet Meadow Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is known from the Central Appalachians-Northeast region and is characterized by wet or wet-mesic sites flooded for part of the growing season. The vegetation comprises sedge meadows, forb meadows, and shallow marshes. Typical dominants include sedges, such as *Care stricta, Carex vesicaria,* and *Carex lacustris;* and tall forbs, typically *Eutrochium fistulosum, Eupatorium perfoliatum, Impatiens capensis, Impatiens pallida, Solidago canadensis, Solidago rugosa,* and *Verbesina alternifolia*. In wetter sites, *Leersia oryzoides* is typically dominant with *Impatiens capensis, Phalaris arundinacea, Sagittaria latifolia*, and *Scirpus atrovirens* common associates or codominants. Stands have been found on alluvium or poorly drained basins. Further characterization of the diversity of Cyperaceae that can dominate individual stands is needed.

IVC Dynamics:

IVC Environment: Stands are characterized by wet or wet-mesic sites flooded for part of the growing season. They can occur along river and stream floodplains, the margins of lakes and ponds, or in isolated depressions.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the Central Appalachians-Northeast region.

IVC Nations: CA,US

IVC States/Provinces: AL, CT, DC, DE, GA, KY, MA, MD, ME, MS, NC, NH, NJ, NY, OH, ON, PA, QC, RI, SC, TN, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006412 *Carex stricta* - *Carex vesicaria* Wet Meadow** [Upright Sedge - Blister Sedge Wet Meadow] []
  G4G5 (2007-01-31) CT, DE?, MA, MD, ME, NH, NJ, NY, PA, RI, VT, WV
- **CEGL005147 Tall Forbs Mixed spp. Wet Meadow** [Tall Forbs Mixed species Wet Meadow] []
  GNR. ON
- **CEGL006349 *Scirpus cyperinus* Wet Meadow** [Woolgrass Wet Meadow] []
  GNR. CT, DC?, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VA, VT, WV
- **CEGL005106 *Leersia oryzoides* - *Glyceria striata* - *(Schoenoplectus* spp., *Impatiens capensis)* Wet Meadow** [Rice Cutgrass - Fowl Mannagrass - (Bulrush species, Orange Jewelweed) Wet Meadow] []
  GNR. DE, NJ, NY, ON, QC
- **CEGL005146 Tall Forbs Mixed spp. (*Impatiens capensis, Impatiens pallida*) Wet Meadow** [Tall Forbs Mixed species (Orange Jewelweed, Pale Touch-me-not) Wet Meadow] []
  GNR. ON

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author: D. Faber-Langendoen

IVC Description Date:

IVC Acknowledgments: J. Drake, L. Sneddon

A3670 Common Buttonbush - Swamp-loosestrife Shrub Swamp Alliance

[ ]

Cephalanthus occidentalis - Decodon verticillatus Shrub Swamp Alliance

Appalachian-Northeast Buttonbush - Swamp-loosestrife Shrub Swamp

IVC Scientific Name: *Cephalanthus occidentalis - Decodon verticillatus* Shrub Swamp Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The alliance is wide-ranging, throughout the Central Appalachian region, northeastern United States, and adjacent Canada. The vegetation is characterized by *Cephalanthus occidentalis* or *Decodon verticillatus* and occurs in depressions, oxbow ponds, and backwater sloughs of stream and river floodplains in waters 1-2 m deep. Occasional shrub associates include any number of *Salix* spp. or *Cornus* spp., as well as *Ilex verticillata, Rosa palustris, Vaccinium corymbosum*, and *Viburnum dentatum*. Floating aquatics, such as *Lemna* spp., can be common in deepwater habitats, whereas a variety of forbs and graminoids are associates under less flooded conditions. These include *Bidens tripartita, Boehmeria cylindrica, Glyceria* spp., *Leersia oryzoides, Polygonum* spp., *Scutellaria lateriflora, Sium suave*, and a wide variety of *Carex* spp. Inundation is usually continuous throughout the year, but these sites can become dry in mid or late summer or during periods of prolonged drought.

IVC Dynamics:

IVC Environment: This shrubland occupies shallow water depressions, oxbow ponds, sinkhole ponds, and backwater sloughs of stream and river floodplains throughout swampy forested areas. Inundation is usually continuous throughout the year, but these sites can become dry in mid or late summer or during periods of prolonged drought (Faber-Langendoen and Maycock 1989). *Cephalanthus* appears to be very tolerant of extended periods of inundation which, by slowing canopy closure of trees and maintaining higher light levels, may favor this shrub (Conner et al. 1981). Soils can vary in texture from clays to sands, with organic horizons overlying these soils.

DISTRIBUTION

IVC Geographic Range: The alliance is wide-ranging and is found in the Central Appalachian region, northeastern United States, and adjacent Canada.

IVC Nations: CA,US

IVC States/Provinces: CT, DC, DE, IA, IL, MA, MD, ME, MI, NH, NJ, NY, OH, ON, PA, QC, RI, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006069 *Cephalanthus occidentalis - Decodon verticillatus* Shrub Swamp** [Common Buttonbush - Swamp-loosestrife Shrub Swamp] []
  This buttonbush swamp occurs in the northeastern United States, in backwater sloughs, wet swales in floodplains, pond and lake borders, and small, isolated depressions, where surface water persists for much or all of the year. *Cephalanthus occidentalis* is dominant. G4G5 (2007-01-31) CT, DC, DE, MA, MD, ME, NH, NJ, NY, ON, PA, RI, VA, VT
- **CEGL005089 *Decodon verticillatus* Shrub Swamp** [Swamp-loosestrife Shrub Swamp] []
  GNR. CT, DE, MA, MD, NH, NJ, NY, ON, PA, WV?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

G770 Midwest Wet Prairie, Wet Meadow & Shrub Swamp

[ ]

IVC Colloquial Name: Midwest Wet Prairie, Wet Meadow & Shrub Swamp
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This herbaceous group is found on wet-mesic to wet sites dominated by medium to tall graminoids, generally 1-2 m tall. Dominant species include *Andropogon gerardii, Calamagrostis canadensis, Panicum virgatum*, and *Spartina pectinata*. Some stands are affected by saline groundwater and have other species such as *Calamagrostis stricta, Carex praegracilis*, and *Carex sartwellii*. A wide variety of forbs can be found in this group and some can be very common in some places. Shrubs are absent to sparse in most stands but some can have significant cover of *Betula pumila, Salix petiolaris, Salix discolor*, and *Spiraea tomentosa*, though still with a wet-prairie herbaceous layer. This group is found on flat or very gently sloping sites. It can occur on silt, loam, clay, or fine sands but all sites are flooded or saturated for a few to several weeks in most years.

IVC Dynamics: Stands are flooded or saturated for at least a few weeks each year and can remain saturated for most of the growing season in some stands. Prolonged changes in hydrologic regime, either wetter or drier, often result in a change to a different group (emergent marshes if a wetter regime and mesic prairie if a drier regime). Fires, usually spreading from adjacent uplands, can move through examples of this group periodically, removing plant litter and woody species. These fires are more common in the grassland-dominated landscapes of the tallgrass prairie region and less common in forested landscapes such as southern Wisconsin and central Minnesota.

IVC Environment: This group occurs in shallow depressions and along the edges of deeper wetlands or where groundwater seeps to the surface. Soils are often fine-textured but they can be sandy where there is a shallow water table or where a sub-surface layer of more impermeable soil allows water to remain close to the surface for longer periods.

DISTRIBUTION

IVC Geographic Range: This group is found across much of the tallgrass and southern Great Lakes region from northwestern Minnesota and eastern North Dakota south to eastern Oklahoma east to central Ohio and southern Ontario.

IVC Nations: CA,US

IVC States/Provinces: AR, IA, IL, IN, KS, KY?, MB, MI, MN, MO, ND, NE, OH, OK, ON, QC, SD, SK, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G2 rank that was calculated from closely related ecological system global ranks. A rank of G3G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4433 *Andropogon gerardii* - *Calamagrostis canadensis* - *Oligoneuron ohioense* Grassland Alliance** [Big Bluestem - Bluejoint - Ohio Goldenrod Grassland Alliance] []
- **A4056 *Andropogon gerardii* - *Panicum virgatum* Wet-mesic Prairie Alliance** [Big Bluestem - Switchgrass Wet-mesic Prairie Alliance] []
  This wet-mesic herbaceous alliance occurs throughout the central Midwest, is dominated by tallgrass species, particularly *Andropogon gerardii* and *Panicum virgatum*, and is found on sites that are saturated or flooded for part of the growing season.
- **A1350 *Calamagrostis stricta* - *Carex sartwellii* - *Carex praegracilis* Saline Wet Meadow Alliance** [Slimstem Reedgrass - Sartwell's Sedge - Clustered Field Sedge Saline Wet Meadow Alliance] []
  This saline wet meadow occurs in the northern tallgrass region of the United States and Canada where moderately saline shallow wetlands are dominated by *Calamagrostis stricta, Carex praegracilis, Carex sartwellii, Juncus arcticus ssp. littoralis, Plantago eriopoda, Bolboschoenus maritimus*, and *Symphyotrichum lanceolatum*.
- **A4105 *Carex* spp. - *Calamagrostis canadensis* Midwest Wet Meadow Alliance** [Sedge species - Canada Bluejoint Midwest Wet Meadow Alliance] []
  This herbaceous wetland alliance is found in the central midwestern United States and adjacent Canada where *Carex* spp. (especially *Carex aquatilis, Carex lacustris, Carex pellita, Carex stricta*) and *Calamagrostis canadensis* dominate sites that are flooded or saturated for much or all of the growing season.

- **A4378 *Cornus sericea - Alnus incana - Cephalanthus occidentalis* Midwest Shrub Swamp Alliance** [Red-osier Dogwood - Gray Alder - Common Buttonbush Midwest Shrub Swamp Alliance] []
- **A3654 *Spartina pectinata* Wet Prairie Alliance** [Prairie Cordgrass Wet Prairie Alliance] []
  The vegetation of this alliance is characterized by dense stands of graminoids 1-2 m tall with scattered to very infrequent woody plants. *Spartina pectinata* and *Calamagrostis canadensis* are typically the two most common species with *Spartina pectinata* sometimes forming near monocultures. This alliance is found primarily in central North America. Stands of this wide-ranging alliance are found on level to gently sloping sites with sand, loam, or clay soils. All sites are typically flooded for part of the winter and spring and usually remain saturated for much of the growing season.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2015)
IVC Description Author: J. Drake
IVC Description Date: 2015-05-20
IVC Acknowledgments:

A4433 Big Bluestem - Bluejoint - Ohio Goldenrod Grassland Alliance

[ ]
Andropogon gerardii - Calamagrostis canadensis - Oligoneuron ohioense Grassland Alliance
Great Lakes Lakeplain Prairie

IVC Scientific Name: *Andropogon gerardii - Calamagrostis canadensis - Oligoneuron ohioense* Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: IL, IN, MI, OH, ON, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005109 *Spartina pectinata - Carex* spp. - *Calamagrostis canadensis* Lakeplain Wet Meadow** [Prairie Cordgrass - Sedge species - Bluejoint Lakeplain Wet Meadow] []
  G2G3 (1998-06-22) IL, IN, MI, OH, ON
- **CEGL005095 *Andropogon gerardii - Calamagrostis canadensis - Pycnanthemum virginianum - Oligoneuron ohioense* Wet Meadow** [Big Bluestem - Bluejoint - Virginia Mountainmint - Ohio Goldenrod Wet Meadow] []
  G2 (1998-06-22) IL, IN, MI, OH, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021c)

IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4056 Big Bluestem - Switchgrass Wet-mesic Prairie Alliance

[ ]
Andropogon gerardii - Panicum virgatum Wet-mesic Prairie Alliance
Wet-Mesic Tallgrass Prairie

IVC Scientific Name: *Andropogon gerardii - Panicum virgatum* Wet-mesic Prairie Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found scattered throughout the central Midwest from eastern South Dakota to eastern Oklahoma and east to southern Michigan and western Ohio. Tallgrasses dominate and often form dense stands. *Andropogon gerardii* and *Panicum virgatum* are common to dominant on most examples. *Calamagrostis canadensis, Pascopyrum smithii* (in the west), *Sorghastrum nutans*, and *Spartina pectinata* are frequently present to abundant. Sites that experience seasonal droughts can have significant midgrasses, especially *Schizachyrium scoparium*. Woody vegetation tends to increase in the absence of fire and can take over sites left unburned for long periods. Forbs are abundant, especially in the east. Among these forbs are Asteraceae spp., *Helianthus grosseserratus, Lysimachia quadrifolia, Pycnanthemum virginianum, Ratibida columnifera, Ratibida pinnata, Thalictrum dasycarpum*, and *Zizia aurea*. The alliance occurs on sites that are wet or even flooded for part of the growing season but not to the degree that they are true wetlands. These are typically in ravines, shallow depressions, or flat lakeplains. Soils are usually fine-textured but coarse-textured surficial soils can be present if an impervious subsurface layer or a shallow water table keeps sites wet.
IVC Dynamics: Precipitation generally increases from west to east across this alliance's range, so fire or other factors that remove or inhibit growth of woody species become more important the farther east a site is. Fires were a common occurrence in stands of this alliance before effective fire suppression activities. In the prolonged absence of fire, woody species usually invade and can become abundant (Curtis 1959, Steinauer 1989). Seasonally variable conditions in soil moisture (flooded to dry) can also inhibit woody vegetation.
IVC Environment: Stands of this widespread alliance occur most frequently on sand to silt loam soils. Some are found on clay loams or silty clays. The sites are typically level to gently sloping, and those with heavier soils often have standing water present in the spring or after heavy rains. Most stands are in the glaciated Midwest and occur on glacial till, outwash, drift, or glacial lakeplains.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the western tallgrass region of western Minnesota and eastern South Dakota south to eastern Oklahoma and northern Arkansas and east to southern Michigan and western Ohio.
IVC Nations: CA,US
IVC States/Provinces: AR, IA, IL, IN, KS, KY?, MB, MI, MN, MO, ND, NE, OH, OK, ON, SD, SK, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005177 *Andropogon gerardii - Calamagrostis canadensis* Sand Wet Meadow** [Big Bluestem - Bluejoint Sand Wet Meadow] []
  G2G3 (1998-06-22) IL, IN, MI, ON?
- **CEGL002199 *Andropogon gerardii - (Panicum virgatum) - Muhlenbergia richardsonis* Wet Meadow** [Big Bluestem - (Switchgrass) - Mat Muhly Wet Meadow] []
  G3G4 (1998-06-22) IA, MB, MN, ND, SD, SK

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A1350 Slimstem Reedgrass - Sartwell's Sedge - Clustered Field Sedge Saline Wet Meadow Alliance

[ ]
Calamagrostis stricta - Carex sartwellii - Carex praegracilis Saline Wet Meadow Alliance
Northern Saline Wet Meadow

IVC Scientific Name: *Calamagrostis stricta - Carex sartwellii - Carex praegracilis* Saline Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This saline wet meadow is found in the northern tallgrass region of the United States and adjacent Canada. Vegetation cover is moderately dense to dense. Graminoids of medium and short stature are the dominant lifeform, although forbs are common. Shrubs may invade this community in the absence of fire, especially on less saline sites. The most abundant species are *Calamagrostis stricta, Carex praegracilis, Carex sartwellii, Juncus arcticus ssp. littoralis, Plantago eriopoda, Bolboschoenus maritimus*, and *Symphyotrichum lanceolatum*. Sites are on level ground in depressions where the water table is at or near the surface for part of the year. The soil and water are moderately saline.
IVC Dynamics: Fire may be important to prevent encroachment of shrubs, especially on less saline sites.
IVC Environment: This community is found on level ground in depressions where the water table is at or near the surface for part of the year. It may occupy the central area of shallower wetland basins and may occur as a peripheral band around deeper wetlands (Stewart and Kantrud 1972). The soil and water are moderately saline.

DISTRIBUTION

IVC Geographic Range: This saline wet meadow community is found in the northern tallgrass prairie region of the United States and adjacent Canada, ranging from Minnesota and the Dakotas to Manitoba.
IVC Nations: CA,US
IVC States/Provinces: MB, MN, ND, SD
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002255 *Calamagrostis stricta - Carex sartwellii - Carex praegracilis - Plantago eriopoda* Saline Wet Meadow** [Slimstem Reedgrass - Sartwell's Sedge - Clustered Field Sedge - Redwool Plantain Saline Wet Meadow] []
  G2G3 (1998-06-22) MB, MN, ND, SD

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2014)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A4105 Sedge species - Canada Bluejoint Midwest Wet Meadow Alliance

[ ]

Carex spp. - *Calamagrostis canadensis* Midwest Wet Meadow Alliance

Midwest Sedge - Bluejoint Wet Meadow

IVC Scientific Name: *Carex* spp. - *Calamagrostis canadensis* Midwest Wet Meadow Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This herbaceous wetland is found in the midwestern United States and adjacent southern Canada. Medium to tall (0.5-1.5 m) graminoids comprise most of the vegetation. Herbaceous cover is usually moderate to dense, unless recent severe disturbance has reduced it. Stands are dominated by *Calamagrostis canadensis* and tall *Carex* spp., especially *Carex aquatilis, Carex lacustris, Carex pellita, Carex stricta*, and, in the southern part of the alliance's range, *Carex cristatella, Carex stipata*, and *Carex vulpinoidea*. Some sites are very strongly dominated by one or a few species. Others have a more diverse composition, including other graminoids such as *Agrostis gigantea, Carex rostrata, Glyceria grandis, Poa compressa, Poa palustris, Scirpus cyperinus*, and *Typha latifolia* and forbs such as *Asclepias incarnata, Apocynum cannabinum, Campanula aparinoides, Comarum palustre, Epilobium leptophyllum, Eutrochium maculatum, Eupatorium perfoliatum, Impatiens capensis, Iris versicolor, Polygonum amphibium*, and *Symphyotrichum lanceolatum*. *Phalaris arundinacea* is a common invasive species in this alliance and can come to dominate stands. Shrubs and trees have less than 25% cover. *Alnus* spp., *Cornus racemosa, Salix* spp., and *Spiraea alba* are among the most common. Soils of this alliance are often fine-textured but can be coarse-textured if there is a subsurface layer or source of water to keep the site flooded or saturated for most of the growing season. Organic matter tends to build up in the soils.

IVC Dynamics: Dominant species in this alliance can tolerate moderate (several months) of flooding and drying, but prolonged, deep flooding or prolonged drying favor other species. Fire could spread into this type from adjacent uplands, especially in the late summer or early fall when the site may be relatively dry.

IVC Environment: Soils of this alliance are often fine-textured but can be coarse-textured if there is a subsurface layer or source of water to keep the site flooded or saturated for most of the growing season. Organic matter tends to build up in the soils.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the midwestern United States and adjacent southern Canada.

IVC Nations: CA,US

IVC States/Provinces: IA, IL, IN, MB, MI, MN, MO, ND, NE, OH, ON, SD, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002256 *Carex lacustris* Midwest Wet Meadow** [Lake Sedge Midwest Wet Meadow] []
  This sedge meadow type is dominated by *Carex lacustris* and occurs in the central midwestern region of the United States and adjacent Canada. Stands occur on floodplains, shallow bays of lakes and streams, and upland depressions, and soils are mineral or well-decomposed peat. G4G5 (1996-10-03) IA, IL, IN, MB, MN, OH, WI
- **CEGL005449 *Calamagrostis canadensis* North-Central Wet Meadow** [Bluejoint North-Central Wet Meadow] []
  G4G5 (2013-07-05) MB?, MN, ON, WI
- **CEGL002262 *Carex aquatilis* - *Carex* spp. Wet Meadow** [Water Sedge - Sedge species Wet Meadow] []
  G4? (1996-10-03) MB?, MN, ND, ON, SD
- **CEGL002258 *Carex stricta* - *Carex* spp. Wet Meadow** [Upright Sedge - Sedge species Wet Meadow] []
  G4? (1996-10-03) IA, IL, IN, MI, MN, ND, ON, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2014)

IVC Description Author: J. Drake

IVC Description Date: 2018-10-26
IVC Acknowledgments:

A4378 Red-osier Dogwood - Gray Alder - Common Buttonbush Midwest Shrub Swamp Alliance

[ ]
Cornus sericea - Alnus incana - Cephalanthus occidentalis Midwest Shrub Swamp Alliance
Midwest Mixed Shrub Swamp

IVC Scientific Name: *Cornus sericea - Alnus incana - Cephalanthus occidentalis* Midwest Shrub Swamp Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: IA, IL, IN, MI, MN, MO, OH, ON, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002186 *Cornus sericea* - *Salix* spp. - (*Rosa palustris*) Shrub Swamp** [Red-osier Dogwood - Willow species - (Swamp Rose) Shrub Swamp] []
  G5 (1996-10-03) IA, IL, IN, MI, MN, OH, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021c)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3654 Prairie Cordgrass Wet Prairie Alliance

[ ]
Spartina pectinata Wet Prairie Alliance
Prairie Cordgrass Wet Prairie

IVC Scientific Name: *Spartina pectinata* Wet Prairie Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: The vegetation of this alliance is characterized by dense stands of graminoids 1-2 m tall with scattered to very infrequent woody plants. *Spartina pectinata* and *Calamagrostis canadensis* are typically the two most common species with *Spartina pectinata* sometimes forming near monocultures. Shrubs, particularly *Salix discolor, Salix petiolaris*, and *Betula pumila*, can be common in some stands in the northern part of this alliance's range. Other common species are *Carex aquatilis, Carex*

atherodes, Carex pellita, and *Carex sartwellii*. Species typical of mesic prairies can be present, including *Andropogon gerardii, Muhlenbergia richardsonis, Panicum virgatum*, and *Sorghastrum nutans*. Forbs can be abundant and include *Helianthus grosseserratus, Lythrum alatum, Pycnanthemum virginianum, Symphyotrichum ericoides, Symphyotrichum novae-angliae*, and *Thalictrum dasycarpum*. Shrubs and small trees are often present. Among these *Cornus* spp., *Fraxinus pennsylvanica*, and *Salix* spp. are typical. This alliance is found primarily in central North America. Stands of this wide-ranging alliance are found on level to gently sloping sites with sand, loam, or clay soils. They occur near lakes or rivers or in depressions. All sites are typically flooded for part of the winter and spring and usually remain saturated for much of the growing season.

IVC Dynamics: *Spartina pectinata* is an early colonizer of suitable habitat and is tolerant of sediment deposition (Weaver 1965, Hansen et al. 1995). On the South Platte River floodplain it appears to be an early colonizer of the fresh sediments laid down by the 1995 flood.

Stands of *Spartina pectinata* have high production rates; however, the rough-edged leaves make for poor forage quality, and it is not readily eaten by livestock or wildlife. Its tall height and thick growth provide shade and cover for wildlife and certain bird species (Hansen et al. 1988a).

IVC Environment: This is a wide-ranging alliance found in the central United States. Locations supporting this alliance are moist, poorly drained, sometimes alkaline areas along ephemeral, intermittent or perennial streams, and overflow areas of large river floodplains. Weaver (1965) reported that, historically, large stands of *Spartina pectinata* occurred on mudflats of the Missouri River. This alliance can also be found in swales, meadows, and on the margins of marshes, ponds or lakes. Sites are generally level to gently sloping. Jones and Walford (1995) found stands along highly meandering, narrow (<12.5 m wide) floodplains, and often the channel was deeply entrenched. The water table is typically high, within 1 m of the surface; the sites are typically flooded for part of the winter and spring. Soils are fine-textured, ranging from clays to silt loam (Weaver 1960, Steinauer 1989), and may be slightly to moderately alkaline (Ungar 1974b, Hansen et al. 1995, Jones and Walford 1995). Soil water movement is rapid enough to preclude the accumulation of salts in the surface horizon. In the east, stands can experience droughty conditions in the summer and fall (Comer et al. 1995b), while in the southern and central portion of this alliance's range they can remain saturated for much of the growing season (Küchler 1974).

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout the midwestern United States and adjacent southern Canada from Missouri and eastern Nebraska to Ohio and southern Ontario and Quebec.

IVC Nations: CA,US

IVC States/Provinces: IA, IL, IN, KY?, MB, MI, MN, MO, ND, NE, OH, ON, QC, SD, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005178 *Spartina pectinata - Carex* spp. - *Calamagrostis canadensis* Sand Wet Meadow** [Prairie Cordgrass - Sedge species - Bluejoint Sand Wet Meadow] []
  G3? (1998-06-22) IL, IN, MI, ON?, WI
- **CEGL002027 *Spartina pectinata - Calamagrostis stricta - Carex* spp. Wet Meadow** [Prairie Cordgrass - Slimstem Reedgrass - Sedge species Wet Meadow] []
  G3? (1998-06-22) IA, MB, MN, ND, NE, SD
- **CEGL002434 *Salix petiolaris - (Betula pumila) / Spartina pectinata - Carex pellita* Wet Shrubland** [Meadow Willow - (Bog Birch) / Prairie Cordgrass - Woolly Sedge Wet Shrubland] []
  G3 (2000-04-12) MB?, MN

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake

IVC Description Date: 2014-12-18

IVC Acknowledgments:

G904 Laurentian-Acadian Wet Meadow & Shrub Swamp

[ ]

IVC Colloquial Name: Laurentian-Acadian Wet Meadow & Shrub Swamp
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is found in the Laurentian region of the Great Lakes and the northeastern United States and adjacent Canada north from West Virginia. It is characterized by wet-mesic to wet sites and can be dominated by a variety of graminoids and forbs. Common abundant species include the graminoids *Calamagrostis canadensis, Carex lacustris, Carex stricta, Carex vesicaria, Carex utriculata, Glyceria striata, Leersia oryzoides*, and *Scirpus cyperinus*. Forbs that may be common or dominant include *Boltonia asteroides var. asteroides, Eutrochium fistulosum, Eupatorium perfoliatum, Impatiens capensis, Impatiens pallida, Mentha arvensis, Sagittaria latifolia, Solidago canadensis, Solidago rugosa, Symphyotrichum racemosum*, and *Verbesina alternifolia*. Sites are found in basins or along slow-moving rivers and streams and are flooded or saturated for at least some of the growing season but rarely more than 0.3 m deep.

IVC Dynamics: Stands are flooded or saturated for at least a few weeks each year and can remain saturated for most of the growing season in some stands. Prolonged changes in hydrologic regime, either wetter or drier, often result in a change to a different group. This group is common behind beaver dams.

IVC Environment: This group occurs in basins or along the edges of slow-moving rivers or streams. Sites are saturated or flooded by shallow water for at least a few weeks during the growing season. Water is usually less than 0.3 m deep. Soils are alluvial, muck, or sometimes peaty. This group occurs from low elevations near the coast in New England and New Jersey to the high Allegheny Mountains in West Virginia.

DISTRIBUTION

IVC Geographic Range: This group is common in the Laurentian region of the Great Lakes and in the northeastern United States and adjacent Canada but does not extend into the Mid-Atlantic Coastal Plain.

IVC Nations: CA,US

IVC States/Provinces: CT, DC?, DE, IA, IL, IN, MA, MB, MD, ME, MI, MN, NB, ND, NH, NJ, NS?, NY, OH, ON, PA, PE?, QC, RI, SD, VA, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G4 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4377 *Alnus incana* Shrub Swamp Alliance** [Gray Alder Shrub Swamp Alliance] []
  This alliance comprises tall alder shrublands dominated or characterized by *Alnus* spp. and *Cornus* spp. in the Laurentian and Acadian-Northern Appalachian regions of the United States and Canada.
- **A4107 *Carex* spp. - *Calamagrostis canadensis* Northern Wet Meadow Alliance** [Sedge species - Bluejoint Northern Wet Meadow Alliance] []
  This bluejoint-sedge wet meadow alliance is found in the Laurentian and Acadian-Northern Appalachian regions of the United States and Canada, extending southward into the Central Appalachian region. It is dominated by *Calamagrostis canadensis* and *Carex* spp. (usually *Carex lacustris, Carex lasiocarpa, Carex stricta, Carex vesicaria*, and *Carex utriculata*). Sites are flooded or saturated for most of the growing season, and soils tend to be fine-textured with muck or sedge peat.
- **A4403 *Dasiphora fruticosa / Cladium mariscoides - Juncus arcticus ssp. littoralis* Wet Meadow Alliance** [Shrubby-cinquefoil / Smooth Sawgrass - Baltic Rush Wet Meadow Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: J. Drake
IVC Description Date: 2015-05-19
IVC Acknowledgments:

A4377 Gray Alder Shrub Swamp Alliance

[ ]
Alnus incana Shrub Swamp Alliance
Laurentian-Acadian Alder Shrub Swamp

IVC Scientific Name: *Alnus incana* Shrub Swamp Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance comprises tall swamps in the Laurentian and Acadian-Northern Appalachian regions of the United States and Canada. These tall shrublands are dominated or characterized by *Alnus incana*, often forming dense, nearly impenetrable thickets. Other common shrubs that may be present include *Cornus amomum, Cornus sericea, Salix bebbiana, Salix eriocephala, Salix sericea, Viburnum nudum* var. *cassinoides*, and *Viburnum dentatum*. In alder peatlands, heath shrubs may also be present, including *Ilex mucronata* and *Kalmia angustifolia*, as well as *Picea mariana*. Alder swamps that receive calcareous groundwater enrichment have species such as *Frangula alnus* and *Dasiphora fruticosa*. Common herbs in alder swamps are variable, but a few ubiquitous species include the graminoids *Calamagrostis canadensis, Carex comosa, Carex stricta, Glyceria canadensis,* and *Glyceria striata,* and the forbs and ferns *Eutrochium maculatum, Osmundastrum cinnamomeum, Onoclea sensibilis*, and *Symphyotrichum puniceum.* Stands occur in a variety of physical settings, including the margins of lakes and ponds, poorly drained depressions, and basins, and in the backwater floodplains of rivers and streams. The soils are generally saturated throughout the growing season and experience some degree of seasonal flooding. In some situations, the majority of the woody vegetation grows on drier hummocks above permanent standing water. The soils vary from mineral soils with a high organic content in the driest swamps to deep organic muck or peat in some of the wettest swamps.
IVC Dynamics:
IVC Environment: Stands occur in a variety of physical settings, including the margins of lakes and ponds, poorly drained depressions, and basins, and in the backwater floodplains of rivers and streams. The soils are generally saturated throughout the growing season and experience some degree of seasonal flooding. In some situations, the majority of the woody vegetation grows on drier hummocks above permanent standing water. The soils vary from mineral soils with a high organic content in the driest swamps to deep organic muck or peat in some of the wettest swamps (Thompson et al. 2019).

DISTRIBUTION

IVC Geographic Range: This alliance comprises tall shrublands in the Laurentian and Acadian-Northern Appalachian regions of the United States and Canada
IVC Nations: CA,US
IVC States/Provinces: CT, MA, MB, ME, MI, MN, NB?, ND, NH, NS?, NY, OH, ON, PA, PE?, QC?, RI, VT, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006839 *Alnus incana* Shrub Swamp** [Gray Alder Shrub Swamp] []
  This alder swamp community is widespread across the Laurentian and Acadian-Appalachian regions of the northeastern United States and southeastern Canada. G5 (2021-09-30) MA, ME, MI, MN, ND, NH, NY, ON, VT, WI, WV
- **CEGL006158 *Alnus incana ssp. rugosa - Ilex mucronata / Sphagnum* spp. Acidic Peatland** [Speckled Alder - Catberry / Peatmoss species Acidic Peatland] []
  G5 (1997-12-01) ME, NB?, NH, NS?, NY, PE?, VT
- **CEGL002187 *Cornus sericea - Salix (bebbiana, discolor, petiolaris) / Calamagrostis stricta* Shrub Swamp** [Red-osier Dogwood - (Bebb's Willow, Pussy Willow, Meadow Willow) / Slimstem Reedgrass Shrub Swamp] []
  G3G4 (1996-10-03) MB, MN, ND, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments: E.H. Thompson, E.R. Sorenson, B.J. Zaino

A4107 Sedge species - Bluejoint Northern Wet Meadow Alliance

[ ]
Carex spp. - *Calamagrostis canadensis* Northern Wet Meadow Alliance
Laurentian-Acadian Graminoid Wet Meadow

IVC Scientific Name: *Carex* spp. - *Calamagrostis canadensis* Northern Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This bluejoint-sedge wet meadow alliance is found in the Laurentian and Acadian-Northern Appalachian regions of the United States and Canada. extending southward into the Central Appalachian region. It is dominated by medium to medium-tall graminoids, usually with moderate to dense cover. Dominant species are *Calamagrostis canadensis* and *Carex* spp., usually *Carex lacustris, Carex lasiocarpa, Carex stricta, Carex vesicaria*, and *Carex utriculata*, but sometimes others. Sites are flooded or saturated for at least part of the growing season, but surface water may be gone later in the growing season. Soils tend to be fine-textured and often have muck or sedge peat accumulated from decaying organic matter.
IVC Dynamics: Sites are flooded or saturated for at least part of the growing season but surface water is often gone by late in the summer.
IVC Environment: Sites are flooded or saturated for at least part of the growing season but surface water may be gone later in the growing season. Soils tend to be fine-textured and often have muck or sedge peat accumulated from decaying organic matter.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Laurentian and Acadian-Northern Appalachian regions of the United States and Canada, extending southward into the Central Appalachian region.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, MA, MB, MD, ME, MI, MN, ND?, NH, NJ, NY, ON, PA, QC, RI, SD, VA, VT, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005448 *Calamagrostis canadensis* - *Carex* spp. Laurentian-Acadian Wet Meadow** [Bluejoint - Sedge species Laurentian-Acadian Wet Meadow] []
  G4G5 (2013-07-04) CT, MA, MD, ME, MI, MN, NH, NJ, NY, QC, RI, VT, WI, WV
- **CEGL006519 *Calamagrostis canadensis* - *Scirpus* spp. - *Dulichium arundinaceum* Wet Meadow** [Bluejoint - Bulrush species - Threeway Sedge Wet Meadow] []
  GNR. MA, NH, NY, VT
- **CEGL002257 *Carex utriculata* - *Carex stricta* - *Carex lacustris* - *Carex vesicaria* Wet Meadow** [Northwest Territory Sedge - Upright Sedge - Lake Sedge - Blister Sedge Wet Meadow] []
  This wet meadow alliance is found in the northeastern United States and Great Lakes region and is dominated by *Carex lacustris, Carex vesicaria*, and *Carex utriculata*. Sites are flooded or saturated for most of the growing season, and soils tend to be fine-textured with muck or sedge peat. G4G5 (1999-06-17) MB, ME, MI, MN, ND?, ON, SD, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2014)
IVC Description Author: J. Drake and D. Faber-Langendoen
IVC Description Date: 2018-10-26
IVC Acknowledgments:

A4403 Shrubby-cinquefoil / Smooth Sawgrass - Baltic Rush Wet Meadow Alliance

[ ]

Dasiphora fruticosa / *Cladium mariscoides - Juncus arcticus ssp. littoralis* Wet Meadow Alliance

Great Lakes Interdunal Wetland

IVC Scientific Name: *Dasiphora fruticosa* / *Cladium mariscoides - Juncus arcticus ssp. littoralis* Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: IL, IN, MI, OH, ON, PA, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005105 *Dasiphora fruticosa* / *Cladium mariscoides - Juncus arcticus ssp. littoralis* - (*Rhynchospora capillacea*) Wet Meadow** [Shrubby-cinquefoil / Smooth Sawgrass - Baltic Rush - (Needle Beaksedge) Wet Meadow] []
  G3? (1998-06-22) IL, IN, MI, OH-SX, ON, PA, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021c)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G125 Eastern North American Freshwater Marsh

[ ]

IVC Colloquial Name: Eastern North American Freshwater Marsh
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These freshwater emergent marshes are dominated by herbaceous vegetation, primarily graminoids. *Schoenoplectus* spp., *Typha* spp., and *Zizania* spp. are common dominants though other species can be abundant or even form nearly monotypic stands. They are common throughout the northern half of the eastern United States and adjacent Canadian provinces. Freshwater marshes occur in closed or open basins that are generally flat and shallow and are always or nearly always flooded. Water depths range from a few centimeters to approximately 1 m. They are associated with lakes, ponds, slow-moving streams, and/or impoundments or ditches. These marshes include those along the shores and estuaries of the Great Lakes. Dominant vegetation tends to be 1-2 m tall and cover varies from moderate to dense. Scattered shrubs may be present but total less than 25% cover. Trees are generally absent and, if present, are scattered. The substrate is typically muck over mineral soil, though where waves or currents are stronger or in some low-nutrient sites, the mineral soil may be exposed.

IVC Dynamics: Wave and current action is typically minor in these marshes. Especially strong storms may create especially strong waves and/or currents that break up marsh vegetation. Prolonged drought or a lowering of the water table may lead to exposure of the soil and invasion by plants more typical of wet meadows. Prolonged increases in the water level will favor submergent or floating-leaved vegetation. These dynamics of flood and drought are more common on the western edge of this group's range, though not as common as in the Great Plains.

IVC Environment: *Climate:* The climate of these marshes ranges from cool-temperate to sub-boreal in southern Canada and the northern United States to nearly warm-temperate in the Atlantic Coastal Plain in Virginia and Maryland.
Soil/substrate/hydrology: Most examples of these marshes are eutrophic with muck over mineral soil as the substrate. Where wave or currents are more active, the mineral soil may be exposed. Some examples of these marshes occur on oligotrophic sites where sand is the substrate. Parts of these marshes can occur on floating root mats which may move with prevailing currents or winds. Marshes are permanently to semipermanently flooded with water depths from a few centimeters to over 1 m deep except in very dry years.

DISTRIBUTION

IVC Geographic Range: This freshwater marsh group is found across most of the northern half of the eastern United States and adjacent Canada. This area stretches from New England and New Brunswick south to Virginia and west through the Great Lakes area to eastern North Dakota and northwestern Ontario, south to northern Missouri.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC?, DE, FL?, GA, IA, IL, IN, KS, KY, LA, MA, MB, MD, ME, MI, MN, MO, MS, NB, NC, ND, NE, NH, NJ, NM, NS, NY, OH, OK, ON, PA, PE, QC, RI, SC, SD, SK, TN, TX, VA, VT, WI, WV, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G2 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3669 *Peltandra virginica - Pontederia cordata - Sagittaria* spp. Marsh Alliance** [Green Arrow-arum - Pickerelweed - Arrowhead species Marsh Alliance] []
  This alliance includes very wet or partially submerged forb vegetation the northeastern and midwestern United States and adjacent Canada. Dominants vary greatly and may include *Peltandra virginica, Polygonum amphibium, Polygonum hydropiper, Carex emoryi, Impatiens capensis, Pontederia cordata, Bidens cernua*, and *Verbena hastata*.
- **A3664 *Schoenoplectus acutus - Bolboschoenus fluviatilis - Schoenoplectus tabernaemontani* Marsh Alliance** [Hardstem Bulrush - River Bulrush - Softstem Bulrush Marsh Alliance] []
  This alliance comprises permanently or semipermanently flooded wetlands dominated by *Schoenoplectus acutus, Bolboschoenus fluviatilis*, and *Schoenoplectus tabernaemontani*. It is found in the northeastern United States and Great Lakes area and adjacent southern Canada.
- **A1436 *Typha angustifolia - Typha latifolia - Schoenoplectus* spp. Deep Marsh Alliance** [Narrowleaf Cattail - Broadleaf Cattail - Bulrush species Deep Marsh Alliance] []
  This deep marsh alliance, found across the eastern half of the United States and southern Canada, contains stands dominated or codominated by *Typha angustifolia* and/or *Typha latifolia*, either alone or in combination with other tall emergent marsh species.
- **A1441 *Zizania aquatica - Zizania palustris* Marsh Alliance** [Annual Wild Rice - Northern Wild Rice Marsh Alliance] []
  This wild rice marsh community is found in the upper midwestern United States and adjacent Canada in deeper, sheltered waters

of slow-moving streams, protected bays, and flowage lakes where the vegetation is dominated by *Zizania aquatica* or *Zizania palustris*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2011)
IVC Description Author: J. Drake
IVC Description Date: 2015-05-19
IVC Acknowledgments:

A3669 Green Arrow-arum - Pickerelweed - Arrowhead species Marsh Alliance

[ ]
Peltandra virginica - Pontederia cordata - Sagittaria spp. Marsh Alliance
North-Central & Northeast Forb Marsh

IVC Scientific Name: *Peltandra virginica - Pontederia cordata - Sagittaria* spp. Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance includes very wet or partially submerged forb vegetation in the northeastern and midwestern United States and adjacent Canada. Dominants vary depending on water levels, recent disturbances, etc. A wide variety of forbs can dominate, including *Peltandra virginica, Polygonum amphibium, Polygonum hydropiper, Carex emoryi, Impatiens capensis, Pontederia cordata, Bidens cernua*, and *Verbena hastata*. Typical associates include *Nuphar* ssp., *Glyceria striata, Polygonum sagittatum, Schoenoplectus tabernaemontani, Schoenoplectus americanus*, and *Sagittaria latifolia*. Stands occur on the banks of rivers and lakes and sometimes of artificial ponds and impoundments.
IVC Dynamics:
IVC Environment: This alliance includes very wet or partially submerged forb vegetation of rivershores and lakeshores, and sometimes of artificial ponds and impoundments.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northeastern and midwestern United States from Virginia north to New York and Maine and west to Minnesota, Iowa, and possibly into the Great Plains. It also occurs in southern Quebec.
IVC Nations: CA,US
IVC States/Provinces: AL?, AR, CT, DE, IA, IL, KY, MA, MD, ME, MI, MN, MS, NC, NH, NJ, NY, OH, ON, PA, QC, RI, SC, SD, TN, VA, VT, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL007696 *Peltandra virginica - Saururus cernuus - Boehmeria cylindrica / Climacium americanum* Marsh** [Green Arrow-arum - Lizard's-tail - Small-spike False Nettle / American Tree Moss Marsh] []
  G3 (2011-05-23) CT, DE, MD, NC, NJ, OH, PA, SC?, TN?, VA, WV
- **CEGL005189 Low Forb Aquatic Marsh** [Low Forb Aquatic Marsh] []
  GNR. ON
- **CEGL005151 (*Lemna* spp., *Rorippa* spp., *Heteranthera* spp., *Hydrocharis* spp.) Marsh** [(Duckweed species, Yellowcress species, Mud-plantain species, Frogbit species) Marsh] []
  GNR. ON
- **CEGL006191 *Pontederia cordata - Peltandra virginica - Sagittaria latifolia* Marsh** [Pickerelweed - Green Arrow-arum - Broadleaf Arrowhead Marsh] []
  G5 (2006-01-19) CT, MA, ME, NH, NJ, NY, ON, PA, RI, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3664 Hardstem Bulrush - River Bulrush - Softstem Bulrush Marsh Alliance

[ ]

Schoenoplectus acutus - Bolboschoenus fluviatilis - Schoenoplectus tabernaemontani Marsh Alliance

Eastern Bulrush Deep Marsh

IVC Scientific Name: *Schoenoplectus acutus - Bolboschoenus fluviatilis - Schoenoplectus tabernaemontani* Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is found in the northeastern United States and adjacent southern Canada. Vegetation is characterized by medium to tall graminoids which typically range from 1 to over 2 m. The vegetation is moderately dense to dense. Some stands are heavily dominated by one or two *Schoenoplectus* spp., while others have several graminoids common throughout the stand. The most abundant species are typically *Schoenoplectus acutus, Bolboschoenus fluviatilis*, and *Schoenoplectus tabernaemontani* . Species composition and abundance can vary from year to year depending mostly on water level fluctuations. In most years, typical species include *Lemna* spp., *Phragmites australis, Schoenoplectus americanus* (in alkaline stands), *Triglochin maritima* (in alkaline stands), *Typha latifolia*, and *Utricularia macrorhiza*. *Potamogeton* spp. often occur in the deeper parts of stands of this alliance and where emergent species are not densely packed. Shrubs, such as *Salix* spp., are not common but may become established in shallow water areas. During droughts, species more tolerant of low water, such as *Polygonum amphibium*, may invade and alter the species composition of stands. Stands of this alliance are flooded for most or all of the growing season and can range from having no water (exposed soil) to water approximately 1.5 m deep, but usually it is less than 1 m. Within a stand, water levels can vary by up to 1 m during the year. The water can be fresh to mildly saline throughout most of this alliance's range. Across its range, soils are deep, poorly drained, muck, peat, or mineral.

IVC Dynamics:

IVC Environment: Stands of this alliance are flooded for most or all of the growing season and can range from having no water (exposed soil) to water approximately 1.5 m deep, but usually it is less than 1 m. Within a stand, water levels can vary by up to 1 m during the year. The water can be fresh to mildly saline throughout most of this alliance's range. Across the range of this alliance, soils are deep, poorly drained, muck, peat, or mineral.

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout the northeastern and Great Lakes areas of the United States and southeastern Canada from Maryland and West Virginia north to southern Ontario and Quebec.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, MA, MB, MD, ME, MI, MN, NH, NJ, NY, ON, PA, QC, RI, VT, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006358 *Schoenoplectus acutus - Carex lasiocarpa* Marsh** [Hardstem Bulrush - Woolly-fruit Sedge Marsh] []
  G1G2 (1998-01-23) CT, MA, NJ, NY?
- **CEGL006275 *Schoenoplectus (tabernaemontani, acutus)* Eastern Marsh** [(Softstem Bulrush, Hardstem Bulrush) Eastern Marsh] []
  GNR. CT, DE, MA, MD, ME, NH, NJ, NY, PA, RI, VT, WV

- **CEGL005274** ***Schoenoplectus acutus - Schoenoplectus subterminalis - Eleocharis palustris - (Schoenoplectus americanus)*** **Northern Great Lakes Shore Marsh** [Hardstem Bulrush - Swaying Bulrush - Common Spikerush - (Chairmaker's Bulrush) Northern Great Lakes Shore Marsh] []
  G3? (2000-04-12) MI, MN, ON, WI
- **CEGL005258** ***Equisetum fluviatile - (Eleocharis palustris)*** **Marsh** [Water Horsetail - (Common Spikerush) Marsh] []
  G4 (1996-02-01) MB, MI?, MN, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A1436 Narrowleaf Cattail - Broadleaf Cattail - Bulrush species Deep Marsh Alliance

[ ]
Typha angustifolia - Typha latifolia - Schoenoplectus spp. Deep Marsh Alliance
Eastern Cattail - Bulrush Deep Marsh

IVC Scientific Name: *Typha angustifolia - Typha latifolia - Schoenoplectus* spp. Deep Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance, found across the eastern half of the United States and southern Canada, contains stands dominated or codominated by *Typha angustifolia* and/or *Typha latifolia*, either alone or in combination with other tall emergent marsh species. *Typha* often occurs in pure stands, and can colonize areas recently exposed by either natural or human causes. *Lythrum salicaria*, an exotic species from Europe, has become a common associate of many eastern *Typha* marshes. In the Southeast, this alliance is widespread and currently representative of a wide variety of mixed marshes with no clear dominants. Vegetation in this alliance may be natural or semi-natural and includes mixed stands of the nominal species, as well as essentially monospecific stands of *Typha latifolia*. Occurrences may display areas of open water, but emergent vegetation dominates. Vegetative diversity and density are highly variable in response to water depth, water chemistry, and natural forces. Associated species vary widely; in the Midwest they include many sedges such as *Carex aquatilis, Carex pellita, Carex rostrata*, bulrushes such as *Schoenoplectus acutus, Schoenoplectus americanus*, and *Schoenoplectus heterochaetus*, and broad-leaved herbs such as *Asclepias incarnata, Hibiscus moscheutos, Impatiens capensis, Sagittaria latifolia, Scutellaria lateriflora, Sparganium eurycarpum, Thelypteris palustris*, and *Verbena hastata*. Floating aquatics such as *Lemna minor* may predominate in deeper zones. This alliance is found most commonly along lake margins and in shallow basins, and occasionally in river backwaters. Lacustrine cattail marshes typically have a muck-bottom zone bordering the shoreline, where cattails are rooted in the bottom substrate, and a floating mat zone, where the roots grow suspended in a buoyant peaty mat. These marshes have hydric soils and are flooded with water levels ranging from several centimeters to more than 1 m for a significant part of the growing season. Soils which support this community can be mineral or organic but are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.
IVC Dynamics: *Typha angustifolia* occupies inundated and disturbed grounds and can tolerate deeper water and higher alkalinity levels than *Typha latifolia*. *Typha* species are prolific seed producers, spreading rapidly to become the early colonizers of wet mineral soil and will persist under wet conditions. Roots and lower stems are well-adapted to prolonged submergence, but periods of drawdown are required for seed germination to occur. These are important wetland communities for many species of birds and waterfowl.
IVC Environment: This alliance is found most commonly along lake or pond margins, slow-moving ditches, in shallow basins, adjacent to stream or river channels in wet mud, oxbows, and occasionally in river backwaters. Sites where this alliance occurs are typically semipermanently flooded, inundated with 30-100 cm of water throughout the year. Lacustrine cattail marshes typically have a muck-bottom zone bordering the shoreline, where cattails are rooted in the bottom substrate, and a floating mat zone, where the roots grow suspended in a buoyant peaty mat. *Typha angustifolia* can grow in deeper water compared to *Typha latifolia*, although both species reach maximum growth at a water depth of 50 cm (Grace and Wetzel 1981). Soils are characterized by accumulations of organic matter over deposits of fine silt and clay, or loams, sandy loams, or coarse sand. *Typha* often occurs in pure stands, and can colonize areas recently exposed by either natural or human causes. Adjacent

herbaceous wetland vegetation types can be dominated by species of *Scirpus* and/or *Schoenoplectus, Carex*, or *Eleocharis*. Riparian shrublands or forests include those dominated by species of *Salix, Fraxinus*, or *Populus*.

DISTRIBUTION

IVC Geographic Range: This alliance is widespread in the eastern half of the United States from eastern North Dakota to eastern Texas and east to the Atlantic Ocean. It is also found in Canada in southern Ontario and southern Quebec.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC?, DE, FL?, GA, IA, IL, IN, KS, KY, LA, MA, MB, MD, ME, MI, MN, MO, MS, NC, ND, NE, NH, NJ, NM, NY, OH, OK, ON, PA, QC, RI, SC, SD, SK, TN, TX, VA, VT, WI, WV, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002026 *Schoenoplectus tabernaemontani* - *Typha* spp. - (*Sparganium* spp., *Juncus* spp.) Marsh** [Softstem Bulrush - Cattail species - (Bur-reed species, Rush species) Marsh] []
  G4G5 (1998-06-22) AR, DC?, IA, IL, IN, KS, MB, MI, MN, MO, ND, NE, NM, OH, OK, ON, SD, SK, VA?, WI, WV, WY
- **CEGL002233 *Typha* spp. Midwest Marsh** [Cattail species Midwest Marsh] []
  G5 (1996-10-03) IA, IL, IN, KS, MI, MN, MO, ND, NE, OH, ON, SD, WI
- **CEGL002229 *Typha* spp. - *Schoenoplectus acutus* - Mixed Herbs Midwest Marsh** [Cattail species - Hardstem Bulrush - Mixed Herbs Midwest Marsh] []
  G4? (2000-01-26) AL, IA, IL, IN, KY, MI, MN, MO, ND, NE, OH, ON, SD, TN, WI
- **CEGL002221 *Bolboschoenus fluviatilis* - *Schoenoplectus* spp. Marsh** [River Bulrush - Clubrush species Marsh] []
  G3G4 (2000-01-26) IA, IL, IN, MB, MN, MO, OH, ON?, WI
- **CEGL005112 *Typha* spp. - *Schoenoplectus tabernaemontani* - Mixed Herbs Southern Great Lakes Shore Marsh** [Cattail species - Softstem Bulrush - Mixed Herbs Southern Great Lakes Shore Marsh] []
  G3G4 (2000-03-29) MI, NY, OH, ON, PA, QC, VT, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M.S. Reid, in Faber-Langendoen et al. (2013)

IVC Description Author: M.S. Reid and J. Drake

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A1441 Annual Wild Rice - Northern Wild Rice Marsh Alliance

[ ]

Zizania aquatica - Zizania palustris Marsh Alliance

Wild Rice Marsh

IVC Scientific Name: *Zizania aquatica - Zizania palustris* Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This wild rice marsh community is found in the upper midwestern United States and adjacent Canada. A thick mat of rice stalks often covers the bottom. The marsh is dominated almost entirely by the tall emergent graminoids *Zizania aquatica* or *Zizania palustris*. Floating-leaved and submerged aquatic cover can be high, but species composition is variable. Species include *Ceratophyllum demersum, Nuphar variegata, Potamogeton natans, Potamogeton zosteriformis, Spirodela polyrrhiza, Utricularia macrorhiza*, and others. Stands are found in deeper, sheltered waters of slow-moving streams, protected bays, and flowage lakes, particularly at stream mouths. Water depths generally exceed 0.5 m. Substrate is rich sedimentary peat or mucky, silty mineral soils.

IVC Dynamics:

IVC Environment: Stands are found in deeper, sheltered waters of slow-moving streams, protected bays, and flowage lakes, particularly at stream mouths. Water depths generally exceed 0.5 m. Substrate is rich sedimentary peat or mucky, silty mineral soils.

DISTRIBUTION

IVC Geographic Range: This wild rice marsh community is found in the upper midwestern and northeastern United States and adjacent Canada, ranging from Vermont and New York to Minnesota and Manitoba, south to Iowa and Indiana.

IVC Nations: CA,US

IVC States/Provinces: IA, IN, MB?, MI, MN, NY, ON, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002382 *Zizania (aquatica, palustris)* Marsh** [(Annual Wild Rice, Northern Wild Rice) Marsh] []
  G3G4 (2000-01-21) IA, IN, MB?, MI, MN, NY, ON, VT, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake

IVC Description Date: 2014-12-18

IVC Acknowledgments:

G773 Eastern North American Inland Saline Marsh

[ ]

IVC Colloquial Name: Eastern North American Inland Saline Marsh

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This inland salt marsh group occurs in just a few known locations in Virginia, New York, Michigan, and Illinois. Total vegetation cover is sparse to open in Great Lakes area stands but dense in Virginia. Stands are dominated by medium and tall herbaceous species tolerant of the saline conditions, typically including *Alisma subcordatum, Atriplex patula, Eleocharis parvula, Hordeum jubatum, Juncus gerardii, Salicornia depressa, Bolboschoenus maritimus, Bolboschoenus robustus, Spergularia salina*, and *Sium suave*. Shrubs and trees are essentially absent. These salt marshes occur where saline water emerges as spring or seeps, often as pockets within a larger freshwater marsh. Soils can be mineral, muck, or peat.

IVC Dynamics: Increased water from high precipitation or other sources can result in a lowering of the salinity in this group. Short-term seasonal changes of this nature are common during heavy rains or after snowmelt in the north but long-term changes in the hydrology will result in a change in the vegetation.

IVC Environment: These salt marshes occur where saline water emerges as spring or seeps, often as pockets within a larger freshwater marsh. Soils can be mineral, muck, or peat.

DISTRIBUTION

IVC Geographic Range: This group is rare and widely scattered with a few known sites in Illinois, Michigan, and New York and one site in Virginia. It may occur in southern Ontario.

IVC Nations: CA,US

IVC States/Provinces: IL, MI, NS, NY, ON?, QC?, VA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G1 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G1 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range very restricted, few occurrences, and threats very high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1434 *Bolboschoenus robustus - Bolboschoenus maritimus - Atriplex patula* Inland Saline Marsh Alliance** [Sturdy Bulrush - Cosmopolitan Bulrush - Spear Saltbush Inland Saline Marsh Alliance] []
  This alliance consists of rare inland salt marshes in the mid-Atlantic and southern Great Lakes areas that are dominated by salt-tolerant herbaceous species.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2015-05-19
IVC Acknowledgments:

A1434 Sturdy Bulrush - Cosmopolitan Bulrush - Spear Saltbush Inland Saline Marsh Alliance

[ ]
Bolboschoenus robustus - Bolboschoenus maritimus - Atriplex patula Inland Saline Marsh Alliance
Inland Alkali Bulrush Saline Marsh

IVC Scientific Name: *Bolboschoenus robustus - Bolboschoenus maritimus - Atriplex patula* Inland Saline Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This inland salt marsh alliance occurs in just a few known locations in Virginia, New York, Michigan, and Illinois. Total vegetation cover is sparse to open in Great Lakes area stands but dense in Virginia. Stands are dominated by medium and tall herbaceous species tolerant of the saline conditions, typically including *Alisma subcordatum, Atriplex patula, Eleocharis parvula, Hordeum jubatum, Juncus gerardii, Salicornia depressa, Bolboschoenus maritimus, Bolboschoenus robustus, Spergularia salina*, and *Sium suave*. Shrubs and trees are essentially absent. These salt marshes occur where saline water emerges as spring or seeps, often as pockets within a larger freshwater marsh. Soils can be mineral, muck, or peat.
IVC Dynamics: Seasonal and inter-annual fluctuations in water levels and salinity create a changing environment that maintains stands of this alliance.
IVC Environment: These salt marshes occur where saline water emerges as spring or seeps, often as pockets within a larger freshwater marsh. Soils can be mineral, muck, or peat.

DISTRIBUTION

IVC Geographic Range: This alliance is rare and widely scattered with a few known sites in Illinois, Michigan, and New York and one site in Virginia. It may occur in southern Ontario.
IVC Nations: CA,US
IVC States/Provinces: IL, MI, NY, ON?, QC?, VA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005111** ***Bolboschoenus maritimus* - *Atriplex patula* - *Eleocharis parvula*** **Saline Marsh** [Cosmopolitan Bulrush - Spear Saltbush - Dwarf Spikerush Saline Marsh] []
  G1 (1998-06-22) IL, MI, NY, ON?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M061 Eastern North American Cool Temperate Seep

Petites sources dans les zones tempérées froides de l'Est

IVC Colloquial Name: Eastern North American Cool Temperate Seep

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: These are generally small-patch herbaceous to shrubby seepage wetlands found predominantly on circumneutral to somewhat alkaline to acidic sites, ranging from the Appalachians, Interior Low Plateau, and Ozark regions north to New England and the Midwest-Great Lakes region. North-central and northeastern seep vegetation is dominated by tall and short forbs, as well as by graminoids and *Sphagnum* mosses in some associations. Characteristic forbs include *Chelone* spp., *Impatiens capensis, Impatiens pallida, Rudbeckia laciniata*, and *Symplocarpus foetidus*; graminoids may also be present, including *Carex* spp., *Eriophorum virginicum*, and *Glyceria striata*. In the Ozarks region and Interior Plateau, characteristic herbaceous species include *Cardamine bulbosa, Carex interior, Carex lurida, Carex leptalea, Impatiens capensis, Parnassia grandifolia, Rudbeckia fulgida var. speciosa, Rudbeckia fulgida var. umbrosa, Scirpus atrovirens, Scirpus cyperinus, Spartina pectinata*, and *Thelypteris palustris var. pubescens*. Shrubs such as *Alnus serrulata* and *Salix* spp. may also occur. In the Central and Southern Appalachians, seepage fens are typically dominated by trees and shrubs. Some characteristic tree species include *Tsuga canadensis, Picea rubens, Acer rubrum, Nyssa sylvatica*, and *Pinus rigida*; some characteristic shrubs include *Alnus serrulata, Viburnum nudum var. cassinoides*, and *Toxicodendron vernix*. The habitats on which this type occurs are generally on flat to gently sloping terrain, on a variety of rock types, mostly typically limestone and dolomite, but also mafic and ultramafic igneous and metamorphic rocks, as well as less frequently acidic sedimentary rocks. Some soils are essentially a thin organic layer over limestone gravel, over a less permeable layer of more solid rock; the soil or substrate is saturated by groundwater, which may be circumneutral and of calcareous origin. To the north, the organic (peat) surface component of the substrate may be deeper than in the south. In the Central and Southern Appalachians, these sites occur at elevations below 1220 m (4000 feet) on soils which are often saturated and mucky, including in poorly drained bottomlands. Wetness results from a combination of groundwater input, seepage from adjacent slopes, rainfall and impeded drainage. In glaciated areas, examples are characteristically in pitted outwash or in kettle lakes associated with kettle-kame-moraine topography. North-central and northeastern seeps are linear, non-peaty, non-sphagnous, often rocky, groundwater slope wetlands that are embedded in an upland forest setting.

IVC Geographic Range: These seepage wetlands range from the Southern Appalachians, Cumberland Mountains, upper Piedmont, Ridge and Valley, Central Appalachians, Interior Low Plateau, and Ozark regions north to New England, the Great Lakes states, and west to Minnesota, as well as into adjacent Canada.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC, DE, GA, IA, IL, IN, KY, MA, MD, ME, MI, MN, MO, NB?, NC, NH, NJ, NS?, NY, OH, ON, PA, QC?, RI, SC, TN, VA, VT, WI, WV

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G189 North-Central & Northeastern Seep []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M. Pyne and S. Menard, in Faber-Langendoen et al. (2014)

IVC Description Author: M. Pyne, S. Menard, S.C. Gawler, D. Faber-Langendoen

IVC Description Date: 2014-10-15

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by S.C. Gawler, A.S. Weakley, and M.P. Schafale

G189 North-Central & Northeastern Seep

[ ]

IVC Colloquial Name: North-Central & Northeastern Seep

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group contains primarily herbaceous-dominated seep vegetation of the north-central and northeastern United States from Maryland and Pennsylvania north to Maine, Vermont, Wisconsin, and into adjacent Canada. This vegetation is primarily dominated by tall and short forbs, as well as by graminoids and *Sphagnum* mosses in some associations. These seepage-fed wetlands are found on gentle slopes. Examples are linear, non-peaty, non-sphagnous, often rocky, groundwater slope wetlands that are embedded in an upland forest setting. Some smaller examples may be nearly or fully shaded by overhanging trees rooted in the adjacent forest, but others are open. Stands of this group are dominated by a wetland flora, but with a lack of species characteristic of floodplains and true bogs (some bog-related species may occasionally be present). Trees may be present on the edges of stands, or often overhanging, but are not characteristic. Shrub species are typically sparse and most typically mesophytic, rather than obligate wetland species. They may form dense zones around the edge but are not characteristic. The herb layer is generally well-developed, and is usually dominated either by characteristic forbs such as *Chelone* spp., *Impatiens capensis, Impatiens pallida, Rudbeckia laciniata*, and *Symplocarpus foetidus*, and/or with presence of *Carex* spp. and other graminoids, including *Eriophorum virginicum* and *Glyceria striata*. In addition, *Sphagnum* spp. may occur in a minority of examples, but it is more characteristic of vegetation in the other groups within this macrogroup.

IVC Dynamics: The presence of seepage is the primary environmental characteristic of stands of this group. Long-term droughts that would affect seepage flow are presumed to have an effect on the vegetation, but this has not been documented. Soil wetness may limit recruitment of most tree and shrub seedlings to drier embedded microsites, making canopy gaps persist longer than in adjacent forests and creating and sustaining the openings where this vegetation occurs. Fires may penetrate from adjacent forests, but only in the driest conditions are they likely to be intense enough to have much effect. Seeps are fairly permanent features of the landscape, but may potentially be created, destroyed, or altered in extent because of changes in groundwater flow, stream entrenchment or headward erosion, mass movement on slopes, or long-term climatic cycles. Examples are often left undisturbed when surrounding forests are logged. Effects of logging on water infiltration or surface flow may have significant indirect effects.

IVC Environment: This vegetation occurs in small patches where seepage creates permanent or seasonally saturated soil conditions. Wetness may vary substantially over short distances in response to amounts of seepage, flow, and pooling by topography or the presence of an impermeable substrate. Stands of the group occur over a wide elevational range, from low and moderate elevations northward nearly to the highest peaks of the Southern Appalachians. Landforms are usually concave slopes but may be convex slopes or even (rarely) ridgetop gaps. This vegetation is almost never found on flat valley bottoms, though it may be found on their edges. Soils are usually saturated mineral soils, rather than peats or mucks, and may be residual or colluvial, and shallow to deep.

Climate: This vegetation is favored by a cool-temperate climate, in which cool temperatures and high rainfall make more water available, thereby making seepage flow more reliable. *Soil/substrate/hydrology:* This vegetation occurs in small patches where seepage creates permanent or seasonal saturated soil conditions. Soils are usually saturated mineral soils, rather than peats or mucks. Soil wetness may limit recruitment of most tree and shrub seedlings to drier microsites, making canopy gaps persist longer than in adjacent forests and creating and sustaining the openings where this vegetation is found. Wetness may vary substantially over short distances in response to amounts of seepage, flow, and pooling by topography or impermeable substrate.

DISTRIBUTION

IVC Geographic Range: This vegetation ranges throughout the north-central and northeastern United States from Maryland and Pennsylvania north to Maine, Vermont, Wisconsin, and into adjacent Canada.

IVC Nations: CA,US

IVC States/Provinces: CT, DC, DE, IA, IL, IN, MA, MD, ME, MI, MN, NB?, NH, NJ, NS?, NY, OH, ON, PA, QC?, RI, VA, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4496 *Acer spicatum - Sambucus racemosa / Veratrum viride* Seep Alliance** [Mountain Maple - Red Elderberry / Green False Hellebore Seep Alliance] []
  These small seepage wetlands range across parts of the Great Lakes, northern New England and New York, and adjacent Canada. They occur as pockets or narrow linear patches within northern forests where seepage waters create saturated and mineral-rich conditions.
- **A1685 *Carex scabrata - Chrysosplenium americanum* Seep Alliance** [Eastern Rough Sedge - Golden-saxifrage Seep Alliance] []
  This alliance accommodates small seepages with scattered cover of *Carex scabrata* and small forbs, including *Chrysosplenium americanum, Cardamine clematitis, Circaea alpina*, and usually also with the moss *Rhizomnium appalachianum*. Vegetation in this alliance is normally over-shaded by trees rooted in adjacent (non-wetland) communities. The alliance is distributed primarily in the Appalachian Mountains from New Hampshire and Vermont south to West Virginia, and possibly in adjacent Canada.
- **A3374 *Impatiens capensis - Symplocarpus foetidus - Caltha palustris* Seep Alliance** [Orange Jewelweed - Skunk-cabbage - Yellow Marsh-marigold Seep Alliance] []
  These are circumneutral or slightly calcareous groundwater seeps typically dominated by forbs, including *Angelica atropurpurea, Caltha palustris, Impatiens capensis*, and *Symplocarpus foetidus*, and found throughout the Central Appalachian, northeastern and north-central United States and eastern temperate Canada.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M. Pyne, in Faber-Langendoen et al. (2011)
IVC Description Author: M. Pyne, S.C. Gawler, M. Pyne and D. Faber-Langendoen
IVC Description Date: 2015-05-19
IVC Acknowledgments: Sean Basquill

A4496 Mountain Maple - Red Elderberry / Green False Hellebore Seep Alliance

[ ]

Acer spicatum - Sambucus racemosa / *Veratrum viride* Seep Alliance

Laurentian-Northern Appalachian Seep

IVC Scientific Name: *Acer spicatum - Sambucus racemosa* / *Veratrum viride* Seep Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These small seepage wetlands range across parts of the Great Lakes, northern New England and New York, and adjacent Canada. They occur as pockets or narrow linear patches within northern forests where seepage waters create saturated and mineral-rich conditions. Streamheads and lower slopes are typical settings, and the ground surface is usually gently sloping. Though generally shaded by the overhanging forest canopy, this association is defined by the herbaceous vegetation which is distinctly different from the herb and shrub layers in the surrounding forest. Shrub cover is generally low, and herb cover is lush (typically in the range of 60-85%). Bryophytes may be present but are often patchy. Herb composition is variable depending on the nutrient status of the soil and seepage water. Ferns, such as *Onoclea sensibilis, Athyrium filix-femina*, and *Matteuccia struthiopteris*, may be prominent. *Impatiens capensis* and *Arisaema triphyllum* are typical forb species. On the more enriched sites, *Adiantum pedatum, Hydrophyllum virginianum, Impatiens pallida, Milium effusum, Carex platyphylla*, and/or *Carex plantaginea* may be present. Other species commonly recorded from this vegetation are *Carex scabrata, Carex debilis, Polystichum acrostichoides, Glyceria striata, Solidago caesia*, and *Ageratina altissima*.

IVC Dynamics:

IVC Environment: These small seepage wetlands occur as pockets or narrow linear patches within northern hardwood forests where seepage waters create saturated and mineral-rich conditions. Streamheads and lower slopes are typical settings, and the ground surface is usually gently sloping.

DISTRIBUTION

IVC Geographic Range: These small seepage wetlands range across parts of the Great Lakes, northern New England and New York, and adjacent Canada.

IVC Nations: CA?,US

IVC States/Provinces: ME, MI, NB?, NH, NY?, QC?, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006409 *Onoclea sensibilis - (Adiantum pedatum) - Impatiens capensis - Carex plantaginea* Seepage Meadow** [Sensitive Fern - (Northern Maidenhair) - Orange Jewelweed - Plantainleaf Sedge Seepage Meadow] []
  G4? (2005-12-06) ME, NB?, NH, NY?, QC?, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

A1685 Eastern Rough Sedge - Golden-saxifrage Seep Alliance

[ ]
Carex scabrata - Chrysosplenium americanum Seep Alliance
Central Appalachian-Northeast Circumneutral Seep

IVC Scientific Name: *Carex scabrata - Chrysosplenium americanum* Seep Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance accommodates small herbaceous seepages with scattered cover of *Carex scabrata* and small forbs, including *Chrysosplenium americanum, Cardamine clematitis, Circaea alpina*, and usually also with the moss *Rhizomnium appalachianum*. Vegetation in this alliance is normally over-shaded by trees rooted in adjacent (non-wetland) communities. The spatial extent of this alliance is small, with individual occurrences normally much less than a hectare in size. Despite its small spatial scale, this alliance is an important component of the diversity of the landscapes in which it occurs. The alliance is distributed primarily in the Appalachian Mountains from New Hampshire and Vermont south to West Virginia, and possibly in adjacent Canada.
IVC Dynamics:
IVC Environment: This alliance consists of small seepages in the Appalachian Mountains with scattered cover of small forbs.

DISTRIBUTION

IVC Geographic Range: The alliance is distributed primarily in the Appalachian Mountains from New Hampshire and Vermont south to West Virginia. It is possibly found in adjacent Canada.
IVC Nations: CA?,US
IVC States/Provinces: CT, DC, DE, MA, MD, ME, NH, NJ, NY, OH, PA, QC?, RI, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006193 *Chrysosplenium americanum* Seepage Meadow** [American Golden-saxifrage Seepage Meadow] []
  G3G5 (1997-12-01) CT, DE, MA, MD, ME, NH, NJ, NY, OH?, PA, QC?, RI, VT, WV

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M. Pyne, in Faber-Langendoen et al. (2013)
IVC Description Author: M. Pyne and D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3374 Orange Jewelweed - Skunk-cabbage - Yellow Marsh-marigold Seep Alliance

[ ]

Impatiens capensis - Symplocarpus foetidus - Caltha palustris Seep Alliance

Central Appalachian-Northeast Calcareous Seep

IVC Scientific Name: *Impatiens capensis - Symplocarpus foetidus - Caltha palustris* Seep Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These circumneutral or slightly calcareous groundwater seeps are typically dominated by forbs, including *Angelica atropurpurea, Caltha palustris, Impatiens capensis*, and *Symplocarpus foetidus*. Other species that may be found include *Carex lacustris, Carex stricta, Glyceria striata*, and *Thelypteris palustris*. This type is found throughout the Central Appalachian, northeastern and north-central United States and eastern temperate Canada. Stands are found on lower slopes of glacial moraines, ravines, and terraces around seepage areas, where circumneutral or slightly calcareous groundwater seeps to the surface. Peat sometimes accumulates to a depth of 1 m. Other sites have little organic material, with groundwater typically welling up through carbonate-encrusted gravel.
IVC Dynamics:
IVC Environment: Stands are found on lower slopes of glacial moraines, ravines, and terraces around seepage areas, where circumneutral or slightly calcareous groundwater seeps to the surface. Peat sometimes accumulates to a depth of 1 m. Other sites have little organic material, with groundwater typically welling up through carbonate-encrusted gravel.

DISTRIBUTION

IVC Geographic Range: This type is found throughout the Central Appalachian, northeastern and north-central United States and eastern temperate Canada.
IVC Nations: CA,US
IVC States/Provinces: CT, DC, IA, IL, IN, MA, MD?, ME, MI, MN, NB?, NH, NJ, NY, OH, ON, PA, QC?, RI, VA, VT, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002385 *Symplocarpus foetidus* - Mixed Forbs Seep** [Skunk-cabbage - Mixed Forbs Seep] []
  G4? (1996-10-03) IA, IL, IN, MA, MI, MN, NJ?, OH, ON, PA, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:

IVC Primary Concept Source: M. Pyne, in Faber-Langendoen et al. (2013)
IVC Description Author: M. Pyne and D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M880 Eastern North American Wet Shoreline Vegetation

Végétation des rivages humides de l'est de l'Amérique du Nord

IVC Colloquial Name: Eastern North American Wet Shoreline Vegetation

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This widely ranging macrogroup comprises a large number of variable vegetation types that occur on the shores of rivers and lakes in the eastern U.S. and adjacent Canada. The patchy vegetation is typically composed of sparsely vegetated mud, sand, gravel or bedrock shores. Characteristic species vary over the range. Typical shrubs may include *Alnus serrulata, Cephalanthus occidentalis, Cornus* spp., *Hypericum densiflorum, Physocarpus opulifolius, Salix* spp., and stunted individuals of floodplain trees such as *Acer saccharinum, Betula nigra*, and *Platanus occidentalis*. The herbaceous flora is highly variable but often includes *Bacopa monnieri, Boehmeria cylindrica*, a number of *Cyperus* spp., *Dulichium arundinaceum, Eragrostis hypnoides, Justicia americana, Ludwigia palustris, Lindernia dubia, Polygonum* spp., *Saururus cernuus, Schoenoplectus pungens, Scirpus cyperinus*, and *Zizaniopsis miliacea*. In the Great Lakes portion of the range, scattered woody trees and shrubs are found throughout, including *Abies balsamea, Alnus incana, Juniperus communis, Picea glauca*, and *Populus tremuloides*. Herbs include *Argentina anserina, Calamagrostis canadensis, Carex buxbaumii, Carex castanea, Danthonia spicata, Deschampsia cespitosa*, and *Trichophorum cespitosum*.

IVC Geographic Range: This macrogroup has a broad range, found from northern New England and northern New York west across the upper Great Lakes, Manitoba, and adjacent Canada, southwards discontinuously to Texas.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC, DE, FL, GA, IA, IL, IN, KS, KY, LA, MA, MB, MD, ME, MI, MN, MO, MS, NB, NC, ND, NE, NH, NJ, NS, NY, OH, OK, ON, PA, PE, QC, RI, SC, SD, SK, TN, TX, VA, VT, WI, WV, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G755 Eastern North American Scrub & Herb Riverbed Wetland []**
- **G756 Eastern North American Wet Shoreline Vegetation []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: A.F. Hill (1923)

IVC Description Author: S.C. Gawler and L. Sneddon

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G755 Eastern North American Scrub & Herb Riverbed Wetland

[ ]

IVC Colloquial Name: Eastern North American Scrub & Herb Riverbed Wetland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This eastern North American group consists of riverine wetlands. Even with this reduced concept, composition is variable enough that individual character species are somewhat difficult to isolate, but some reasonably constant species might include *Alnus serrulata, Carex torta, Elymus* spp., *Eupatorium* spp., *Panicum virgatum, Salix caroliniana, Salix interior* (more Midwest), *Solidago gigantea*, and others.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC, DE, FL, GA, IA, IL, IN, KS, KY, LA, MA, MB, MD, ME, MI, MN, MO, MS, NC, ND, NE, NH, NJ, NY, OH, OK, ON, PA, QC, RI, SC, SD, SK, TN, TX, VA, VT, WI, WV, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3647 *Carex torta* - Mixed Forb Riverbed Alliance** [Twisted Sedge - Mixed Forb Riverbed Alliance] []
  This herbaceous vegetation, ranging from Alabama north to northern New England and southern Quebec, occurs on large coarse substrates deposited along medium- to high-energy river channels and, less frequently, exposed lakeshores with heavy wave action. Vegetation can be sparse to dense depending on degree of flooding and length of exposure, with *Carex torta* and low *Salix* spp. as the characteristic species.
- **A4494 Central Lowlands Rivershore Alliance** [Central Lowlands Rivershore Alliance] []
- **A4495 Laurentian-Acadian Rivershore Alliance** [Laurentian-Acadian Rivershore Alliance] []
  This rivershore alliance comprises sparsely vegetated shorelines of high-energy rivers in the Laurentian and Acadian-Northern Appalachian regions of the United States and Canada. The vegetation is sparse and usually consists of scattered patches of grasses, forbs, and shrubs and annual or biennial forbs under 1 m tall. The substrate consists of a mixture of cobbles, gravel, and sand, and soils are poorly developed or absent.
- **A3646 *Salix interior* Sand-Gravel Floodplain Shrubland Alliance** [Sandbar Willow Sand-Gravel Floodplain Shrubland Alliance] []
  This alliance is made up of flood-battered scrub occurring on sand/or gravel substrate deposited by regular and high-intensity alluvial flooding, from the central Midwest east to Pennsylvania. *Salix interior* is characteristic, and *Salix eriocephala* may codominate.
- **A0948 *Salix nigra* Sand-Gravel Floodplain Scrub Alliance** [Black Willow Sand-Gravel Floodplain Scrub Alliance] []
  This alliance is composed of vegetation occurring on sand and gravel rivershores receiving high-energy flood-scour throughout the eastern United States and possibly adjacent Canada. The physiognomy is best characterized as scrub, formed by intermittent flood-scour. *Salix nigra* is characteristic, but floristic composition and structure is widely variable.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L. Sneddon, in Faber-Langendoen et al. (2013)
IVC Description Author:
IVC Description Date: 2015-12-14
IVC Acknowledgments:

A3647 Twisted Sedge - Mixed Forb Riverbed Alliance

[ ]

Carex torta - Mixed Forb Riverbed Alliance

Twisted Sedge - Mixed Forb Riverbed

IVC Scientific Name: *Carex torta* - Mixed Forb Riverbed Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This herbaceous vegetation occurs on large coarse substrates deposited along medium- to high-energy river channels and, less frequently, exposed lakeshores with heavy wave action. Seasonal flooding and ice-scour maintain the open nature of

these communities; generally, they develop in areas of the active channel that are exposed at low water or in drought years. Vegetation can be sparse to dense depending on degree of flooding and length of exposure. Characteristic perennial species that tolerate inundation and flood-scouring include *Carex torta* and low *Salix* spp. Associated species tend to vary widely from site to site, can be diverse, and may be sparse. Associated species vary with geography. In the Allegheny Mountains, associated species include *Doellingeria umbellata, Dichanthelium clandestinum, Solidago rugosa ssp. aspera, Juncus effusus var. solutus, Scirpus expansus, Scirpus cyperinus, Equisetum arvense, Onoclea sensibilis, Vernonia noveboracensis, Lycopus virginicus, Scutellaria lateriflora*, and *Salix sericea*. In Southern Appalachian gorges, this vegetation often is associated with *Alnus serrulata - Xanthorhiza simplicissima* Wet Shrubland (CEGL003895). In the Cumberland Plateau of Alabama, herbaceous components may include *Lobelia cardinalis, Symphyotrichum dumosum, Lycopus virginicus, Osmunda regalis*, and *Hypericum mutilum*. Physiognomy varies from strictly herbaceous to shrubby to wooded herbaceous. Scattered shrubs and small, battered specimens of *Platanus occidentalis, Betula nigra, Cornus amomum, Alnus serrulata*, and *Carpinus caroliniana* are present in some stands. Stands in disturbed landscapes may be heavily invaded by *Microstegium vimineum, Polygonum cespitosum var. longisetum*, and other weedy exotics.

IVC Dynamics: Stands of this alliance are characterized by light-demanding, tough-rooted herbaceous perennials that are able to withstand frequent inundation and flood-scouring. Periodic large or severe floods transport and deposit large numbers of cobbles, stones, and even boulders in characteristic bars both within the channel (islands) and along its edges (streambanks). These bars provide a matrix for deposition of finer alluvium and habitats for the establishment of tough, adaptable herbaceous plants, which in turn stabilize the bars with massive networks of perennial rootstocks. Regular flood-scouring batters or removes woody plants which take root in these habitats, maintaining open-canopy conditions. These habitats are highly dynamic, with conditions more or less constantly shifting in response to an irregular but powerful disturbance regime. While some of the bar habitats may be damaged or removed by severe floods, others may accrete or be newly deposited during the same events (Hupp 1982). Successionally, this unit can be considered a pioneering type on new, coarse alluvial land, but it is also more or less permanently maintained by natural disturbances.

IVC Environment: This alliance includes sedge-dominated alluvial wetlands on sand, gravel, and rock bars in valleys and gorges.

DISTRIBUTION

IVC Geographic Range: This alliance has a broad geographic range, from Alabama north to northern New England and southern Quebec.

IVC Nations: CA,US

IVC States/Provinces: AL, CT, DE, GA, KY, MA, MD, ME, NC, NH, NY, PA, QC, RI, SC, TN, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006536 *Carex torta - Apocynum cannabinum - Cyperus* spp. Riverbed Vegetation** [Twisted Sedge - Indian-hemp - Flatsedge species Riverbed Vegetation] []
  G4G5 (2005-02-02) CT, MA, ME, NH, NY, PA, RI?, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: L. Sneddon, in Faber-Langendoen et al. (2013)

IVC Description Author: L. Sneddon and D. Faber-Langendoen

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A4494 Central Lowlands Rivershore Alliance

[ ]

Central Lowlands Rivershore Alliance

Central Lowlands Rivershore

IVC Scientific Name: Central Lowlands Rivershore Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AR, IA, IL, IN, KS, MB, MI, MN, MO, ND, NE, OH, OK, SD, SK, WI, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008725 Central Lowlands Mudflats** [Central Lowlands Mudflats] []
  This river mudflats community is found throughout the upper and central midwestern region of the United States and adjacent Canada. Stands occur in riverine areas that flood in the spring, but dry out later in the season, exposing wet, muddy sediments on which plant species subsequently grow. GNR. AR, IA, IL, IN, MB, MI, MN, MO, WI
- **CEGL002408 Midwest Gravel Wash River Sparse Vegetation** [Midwest Gravel Wash River Sparse Vegetation] []
  GNR. OH
- **CEGL002049 Riverine Sand Flats - Bars Sparse Vegetation** [Riverine Sand Flats - Bars Sparse Vegetation] []
  G4G5 (1998-06-22) IL, IN, KS, MB, MN, MO, ND, NE, SD, SK?, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4495 Laurentian-Acadian Rivershore Alliance

[ ]
Laurentian-Acadian Rivershore Alliance
Laurentian-Acadian Rivershore

IVC Scientific Name: Laurentian-Acadian Rivershore Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This rivershore alliance comprises sparsely vegetated shorelines of high-energy rivers in the Laurentian and Acadian-Northern Appalachian regions of the United States and Canada. The vegetation is sparse and usually consists of scattered patches of grasses, forbs, and shrubs and annual or biennial forbs under 1 m tall. The substrate consists of a mixture of cobbles, gravel, and sand, and soils are poorly developed or absent. Further characterization of this type is needed.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This rivershore alliance occurs in the Laurentian and Acadian-Northern Appalachian regions of the United States and Canada.
IVC Nations: CA,US
IVC States/Provinces: MA, MB, MI, MN, NH, ON, QC, SK, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008726 Appalachian-Northeast Mudflats** [Appalachian-Northeast Mudflats] []
  This river mudflats community is found throughout the Acadian-Appalachianregions of the United States and adjacent Canada.
  GNR. MA, NH, ON, QC?, VT
- **CEGL002304 Igneous - Metamorphic Cobble - Gravel River Shore Sparse Vegetation** [Igneous - Metamorphic Cobble - Gravel River Shore Sparse Vegetation] []
  G4G5 (2000-04-07) MB, MI, MN, ON, QC?, SK, WI?
- **CEGL002302 Bedrock - Boulder Rivershore Vegetation** [Bedrock - Boulder Rivershore Vegetation] []
  GNR. MB, MI, MN, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: L.A. Sneddon and D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

A3646 Sandbar Willow Sand-Gravel Floodplain Shrubland Alliance

[ ]
Salix interior Sand-Gravel Floodplain Shrubland Alliance
Sandbar Willow Floodplain Shrubland

IVC Scientific Name: *Salix interior* Sand-Gravel Floodplain Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is made up of flood-battered scrub occurring on sand or gravel substrate deposited by regular and high-intensity alluvial flooding. *Salix interior* or *Salix caroliniana* is characteristic, and *Salix eriocephala* may codominate. The vegetation is highly variable in physiognomy and species composition due to the dynamic nature of flooding. This alliance has a broad geographic range, from the central Midwest ranging as far east as Pennsylvania.
IVC Dynamics: This alliance represents an early-seral primary successional stage on newly deposited sediments that may persist under a regime of repeated fluvial disturbance. *Salix exigua* and *Salix caroliniana* are highly adapted to most forms of disturbance.
IVC Environment: This alliance is made up of flood-battered scrub occurring on sand or gravel substrate deposited by regular and high-intensity alluvial flooding.

DISTRIBUTION

IVC Geographic Range: This alliance has a broad geographic range, from the central Midwest ranging as far east as Pennsylvania.
IVC Nations: CA,US
IVC States/Provinces: AR, IA, IL, IN, KY, MB, MN, MO?, ND, NE, OH, OK, ON, PA, QC?, SD, TN, TX, WI?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005078 *Salix interior* - *Salix eriocephala* Sandbar Wet Shrubland** [Sandbar Willow - Missouri River Willow Sandbar Wet Shrubland] []
  GNR. IL, IN, OH, ON, PA
- **CEGL008562 *Salix interior* Wet Shrubland** [Sandbar Willow Wet Shrubland] []
  Riparian shrublands dominated by *Salix interior* widespread in the Central Lowlands, (, the Mississippi River Alluvial Plain, and Appalachian Mountains. G4G5 (2001-10-03) AR, IA, IL?, KY?, MB, MN, ND, NE, OK, SD, TN?, TX, WI?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L. Sneddon, in Faber-Langendoen et al. (2013)
IVC Description Author: L. Sneddon, D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A0948 Black Willow Sand-Gravel Floodplain Scrub Alliance

[ ]
Salix nigra Sand-Gravel Floodplain Scrub Alliance
Black Willow Sand-Gravel Riverine Scrub

IVC Scientific Name: *Salix nigra* Sand-Gravel Floodplain Scrub Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is composed of vegetation occurring on sand and gravel rivershores receiving high-energy flood-scour. The physiognomy is best characterized as scrub, formed by intermittent flood-scour. *Salix nigra* is characteristic, but floristic composition and structure is widely variable. Other species of *Salix* may co-occur, as well as *Alnus serrulata, Cornus sericea*, and a variety of herbaceous species that tolerate flood disturbance. Alluvial tree saplings often occur as well, including *Acer saccharinum, Populus deltoides*, and others. This alliance occurs throughout the eastern United States and possibly adjacent Canada.
IVC Dynamics: These young, or frequently disturbed, thickets, often have few to no other species present. The presence of this vegetation is related to disturbance frequency, both natural and anthropogenic.
IVC Environment: This alliance is composed of vegetation occurring on sand and gravel rivershores receiving high-energy flood-scour.

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout the eastern United States and possibly adjacent Canada.
IVC Nations: CA?,US
IVC States/Provinces: AL, AR, CT, DE, FL, GA, IL?, KY, LA, MA, MD, ME, MS, NC, NH, NJ, NY, OH, OK, ON?, PA, SC, TN, TX, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003901 *Salix nigra* Wet Shrubland** [Black Willow Wet Shrubland] []
  G4? (2001-09-19) AL, AR, FL, GA, LA, MD, MS, NC, OK, SC, TN, TX, WV

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: A.S. Weakley, in Faber-Langendoen et al. (2013)
IVC Description Author: L.A. Sneddon and D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G756 Eastern North American Wet Shoreline Vegetation

[ ]

IVC Colloquial Name: Eastern North American Wet Shoreline Vegetation
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group consists of low-energy shorelines of rivers and ponds, characterized by low annual plants, emergent aquatic plants, graminoids, leafy forbs, and scattered shrubs. Typical taxa include *Boehmeria cylindrica, Carex* spp., *Cyperus* spp., *Eragrostis hypnoides, Hydrocotyle umbellata, Juncus effusus, Leersia oryzoides, Lindernia dubia, Ludwigia palustris, Peltandra virginica, Polygonum* spp., *Saururus cernuus, Schoenoplectus* spp., *Triadenum walteri*, and *Utricularia gibba*. Diminutive annuals include *Eragrostis hypnoides, Lipocarpha micrantha*,and *Fimbristylis autumnalis*. Aquatic species include *Heteranthera* spp., *Nuphar*, and *Nymphaea* spp. *Cephalanthus occidentalis* may occur as scattered individuals. Stands occur in shallow basins, shores of slow-moving rivers, or lake and pond margins that flood in the spring and draw down later in the season. This group ranges broadly in the southeastern, mid-Atlantic, and midwestern U.S.
IVC Dynamics: This vegetation is influenced by seasonal flooding in low-energy waterbodies. As the water levels recedes later in the growing season, the mucky substrate is exposed and rapidly colonized by annuals.
IVC Environment: This group occupies the shores of slow-moving rivers, and on lakeshores and pondshores. It also occupies backwater depressions and oxbows of rivers, as well as beaver-influenced wetlands. The substrate is often mucky, or silty on riverbanks. These shores are seasonally flooded, and except for aquatic plants, vegetation may not be evident until late in the growing season when the water level has dropped sufficiently to expose the substrate.

DISTRIBUTION

IVC Geographic Range: This group ranges broadly in the mid-Atlantic, southeastern and mid-western U.S. and adjacent Canada.
IVC Nations: CA,US
IVC States/Provinces: AL, AR, FL?, GA, IA, IL, IN, KY, LA, MB, MI, MN, MO, MS, NC, NJ, NY, OK, ON, PA, QC, SC, TN, TX?, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3696 Inland Mud Lakeshore Alliance** [Inland Mud Lakeshore Alliance] []
  This alliance comprises a single broadly defined and broadly ranging association (from the midwestern to eastern United States) characterized by dryland forms of aquatic plants, including species of the genera *Heteranthera, Nuphar, Nymphaea*, and others.

- **A1881 *Polygonum* spp. Shoreline Wet Meadow Alliance** [Knotweed species Shoreline Wet Meadow Alliance] []
  This alliance covers various southeastern and mid-Atlantic wet depressions, lakes, and ponds dominated by various *Polygonum* species (section *Persicaria*), singly or in combination, or with other obligate wetland plant species. Associations have been described that are dominated by, or contain, *Polygonum amphibium, Polygonum glabrum, Polygonum hydropiperoides, Polygonum lapathifolium, Polygonum pensylvanicum, Polygonum punctatum*, and/or related *Polygonum* spp. The many associated species vary with geography and habitat.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.P. Schafale and A.S. Weakley (1990); Minnesota DNR (2003)
IVC Description Author: L.A. Sneddon
IVC Description Date: 2015-05-20
IVC Acknowledgments: Sean Basquill

A3696 Inland Mud Lakeshore Alliance

[ ]
Inland Mud Lakeshore Alliance
Inland Mud Lakeshore

IVC Scientific Name: Inland Mud Lakeshore Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This lake mudflats alliance comprises a single broadly defined and broadly ranging association characterized by dryland forms of aquatic plants. These aquatics include *Heteranthera* spp., *Nuphar, Nymphaea* spp., *Polygonum amphibium*, and *Potamogeton* spp. As the vegetation matures over the summer and early fall, graminoids or forbs may become dominant, including species of *Cyperus, Juncus, Polygonum*, and *Schoenoplectus*. This alliance ranges broadly from the midwestern to eastern United States. Stands occur in shallow basins or lake margins that flood in the spring and draw down later in the season, exposing wet, muddy sediments on which plant species subsequently grow. Substrates include silt and clay mixed with marl or sedimentary peats composed of plant and animal residues precipitated from standing water.
IVC Dynamics:
IVC Environment: Stands occur in shallow basins or lake margins that flood in the spring and draw down later in the season, exposing wet, muddy sediments on which plant species subsequently grow. Substrates include silt and clay mixed with marl or sedimentary peats composed of plant and animal residues precipitated from standing water.

DISTRIBUTION

IVC Geographic Range: This alliance ranges broadly from the midwestern to eastern United States.
IVC Nations: CA,US
IVC States/Provinces: IN, MB, MI, MN, NY, ON, QC?, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002313 Lake Mudflats Sparse Vegetation** [Lake Mudflats Sparse Vegetation] []
  GNR. IN, MB, MI, MN, NY, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: L.A. Sneddon, in Faber-Langendoen et al. (2013)
IVC Description Author: L.A. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A1881 Knotweed species Shoreline Wet Meadow Alliance

[ ]
Polygonum spp. Shoreline Wet Meadow Alliance
Eastern Knotweed Shoreline Wet Meadow

IVC Scientific Name: *Polygonum* spp. Shoreline Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance covers various southeastern and Mid-Atlantic wet depressions, lakes, and ponds dominated by various *Polygonum* species (section *Persicaria*), singly or in combination, or with other obligate wetland plant species. Associations have been described that are dominated by, or contain, *Polygonum amphibium, Polygonum glabrum, Polygonum hydropiperoides, Polygonum lapathifolium, Polygonum pensylvanicum, Polygonum punctatum*, and/or related *Polygonum* spp. The many associated species vary with geography and habitat. In western Kentucky, this alliance occurs in marshes associated with the Ohio River in backflood areas around oxbows, beaver-flooded areas, levees, and depressional drainages. Associated species include *Nelumbo lutea, Cephalanthus occidentalis, Sagittaria brevirostra, Peltandra virginica*, and *Juncus effusus*. Associates in Oklahoma include *Ammannia coccinea, Helianthus annuus, Lemna minor, Stuckenia pectinata, Spirodela polyrrhiza, Utricularia gibba*, and *Xanthium strumarium*. In Mississippi, one example of this vegetation is dominated by the perennial *Polygonum glabrum*; associated species include *Lemna minor, Saccharum giganteum, Hydrocotyle umbellata, Saururus cernuus, Carex lupulina, Triadenum walteri, Cephalanthus occidentalis, Leersia* sp., *Ludwigia peploides, Boehmeria cylindrica, Juncus effusus, Rhynchospora corniculata, Ludwigia decurrens, Habenaria repens, Mikania scandens, Scirpus cyperinus*, and others. It occurs as a band ringing the shores of ponds in the East Gulf Coastal Plain and along the banks of ditches and sloughs in the Mississippi River Alluvial Plain. This alliance also occurs in a wide variety of human- and beaver-created wetlands. Composition is highly variable and re-evaluation may be required as additional data become available. In the western United States and adjacent Canada, this alliance is found primarily over a wide elevational range from near sea level to over 2700 m. Stands are found in permanently flooded depressions such as margins of lake shores and oxbow lakes in river floodplains. The vegetation is characterized by the dominance or codominance of *Polygonum amphibium*. Associates may include species of *Potamogeton* and other aquatic plants.
IVC Dynamics:
IVC Environment: In the southeastern United States, this alliance occurs in a wide variety of human- and beaver-created wetlands (wet depressions, lakes, and ponds), including a band ringing the shores of ponds in the East Gulf Coastal Plain and in ditches and sloughs in the Mississippi River Alluvial Plain.

DISTRIBUTION

IVC Geographic Range: This alliance is widespread but scattered throughout the eastern United States.
IVC Nations: CA,US
IVC States/Provinces: AL, AR, FL?, GA, IA, IL, IN, KY, LA, MN, MO, MS, NC, NJ, OK, PA, SC, TN, TX?, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:

IVC Primary Concept Source: B.W. Hoagland (1997)
IVC Description Author: L.A. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M881 Eastern North American Riverscour Vegetation

Végétation des lits de torrents de l'est de l'Amérique du Nord

IVC Colloquial Name: Eastern North American Riverscour Vegetation

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This widely ranging macrogroup comprises a large number of highly variable vegetation types that occur on the shores of rivers in the eastern U.S. and adjacent Canada. Characteristic species vary over the range. Shrubs may include *Alnus serrulata, Hypericum prolificum, Prunus pumila, Salix caroliniana*, or *Salix interior*. Characteristic herbaceous species, depending on geography, may include *Andropogon gerardii, Baptisia australis, Calamagrostis canadensis, Campanula rotundifolia, Carex torta, Deschampsia cespitosa, Doellingeria umbellata, Elymus* spp., *Eupatorium* spp., *Packera paupercula, Panicum virgatum, Schizachyrium scoparium, Solidago gigantea, Solidago simplex, Spartina pectinata*, and *Triantha glutinosa*. The patchy vegetation ranges from riverside prairies to highly flood-scoured, ice-scoured, and flood-battered patchy or very sparse vegetation along high-gradient rivers.

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, GA, IA, IL, IN, KY, MA, MD, ME, MI, MN, MO, NB, NC, NH, NJ, NS, NY, OH, OK, ON, PA, QC, RI, TN, TV, VA, VT, WI, WV

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G925 Laurentian-Acadian-Northeast Riverscour Vegetation []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: T. Rawinski, in Faber-Langendoen et al. (2014)

IVC Description Author: L. Sneddon

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G925 Laurentian-Acadian-Northeast Riverscour Vegetation

[ ]

IVC Colloquial Name: Laurentian-Acadian-Northeast Riverscour Vegetation

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group consists of sparsely vegetated barren riverscour, both outcrop-pavement and unconsolidated sand, gravel and cobble, in the Great Lakes, Laurentian, and northeastern North America regions, from Pennsylvania to Quebec, Canada and west to Ontario and Wisconsin. Species composition is highly variable because of riverscouring and variable substrates. Characteristic species include *Andropogon gerardii, Calamagrostis canadensis, Campanula rotundifolia, Deschampsia cespitosa, Doellingeria umbellata, Hypericum prolificum, Packera paupercula, Prunus pumila, Solidago simplex, Spartina pectinata*, and/or *Triantha glutinosa*.

IVC Dynamics: Flooding and ice-scour can remove vegetation and rearrange soil/substrate conditions.

IVC Environment: This group occurs on the shores of rivers where flooding and ice-scour impact the vegetation. Soil is patchy and often poorly developed. The substrate is sand, gravel, cobble, or bedrock. Groundwater seepage occurs in some examples and maintains a more saturated soil condition. Some sites are calcareous due to seepage of calcareous groundwater or occurring on calcareous substrates.

DISTRIBUTION

IVC Geographic Range: This type occurs in the Great Lakes, Laurentian, and northeastern North America, from Pennsylvania to Quebec, Canada and west to Ontario and Wisconsin.

IVC Nations: CA,US
IVC States/Provinces: CT, MA, ME, MI, NH, NJ, NY, ON, PA, QC, VT, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, and threats moderate to high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3826 *Andropogon gerardii - Campanula rotundifolia - Anemone virginiana var. alba* Riverscour Alliance** [Big Bluestem - Bluebell Bellflower - Tall Thimbleweed Riverscour Alliance] []
  This alliance comprises vegetation occurring on bedrock outcrops or sandy point bars or receiving flood-scour. The vegetation is highly variable in substrate, cover, and composition, but is characterized by *Andropogon gerardii, Anemone virginiana var. alba, Prunus pumila, Solidago simplex, Arabis lyrata*, and *Solidago simplex*. It ranges from Pennsylvania and New Jersey to northern New England and southern Quebec.
- **A3827 *Andropogon gerardii - Spartina pectinata - Apocynum cannabinum* Riverscour Alliance** [Big Bluestem - Prairie Cordgrass - Indian-hemp Riverscour Alliance] []
  This alliance comprises riverwash vegetation of northern New England and the Upper Midwest occurring on bedrock ledges, or sandy or cobble beaches receiving alluvial flooding and ice-scour. Physiognomy and species composition are variable but include *Spartina pectinata* and *Apocynum cannabinum*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen and J. Drake
IVC Description Date:
IVC Acknowledgments:

A3826 Big Bluestem - Bluebell Bellflower - Tall Thimbleweed Riverscour Alliance

[ ]
Andropogon gerardii - Campanula rotundifolia - Anemone virginiana var. alba Riverscour Alliance
Great Lakes-Northeast Riverside Outcrop

IVC Scientific Name: *Andropogon gerardii - Campanula rotundifolia - Anemone virginiana var. alba* Riverscour Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance includes scoured riverbank "prairies" in the northeastern United States, which may be called "riverside prairies," "linear prairies," "rivershore grasslands," or "scoured riverine bluff prairie." Vegetation occurs on bedrock outcrops or sandy point bars or receiving flood-scour. The vegetation is highly variable in substrate, cover, and composition, but is characterized by *Andropogon gerardii, Anemone virginiana var. alba, Prunus pumila, Solidago simplex, Arabis lyrata*, and *Solidago simplex*. This vegetation ranges from Pennsylvania and New Jersey to northern New England and southern Quebec.
IVC Dynamics: This vegetation is maintained by major flood-scour that removes much of the accumulated sediment and prevents succession by woody species.
IVC Environment: Most occurrences are small and found as scoured riverbank "prairies" in northeastern United States and as riverine gravel/cobble bar "prairies" and flood-scoured acidic or circumneutral bedrock exposures associated with major rivers.

DISTRIBUTION

IVC Geographic Range: This vegetation ranges from Pennsylvania and New Jersey to northern New England and southern Quebec.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, ME, MI, NH, NJ, NY, ON, PA, QC, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006532** ***Campanula rotundifolia - Packera paupercula - (Aquilegia canadensis)*** **Riverscour Sparse Vegetation** [Bluebell Bellflower - Balsam Groundsel - (Red Columbine) Riverscour Sparse Vegetation] []
  GNR. ME, NY, QC?, VT
- **CEGL005233** ***Spartina pectinata - Muhlenbergia richardsonis - Sporobolus heterolepis - Oligoneuron album - Euthamia graminifolia*** **Riverscour Sparse Vegetation** [Prairie Cordgrass - Mat Muhly - Prairie Dropseed - Prairie Goldenrod - Flat-top Goldentop Riverscour Sparse Vegetation] []
  G1 (1998-05-21) MI, NY, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: E.H. Thompson and E.R. Sorenson (2000)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3827 Big Bluestem - Prairie Cordgrass - Indian-hemp Riverscour Alliance

[ ]
Andropogon gerardii - Spartina pectinata - Apocynum cannabinum Riverscour Alliance
Northeast Unconsolidated Rivershore Grassland

IVC Scientific Name: *Andropogon gerardii - Spartina pectinata - Apocynum cannabinum* Riverscour Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance comprises riverwash vegetation of northern New England and the Upper Midwest occurring on bedrock ledges, or sandy or cobble beaches receiving alluvial flooding and ice-scour. Physiognomy and species composition are variable but include *Spartina pectinata* and *Apocynum cannabinum*. Other characteristic species include *Prunus pumila, Desmodium canadense, Symphyotrichum novi-belgii, Iris versicolor*, and *Argentina anserina*. Other shrub species sometimes present include *Spiraea alba, Cornus sericea*, and *Rosa blanda*.
IVC Dynamics: It occurs close to the active river channel and is exposed to flood-scour.
IVC Environment: This vegetation occurs on cobble river beaches, and on riparian sandy and bedrock substrates as well.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from northern New England and New York to Quebec, and southern Ontario.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, ME, MI, NH, NJ, NY, ON, PA, QC, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006427** ***Calamagrostis canadensis - Doellingeria umbellata - Spartina pectinata*** **Riverscour Wet Meadow** [Bluejoint - Parasol Whitetop - Prairie Cordgrass Riverscour Wet Meadow] []
  GNR. ME, NH, VT
- **CEGL006437** ***Prunus pumila var. depressa / Deschampsia cespitosa*** **Riverscour Wet Meadow** [Eastern Sandcherry / Tufted Hairgrass Riverscour Wet Meadow] []
  GNR. ME, NY, QC?, VT
- **CEGL006518** ***Prunus pumila / Andropogon gerardii - Sorghastrum nutans*** **Riverscour Wet Meadow** [Sandcherry / Big Bluestem - Indiangrass Riverscour Wet Meadow] []
  These tall rivershore wet meadows are found in the temperate region of the northeastern United States. G3 (2011-05-20) CT, MA, NH, NJ, NY, PA, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S.C. Gawler and A. Cutko (2010)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M071 Great Plains Marsh, Wet Meadow, Shrubland & Playa

Marais, prairies humides, arbustaies et bassins endoréiques des Grandes Plaines

IVC Colloquial Name: Great Plains Marsh, Wet Meadow, Shrubland & Playa

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This herbaceous- or shrub-dominated wetland is found throughout the Great Plains. Sites can be dominated by emergent wetland-obligate species or by herbaceous or shrub species tolerant of seasonal flooding in riparian and non-riparian settings. Abundant species vary widely in this wide-ranging and environmentally diverse macrogroup. Common species in wetter sites include *Sagittaria* spp. *Schoenoplectus* spp., *Sparganium* spp., and *Typha* spp. In wet meadows and wet prairies, *Calamagrostis canadensis, Calamagrostis stricta, Carex* spp. (including *Carex atherodes, Carex pellita, Carex nebrascensis*), *Eleocharis palustris, Glyceria* spp., *Juncus* spp., *Lycopus americanus, Panicum virgatum, Spartina pectinata*, and *Triglochin maritima* are common. *Pascopyrum smithii* often occurs on the drier edges of stands in the western parts of its range and in temporarily flooded basins in the southern Great Plains along with *Panicum obtusum* and *Bouteloua dactyloides*. In more saline areas, common species can include *Carex sartwellii, Carex praegracilis, Hordeum jubatum, Plantago eriopoda*, and *Schoenoplectus pungens*. Shrubs are less common range-wide but dominate some sites. Typical species are *Amorpha fruticosa, Artemisia cana ssp. cana* and *Artemisia tridentata* (in the northwest portion of the range), *Cornus drummondii, Cornus sericea, Prunus virginiana, Salix* spp. (especially *Salix interior*), *Symphoricarpos occidentalis*, and the exotic *Elaeagnus angustifolia*. Seedlings of riparian trees, especially *Populus deltoides*, can be found in some stands. This macrogroup occurs in basins and along rivers and streams throughout the semi-arid to dry-temperate Great Plains. The hydrologic regime varies from sites flooded for only a few weeks each growing season to those flooded for years at a time. The water source for these sites can be snowmelt (either local or from the Rocky Mountains), rain, or groundwater. Sites with limited watersheds and little or no groundwater connection tend to be wet for short periods of time, while those with larger watersheds or more reliable water sources can be saturated or flooded for most or all of the growing season. Water varies from fresh to moderately saline. Many sites are on fine-textured, poorly drained soils either on the surface or forming an impermeable subsurface layer that prevents rapid water drainage. Some sites have coarse, often alluvial soils. Soils are nearly always mineral, but muck can accumulate on some sites, and this macrogroup includes fens where marl or peat can form.

IVC Geographic Range: This macrogroup is found throughout the Great Plains from the southern Canadian Prairie Provinces to northern Texas and from the High Plains below the Rocky Mountains to the Tallgrass Prairies in the central United States.

IVC Nations: CA,MX?,US

IVC States/Provinces: AB, AZ?, CHH?, CO, COA?, IA, KS, MB, MN, MO, MT, ND, NE, NM, OK, SD, SK, TX, UT, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G325 Great Plains Freshwater Marsh []**
- **G336 Great Plains Wet Prairie, Wet Meadow & Seepage Fen []**
- **G337 Great Plains Riparian Wet Meadow & Shrubland []**
- **G568 Great Plains Riverscour Vegetation []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: J. Drake

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G325 Great Plains Freshwater Marsh

[ ]

IVC Colloquial Name: Great Plains Freshwater Marsh

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This herbaceous wetland group is found in the semi-arid and parts of the temperate zones of the Great Plains from southern Canada to northern Texas. Herbaceous species, typically between 1 and 2 m tall, dominate. Cover can vary from fairly open to very dense. Woody cover is sparse to absent. *Typha* spp. and *Schoenoplectus* spp. are the most common, though many other species can be locally abundant. Sites are usually in basins but can be found along slow-moving streams or rivers. Most sites are flooded with 0.2 to 1 m of water most or all of the growing season except in very dry or wet years.

IVC Dynamics: Hydrologic changes are the main natural dynamic affecting this group. These marshes are fed by larger drainage basins, and sometimes also by groundwater sources, and are thus more hydrologically stable than other basin wetlands in the Great Plains, but they still occur in a climate that is semi-arid or the dry end of temperate so water can evaporate quickly. This group occurs on sites flooded for most or all of the growing season, and these conditions need to persist at any given site for multiple years for this group to become established, but longer-term precipitation cycles result in longer-term changes in water levels that can change the vegetation at any given site from wet meadow to the deeper marshes in this group and back (Kantrud et al. 1989a). Fire can spread from adjacent uplands, particularly in late summer or fall, and dense *Typha* spp. or *Schoenoplectus* spp. can provide abundant fuel. Fires can affect the composition of these marshes by removing standing and fallen litter which allows more light to reach the surface but also reduces the amount of snow trapped during the winter (in the northern parts of the range of this group) and thus can reduce water levels the following year. Many sites have been affected by agricultural practices either through draining and conversion to cropland or through trampling and grazing by livestock. Herbivory by muskrats (*Ondatra zibethicus*) can alter vegetation cover and composition.

IVC Environment: Examples of this group are found in basins, along lakeshores, and sometimes along slow-moving creeks or in the backwaters of rivers. Water depth is typically between 0.2 and 1 m except in very wet or dry years. Soils are usually fine-textured though some sites are on sands. Soils are also usually high in organic material and tend toward mucks. Some sites can have moderately saline water and soils, particularly if water levels have dropped. *Climate:* Semi-arid to temperate.

DISTRIBUTION

IVC Geographic Range: This group occurs from the southern Canadian Prairie Provinces of Alberta, Saskatchewan, and Manitoba south through western Minnesota, eastern Kansas, central Oklahoma, and the panhandle of Texas. The distribution of this group extends west to north-central Montana, eastern Wyoming, and eastern Colorado.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, IA, KS, MB, MN, MT, ND, NE, NM, OK, SD, SK, TX, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G2 rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3484 *Carex atherodes - Carex aquatilis - Scolochloa festucacea* Marsh Alliance** [Wheat Sedge - Water Sedge - Common Rivergrass Marsh Alliance] []
  This herbaceous wetland occurs in the northern Great Plains on seasonally flooded sites with moderate to dense medium-tall graminoid vegetation typically dominated by *Carex atherodes, Carex aquatilis*, and *Scolochloa festucacea*.
- **A3489 *Eleocharis palustris* Great Plains Marsh Alliance** [Common Spikerush Great Plains Marsh Alliance] []
  This alliance is dominated by medium-tall graminoids, including *Eleocharis palustris*, and is found in the Great Plains on sites flooded for part or all of the growing season.
- **A3488 *Sagittaria latifolia - Sagittaria cuneata - Leersia oryzoides* Great Plains Marsh Alliance** [Broadleaf Arrowhead - Arumleaf Arrowhead - Rice Cutgrass Great Plains Marsh Alliance] []
  In this alliance, *Sagittaria latifolia* and *Sagittaria cuneata* is dominant or abundant but sometimes contains *Bacopa rotundifolia, Heteranthera limosa, Leersia oryzoides, Sagittaria longiloba*, or (in the north) *Hippuris vulgaris*. This alliance is found in the southern and probably northern Great Plains on sites flooded for most or all of the growing season.

- **A3486 *Schoenoplectus acutus - Bolboschoenus maritimus - Schoenoplectus tabernaemontani* Marsh Alliance** [Hardstem Bulrush - Saltmarsh Clubrush - Softstem Bulrush Marsh Alliance] []
  This herbaceous wetland alliance is found in the northeastern Great Plains on sites flooded for most or all of the growing season where *Schoenoplectus acutus* and *Bolboschoenus maritimus* are usually among the dominant species, with *Bolboschoenus maritimus* tending to be more abundant on more saline sites.
- **A3487 *Typha angustifolia - Typha latifolia - Schoenoplectus* spp. Marsh Alliance** [Narrowleaf Cattail - Broadleaf Cattail - Bulrush species Marsh Alliance] []
  This herbaceous wetland, found throughout most of the Great Plains, is dominated by *Typha angustifolia* and/or *Typha latifolia*, either alone or in combination with other tall emergent marsh species, and is found on semipermanently flooded sites.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: C.J. Richardson, in Barbour and Billings (2000)
IVC Description Author: J. Drake
IVC Description Date: 2015-05-08
IVC Acknowledgments:

A3484 Wheat Sedge - Water Sedge - Common Rivergrass Marsh Alliance

[ ]
Carex atherodes - Carex aquatilis - Scolochloa festucacea Marsh Alliance
Great Plains Sedge Marsh

IVC Scientific Name: *Carex atherodes - Carex aquatilis - Scolochloa festucacea* Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This herbaceous wetland occurs in the northern Great Plains. Herbaceous cover is moderate to dense and 0.4-1.0 m tall. Woody cover is uncommon through most of the range but is somewhat more common in the eastern portion of this alliance's range. Stands vary from nearly monotypic to mixed with the most common species being *Carex atherodes, Carex aquatilis*, and *Scolochloa festucacea*. Other *Carex* spp. are sometimes dominant, including *Carex lacustris, Carex rostrata*, and *Carex stricta*. Minor species include *Eleocharis palustris, Glyceria grandis, Schoenoplectus* spp., and *Typha latifolia*. This alliance usually occurs in basins, though sometimes it can be found along streams or rivers. The surface is flooded for a few to several weeks during the growing season with fresh to moderately saline water. Soils are often mineral but mucks can form from the accumulation of organic matter.
IVC Dynamics: Stands in this alliance are flooded for a few to several weeks during the growing season, usually in the spring to early summer. The surface is dry by late summer in most stands.
IVC Environment: This alliance usually occurs in basins, though sometimes it can be found along streams or rivers. The water table may be above the surface for only a few weeks in spring and after heavy rains or constantly until midsummer (Walker and Coupland 1970, Looman 1982), but sites do not stay flooded throughout the growing season. Stands dominated by *Scolochloa festucacea* can be found on marginally fresh to moderately saline sites (Looman 1981a, 1982). The soils are typically medium- to fine-textured and often have an accumulation of organic matter (Smith 1973).

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the northern Great Plains from southern Manitoba and southern Saskatchewan to North Dakota and Montana.
IVC Nations: CA,US
IVC States/Provinces: MB, MT, ND, SK
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002260 *Scolochloa festucacea* Marsh** [Common Rivergrass Marsh] []
  G4G5 (1998-06-22) MB, MT, ND

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A3489 Common Spikerush Great Plains Marsh Alliance

[ ]
Eleocharis palustris Great Plains Marsh Alliance
Great Plains Spikerush Marsh

IVC Scientific Name: *Eleocharis palustris* Great Plains Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Medium-tall graminoids make up the bulk of the vegetation of this alliance, though forbs can be locally abundant. Dominant species vary but *Eleocharis palustris* is usually common to dominant. Other common species include *Eleocharis compressa, Hordeum jubatum, Leptochloa fusca ssp. fascicularis, Polygonum pensylvanicum, Schoenoplectus pungens*, and *Spartina pectinata*. Stands are flooded for part of the growing season but dry out by mid to late summer. Where sites dry out during the growing season, annuals may become abundant later in the year. This herbaceous wetland alliance is found in the central and southern Great Plains, and possibly northern Great Plains.
IVC Dynamics:
IVC Environment: Stands are flooded for part of the growing season but dry out by mid to late summer. Where sites dry out during the growing season, annuals may become abundant later in the year. Habitat conditions include wet depressions, bison wallows, interdunal swales, and playa lakes (Hoagland 1997).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the southern and central Great Plains from northern Texas to South Dakota and possibly in southern Saskatchewan.
IVC Nations: CA,US
IVC States/Provinces: KS, NE, OK, SD, SK
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005291 *Eleocharis palustris* Great Plains Marsh** [Common Spikerush Great Plains Marsh] []
  GNR. NE, SD, SK

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A3488 Broadleaf Arrowhead - Arumleaf Arrowhead - Rice Cutgrass Great Plains Marsh Alliance

[ ]

Sagittaria latifolia - Sagittaria cuneata - Leersia oryzoides Great Plains Marsh Alliance

Great Plains Arrowhead - Rice Cutgrass Marsh

IVC Scientific Name: *Sagittaria latifolia - Sagittaria cuneata - Leersia oryzoides* Great Plains Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Stands of this alliance are dominated by short to medium-tall emergent forbs, especially *Sagittaria latifolia* and *Sagittaria cuneata*. Some stands may be dominated by *Bacopa rotundifolia, Leersia oryzoides, Heteranthera limosa, Sagittaria longiloba*, or (in the north) *Hippuris vulgaris*. Where water is deeper, submergent aquatic species such as *Ceratophyllum* spp., *Myriophyllum* spp., or *Potamogeton* spp. can be abundant beneath the emergent forbs. Sites are typically flooded for most or all of the growing season except during prolonged droughts. It is found widely scattered through the Great Plains.

IVC Dynamics: Water is present for most or all of the growing season. This alliance cannot persist without flooding for most of the growing season.

IVC Environment: This alliance is found in ponds which have water year-round, except in extended droughts. This includes interdunal swales along major streams and in depressional features in upland plains (playas). Soils are dense, poorly drained clays (Hoagland 1997, 2000, Lauver et al. 1999).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the southern Great Plains and southern Manitoba.
IVC Nations: CA,US
IVC States/Provinces: KS, MB, OK, SK, TX
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002280 *Hippuris vulgaris - Sagittaria cuneata - Myriophyllum spicatum* Great Plains Marsh** [Common Mare's-tail - Arumleaf Arrowhead - Eurasian Water-milfoil Great Plains Marsh] []
  GNR. MB, SK

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A3486 Hardstem Bulrush - Saltmarsh Clubrush - Softstem Bulrush Marsh Alliance

[ ]

Schoenoplectus acutus - Bolboschoenus maritimus - Schoenoplectus tabernaemontani Marsh Alliance

Great Plains Bulrush Marsh

IVC Scientific Name: *Schoenoplectus acutus - Bolboschoenus maritimus - Schoenoplectus tabernaemontani* Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Stands of this herbaceous wetland alliance are dominated by medium-tall to tall graminoids, with forbs uncommon and shrubs or trees very rare. *Schoenoplectus acutus* and *Bolboschoenus maritimus* are usually among the dominant species, with *Bolboschoenus maritimus* tending to be more abundant on more saline sites. It can form virtual monotypic stands where the water is most saline. *Schoenoplectus tabernaemontani* and *Bolboschoenus fluviatilis* are often present and can be dominant in some stands. Other species that can be present include *Carex atherodes* (especially in the shallower parts of the community), *Lemna* spp., *Typha latifolia*, and *Utricularia macrorhiza*. In moderately saline stands, typical species include *Juncus arcticus ssp. littoralis, Scolochloa festucacea, Schoenoplectus americanus*, and *Triglochin maritima*. *Triglochin maritima* can also grow on the drier edges of the more saline stands. Stands can be found in depressions or along streams and lakes. Sites are flooded for much or all of the growing season. Water salinity can vary from fresh to saline. This alliance is found in the northeastern Great Plains of the United States and Canada.

IVC Dynamics: *Schoenoplectus acutus* and *Schoenoplectus tabernaemontani* are early colonizers of suitable habitats (Hansen et al. 1995), and are able to persist under wet conditions. *Schoenoplectus* spp. stands are generally considered permanent wetland communities. They will remain in place unless the hydrologic regime is severely altered. In the Prairie Pothole region, where this alliance is centered, water levels regularly rise and fall over multi-year cycles of high and low precipitation. If water levels have fallen, stands of this alliance can burn in either late fall or early spring. Stands of *Schoenoplectus* are important to wildlife species, especially birds, by providing cover and nesting habitat.

IVC Environment: Stands of this alliance are flooded for most or all of the growing season. Stands can have water from 0 (exposed soil) to approximately 1.5 m deep, but usually are less than 1 m. The water can be fresh to mildly saline throughout most of this alliance's range (Stewart and Kantrud 1971). Across the range of this alliance, soils are deep, poorly drained muck, peat, or mineral. Adjacent wetter sites are typically dominated by *Typha latifolia*, while drier sites support herbaceous communities dominated by *Carex* spp., *Poa pratensis*, or other grasses.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northeastern Great Plains and tallgrass prairie areas of the northern United States and southern Canada from Iowa north to Manitoba and west into Saskatchewan and North and South Dakota.

IVC Nations: CA,US

IVC States/Provinces: IA, MB, ND, SD, SK, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002225 *Schoenoplectus acutus - (Bolboschoenus fluviatilis)* Freshwater Marsh** [Hardstem Bulrush - (River Bulrush) Freshwater Marsh] []
  G4G5 (1998-06-22) MB, ND, SD
- **CEGL002227 *Bolboschoenus maritimus - Schoenoplectus acutus - (Triglochin maritima)* Marsh** [Cosmopolitan Bulrush - Hardstem Bulrush - (Seaside Arrow-grass) Marsh] []
  G3G5 (1998-06-22) MB, ND, SD, SK

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake

IVC Description Date: 2014-01-08

IVC Acknowledgments:

A3487 Narrowleaf Cattail - Broadleaf Cattail - Bulrush species Marsh Alliance

[ ]

Typha angustifolia - Typha latifolia - Schoenoplectus spp. Marsh Alliance

Great Plains Cattail - Bulrush Marsh

IVC Scientific Name: *Typha angustifolia - Typha latifolia - Schoenoplectus* spp. Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance, found throughout most of the Great Plains, contains stands dominated by *Typha angustifolia* and/or *Typha latifolia*, either alone or in combination with other tall emergent marsh species. In the southern Great Plains, *Typha domingensis* may be locally prominent. *Typha* spp. often occur in pure stands, and can colonize areas recently exposed by either natural or human causes. Associated species vary widely across the wide geographic range of this alliance. Vegetation in this alliance may be natural or semi-natural and includes mixed stands of the nominal species, as well as essentially monospecific stands of *Typha latifolia*. These monospecific stands occur especially in artificial wetlands, such as borrow pits or ponds. This alliance occurs on hydric soils in wetlands, ditches, ponds, lakes, and rivers, as well as on shorelines and streambanks. Inundation is commonly 3-6 dm (1-2 feet) in depth. Occurrences may display areas of open water, but emergent vegetation dominates (80% cover). Seasonal flooding during winter and spring or flooding during heavy rains helps maintain these marshes. Soils which support this community can be mineral or organic but are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. Vegetative diversity and density are highly variable in response to water depth, water chemistry, and natural forces. This alliance is found most commonly along lake margins and in shallow basins, and occasionally in river backwaters.

IVC Dynamics: *Typha angustifolia* occupies inundated and disturbed grounds and can tolerate deeper water and higher alkalinity levels than *Typha latifolia* (Great Plains Flora Association 1986). *Typha* species are prolific seed producers, spreading rapidly to become the early colonizers of wet mineral soil and will persist under wet conditions. Roots and lower stems are well-adapted to prolonged submergence, but periods of drawdown are required for seed germination to occur. These are important wetland communities for many species of birds and waterfowl.

IVC Environment: This alliance is found most commonly along lake or pond margins, slow-moving ditches, in shallow basins, adjacent to stream or river channels in wet mud, oxbows, and occasionally in river backwaters. Elevations range from roughly 300 m in the southeastern Great Plains to around 2000 m in Colorado. Sites where this alliance occurs are typically semipermanently flooded, inundated with 30-100 cm of water throughout the year. Lacustrine cattail marshes typically have a muck bottom zone bordering the shoreline, where cattails are rooted in the bottom substrate, and a floating mat zone, where the roots grow suspended in a buoyant peaty mat. *Typha angustifolia* can grow in deeper water compared to *Typha latifolia*, although both species reach maximum growth at a water depth of 50 cm (Grace and Wetzel 1981). Soils are characterized by accumulations of organic matter over deposits of fine silt and clay, or loams, sandy loams, or coarse sand (Jones and Walford 1995). *Typha* often occurs in pure stands and can colonize areas recently exposed by either natural or human causes. Adjacent herbaceous wetland vegetation types can be dominated by species of *Scirpus* and/or *Schoenoplectus, Carex*, or *Eleocharis*. Riparian shrublands or forests include those dominated by species of *Salix, Fraxinus*, or *Populus*.

DISTRIBUTION

IVC Geographic Range: This alliance is wide-ranging and common in the Great Plains of the central United States and southern Canada. It ranges from southern Manitoba and Saskatchewan south to eastern Colorado and northern Texas.

IVC Nations: CA,US

IVC States/Provinces: CO, KS, MB, ND, NE, OK, SD, TX, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002228 *Typha* spp. - *Schoenoplectus* spp. - Mixed Herbs Great Plains Marsh** [Cattail species - Bulrush species - Mixed Herbs Great Plains Marsh] []
  G4G5 (1996-10-03) MB, ND, NE, SD
- **CEGL002389 *Typha* spp. Great Plains Marsh** [Cattail species Great Plains Marsh] []
  G4G5 (1996-10-03) KS, MB, ND, NE, SD

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-01-08
IVC Acknowledgments:

G336 Great Plains Wet Prairie, Wet Meadow & Seepage Fen

[ ]

IVC Colloquial Name: Great Plains Wet Prairie, Wet Meadow & Seepage Fen
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group includes herbaceous wetlands and fens in the eastern and central Great Plains. Examples occur in basins or along slow-moving streams or rivers. Sites are flooded or saturated for part of the growing season but often dry out in late summer. These wet meadows and wet prairies typically have moderate to dense cover of herbaceous vegetation 1-2 m tall. *Calamagrostis stricta, Carex* spp., and *Spartina pectinata* are common dominants, though several other species are common locally or in some parts of the range. Soils are fine-textured and may be mineral or mucky in most sites. In fens, soils are muck or peat.
IVC Dynamics: Hydrologic changes (flooding and drought) affect sites in this group significantly. In drier years, sites can be invaded by species from adjacent prairies, while in wetter years, species typical of more permanently flooded marshes do well. Also, fire spreading from adjacent upland prairies can sweep through examples of this group. Many sites have been affected by agricultural practices and either converted to row crops or affected by grazing and trampling by livestock.
IVC Environment: This group occurs on poorly drained nearly level sites with few exceptions. Most sites are in basins or along slow-moving streams or rivers and have seasonally flooded fine-textured soils. Some sites can be moderately saline: these are more common in the western parts of the distribution of this group. Fens in the Great Plains are included in this group. The fens occur where minerotrophic groundwater emerges at the surface, typically on the lower slopes of a hill or cliff or in floodplains. Marl or peat can form in these fens.

DISTRIBUTION

IVC Geographic Range: This group is found throughout the eastern and central Great Plains from the southern Prairie Provinces of Canada to Oklahoma. It probably does not extend west into the shortgrass prairie beyond eastern Montana, eastern Wyoming, and western Kansas or east beyond western Minnesota, central Iowa, and northwestern Missouri.
IVC Nations: CA,US
IVC States/Provinces: AB, CO, IA, KS, MB, MN, MO, MT, ND, NE, OK, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3492 *Panicum virgatum* - *Pascopyrum smithii* Wet Meadow Alliance** [Switchgrass - Western Wheatgrass Wet Meadow Alliance] []
  This central Great Plains alliance is found in basins and drainages with moderate to heavy grass cover dominated by *Panicum virgatum*, sometimes with *Pascopyrum smithii* as a codominant or local dominant.
- **A3493 *Spartina pectinata* Great Plains Wet Meadow Alliance** [Prairie Cordgrass Great Plains Wet Meadow Alliance] []
  This wet prairie alliance is found throughout the Great Plains on intermittently flooded sites with dense, tall graminoids, usually with *Spartina pectinata* common or abundant along with species such as *Calamagrostis canadensis, Carex aquatilis, Carex atherodes, Carex pellita*, and *Carex sartwellii*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: C.J. Richardson, in Barbour and Billings (2000)
IVC Description Author: J. Drake
IVC Description Date: 2015-05-08
IVC Acknowledgments:

A3492 Switchgrass - Western Wheatgrass Wet Meadow Alliance

[ ]
Panicum virgatum - Pascopyrum smithii Wet Meadow Alliance
Great Plains Switchgrass Wet Meadow

IVC Scientific Name: *Panicum virgatum - Pascopyrum smithii* Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Medium-tall grasses dominate the moderate to dense vegetation cover. *Panicum virgatum* is usually dominant, though some stands may have *Pascopyrum smithii* as a codominant or local dominant. Other grasses can be common, including *Sporobolus airoides, Sporobolus compositus*, and *Distichlis spicata* (on more saline sites). *Schizachyrium scoparium* and *Calamovilfa longifolia* become more common on the upland edge of this alliance. This alliance is found in drainages and basins in the central and southern Great Plains. Stands occur on sites flooded for brief periods during the growing season, whether in basins that collect sufficient runoff or along drainages that flood after snowmelt or heavy rains. Soils can be fine- to coarse-textured.
IVC Dynamics: Brief flooding in the spring and after heavy rains is common in stands of this alliance. The water table is usually not far below the surface.
IVC Environment: Stands occur on sites flooded for brief periods during the growing season, whether in basins that collect sufficient runoff or along drainages that flood after snowmelt or heavy rains. Soils can be fine- to coarse-textured.

DISTRIBUTION

IVC Geographic Range: This alliance has been identified in western South Dakota. It likely occurs elsewhere in the central western Great Plains.
IVC Nations: CA,US
IVC States/Provinces: MT, ND, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002239 *Pascopyrum smithii - (Elymus trachycaulus)* Clay Pan Wet Meadow** [Western Wheatgrass - (Slender Wheatgrass) Clay Pan Wet Meadow] []
  GNR. ND, SD, SK?, WY?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-04-28
IVC Acknowledgments:

A3493 Prairie Cordgrass Great Plains Wet Meadow Alliance

[ ]

Spartina pectinata Great Plains Wet Meadow Alliance

Great Plains Prairie Cordgrass Wet Meadow

IVC Scientific Name: *Spartina pectinata* Great Plains Wet Meadow Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The vegetation of this alliance is characterized by dense stands of graminoids 1-2 m tall with scattered to very infrequent woody plants. The most abundant species are *Calamagrostis canadensis, Carex aquatilis, Carex atherodes, Carex pellita, Carex sartwellii*, and *Spartina pectinata*. In some stands, *Spartina pectinata* can form virtual monocultures. Shrubs and small trees are infrequent, though become somewhat more common in the eastern portion of this alliance's range. Among these *Cornus* spp., *Fraxinus pennsylvanica*, and *Salix* spp. are typical. This alliance is found throughout the Great Plains from Oklahoma to the U.S.-Canadian border. Stands of this wide-ranging alliance are found on level to gently sloping sites with sand, loam, or clay soils. They occur near lakes or rivers or in depressions. All sites are typically flooded for part of the winter and spring and can remain saturated for much of the growing season. Some sites are moderately saline.

IVC Dynamics: *Spartina pectinata* is an early colonizer of suitable habitat and is tolerant of sediment deposition (Weaver 1965, Hansen et al. 1995). On the South Platte River floodplain, it appears to be an early colonizer of the fresh sediments laid down by the 1995 flood. Stands of *Spartina pectinata* have high production rates; however, the rough-edged leaves make for poor forage quality, and it is not readily eaten by livestock or wildlife. Its tall height and thick growth provide shade and cover for wildlife and certain bird species (Hansen et al. 1988).

IVC Environment: Locations supporting this alliance are moist, poorly drained, sometimes alkaline areas along ephemeral, intermittent or perennial streams, and overflow areas of large river floodplains. Weaver (1965) reported that, historically, large stands of *Spartina pectinata* occurred on mudflats of the Missouri River. This alliance can also be found in swales, meadows, and on the margins of marshes, ponds or lakes. Sites are generally level to gently sloping. Jones and Walford (1995) found stands along highly meandering, narrow (<12.5 m wide) floodplains, and often the channel was deeply entrenched. The water table is typically high, within 1 m of the surface; sites are typically flooded for part of the winter and spring. Soils are fine-textured, ranging from clay to silt-loam (Weaver 1960, Rolfsmeier and Steinauer 2010), and may be slightly to moderately alkaline (Ungar 1974c, Hansen et al. 1995, Jones and Walford 1995). Soil water movement is rapid enough to preclude the accumulation of salts in the surface horizon. Sites remain saturated for much of the growing season (Kuchler 1974).

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout the Great Plains from the U.S.-Canadian border south to Oklahoma.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, IA, KS, MB, MN, MT, ND, NE, OK, SD, SK, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002028 *Calamagrostis canadensis* - *Juncus* spp. - *Carex* spp. Sandhills Wet Meadow** [Bluejoint - Rush species - Sedge species Sandhills Wet Meadow] []
  G3G4 (1998-06-22) KS, ND, NE, SD, SK?
- **CEGL002220 *Carex atherodes* Wet Meadow** [Wheat Sedge Wet Meadow] []
  G3G5 (1998-06-22) AB, CO, IA, MB, MN, MT, ND, SD, WY
- **CEGL002254 *Carex pellita* - *Calamagrostis stricta* Wet Meadow** [Woolly Sedge - Slimstem Reedgrass Wet Meadow] []
  G3G5 (1998-06-22) CO, MB, MT, ND, SD, SK, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake
IVC Description Date: 2014-01-08
IVC Acknowledgments:

G337 Great Plains Riparian Wet Meadow & Shrubland

[ ]

IVC Colloquial Name: Great Plains Riparian Wet Meadow & Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group consists of shrub- and herbaceous-dominated stands along perennial or intermittent rivers in the Great Plains. This riparian group can be found throughout most of the Great Plains from the U.S. border in central Montana and North Dakota to Oklahoma. Sites are found on raised islands and terraces above the main channel that experience periodic flooding. Shrubs or herbaceous plants can dominate. Common species include *Cornus drummondii, Cornus sericea, Symphoricarpos occidentalis, Prunus virginiana, Pascopyrum smithii, Schizachyrium scoparium* (in the west and south), and the exotics *Poa pratensis* and *Melilotus* spp. Scattered trees may be present, and examples of this group may occur on a floodplain interspersed with Great Plains Cottonwood - Green Ash Floodplain Forest Group (G147).

IVC Dynamics: Flooding and other hydrologic events strongly affect this group. Examples are typically found near enough to streams to be flooded at some point in the growing season but far enough away from larger streams that the flooding is not of a long duration. Fire can spread into stands of this group from surrounding upland prairies, particularly in the central and eastern Great Plains where fire is more common.

IVC Environment: Examples of this group are found on alluvial soils on terraces, raised islands, and banks near streams and rivers. Sites are typically flooded in the spring or after heavy rains but flooding is not of long duration. Sites are generally lower than much of the surrounding landscape, and this combined with proximity to watercourses makes these sites relatively mesic.

DISTRIBUTION

IVC Geographic Range: This group is found in much of the Great Plains from the U.S.-Canadian border region to Oklahoma.
IVC Nations: CA,US
IVC States/Provinces: AB, CO, KS, MB, MT, ND, NE, OK, SD, SK, UT, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3586 *Artemisia cana ssp. cana* Wet Shrubland Alliance** [Plains Silver Sagebrush Wet Shrubland Alliance] []
  This alliance, found in the northern Great Plains along streams and intermittent watercourses, has a sparse to dense short-shrub layer dominated by *Artemisia cana ssp. cana* with *Artemisia tridentata, Ericameria* spp., and *Sarcobatus vermiculatus* possibly present to codominant and mixedgrass species in the herbaceous layer.
- **A0918 *Elaeagnus commutata* Wet Shrubland Alliance** [Silverberry Wet Shrubland Alliance] []
  This silverberry shrubland occurs in the northwestern Great Plains on north-facing slopes and river valley slopes where open thickets dominated by *Elaeagnus commutata* occur within the mixedgrass prairie landscape.
- **A3589 *Salix interior* Wet Shrubland Alliance** [Sandbar Willow Wet Shrubland] []
  This shrubland is found in the Great Plains along streams and rivers where flooding is frequent and *Salix interior* is the dominant shrub, though other shrubs or saplings are common, including *Cornus sericea, Populus deltoides, Salix amygdaloides, Salix eriocephala, Salix lutea*, and *Salix nigra* (in the east).
- **A3590 *Shepherdia argentea* Wet Shrubland Alliance** [Buffaloberry Wet Shrubland Alliance] []
  The vegetation of this mesic shrubland alliance is dominated by a moderate to dense canopy of medium-tall shrubs. The most abundant of these, *Shepherdia argentea*, is typically 1.5-3 m tall. Other common shrub species are *Juniperus horizontalis, Prunus virginiana, Ribes* spp., *Rhus aromatica, Rosa woodsii*, and *Symphoricarpos occidentalis*. Graminoids and forbs may have only half the coverage of the shrub layer. It is found in the northern Great Plains of the United States and Canada. Stands occur on stream terraces, rolling uplands, and badlands, and where moisture is more plentiful than on the surrounding landscape, such as in swales, ravines, near streams, and on northwest- to east-facing slopes.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2011)
IVC Description Author: J. Drake
IVC Description Date: 2015-05-08
IVC Acknowledgments:

A3586 Plains Silver Sagebrush Wet Shrubland Alliance

[ ]
Artemisia cana ssp. cana Wet Shrubland Alliance
Plains Silver Sagebrush Wet Shrubland

IVC Scientific Name: *Artemisia cana ssp. cana* Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found in the northern Great Plains along streams and intermittent watercourses and sometimes in upland settings. There is a sparse to dense short-shrub layer 0.5-1 m tall dominated by *Artemisia cana ssp. cana*. *Artemisia tridentata, Ericameria* spp., and *Sarcobatus vermiculatus* may be present to codominant. Medium-tall grasses dominate the sparse to moderate herbaceous layer including *Calamovilfa longifolia, Hesperostipa comata, Cryptantha* spp., *Eriogonum* spp., *Bouteloua gracilis, Pascopyrum smithii, Andropogon hallii, Pascopyrum smithii, Nassella viridula*, and *Poa pratensis*. Stands are found on sites that receive run-off from higher landscape positions, i.e., ravines, stream valleys, and other intermittent or perennial watercourses and some are flooded periodically. Soils are often fine-textured but some stands occur on sandy sites.
IVC Dynamics: Vegetation types in this alliance occur on alluvial terrain. They are often grazed by domestic livestock and are strongly preferred during the growing season (Padgett et al. 1989). Prolonged livestock use can cause a decrease in the abundance of native bunch grasses and increases in the cover of shrubs and non-native grass species, such as *Poa pratensis*. *Artemisia cana* resprouts vigorously following spring fire, and this method may serve to increase shrub coverage of stands. Conversely, fire in the fall may decrease shrub abundance (Hansen et al. 1995). Sarr (1995) noted that *Artemisia cana* was associated with higher floodplain terraces of alluvial meadows where the late-summer water table averaged 0.8-1.5 m below the surface. Gully erosion of meadows led to an invasion of this type to formerly wet meadows. Comparisons of grazed and protected floodplain sites showed a tendency for *Artemisia cana* to occur more commonly in grazed than ungrazed habitats of the similar groundwater hydrology.
IVC Environment: This alliance is found at elevations from 500-1500 m in the Great Plains. Precipitation is generally 25-50 cm annually. It occurs most frequently on alluvial terraces and fans, intermittent creek bottoms, and sometimes in mesic swales. Soils are deep and usually fine-textured, though some stands are found on sandy soils. Sites may flood in the spring or after heavy rains but do not stay saturated for extended periods. While surface water does not remain for long, sites receive more moisture than the surrounding uplands from runoff.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the northwestern Great Plains from southern Saskatchewan and southern Alberta to Wyoming and western South Dakota.
IVC Nations: CA,US
IVC States/Provinces: AB, MT, ND, NE, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL001072 *Artemisia cana / Pascopyrum smithii* Wet Shrubland** [Silver Sagebrush / Western Wheatgrass Wet Shrubland] [] G4 (1996-02-01) AB, MT, ND, NE, SD, WY

- **CEGL001553 *Artemisia cana ssp. cana / Hesperostipa comata* Shrub Wet Meadow** [Plains Silver Sagebrush / Needle-and-Thread Shrub Wet Meadow] []
  G3 (1999-12-06) AB, MT, ND, SK?, WY?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A0918 Silverberry Wet Shrubland Alliance

[ ]
Elaeagnus commutata Wet Shrubland Alliance
Silverberry Wet Shrubland

IVC Scientific Name: *Elaeagnus commutata* Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This silverberry shrubland occurs in the northwestern portion of the Great Plains of the United States and Canada. The vegetation forms open thickets within the mixedgrass prairie landscape. *Elaeagnus commutata* is generally a short to medium height shrub, although it can grow up to 5 m. These thickets are often associated with *Rosa woodsii* and *Symphoricarpos occidentalis*. Other plants associated with this type include *Anemone multifida, Campanula rotundifolia, Elymus trachycaulus, Festuca altaica, Geum triflorum, Heuchera richardsonii, Pascopyrum smithii, Potentilla arguta*, and *Symphyotrichum laeve*. This shrubland occurs in relatively open stands. Stands occur on a variety of glacial landforms, including kames, eskers, and areas of till and outwash. They are common on north-facing slopes and sites where moisture is more abundant, including along river valley slopes.
IVC Dynamics: *Elaeagnus commutata* is an increaser species on overgrazed cattle rangelands. Land management practices which modify shrub cover can alter the composition of passerine bird communities in mixedgrass prairie of North Dakota. Many bird species are not attracted to mixedgrass prairie with reduced cover of silverberry. *Elaeagnus commutata* is top-killed by most fires, but patches of shrubs can be maintained by employing partial burns (Esser 1994).
IVC Environment: This alliance of the northern Great Plains occurs at low to moderate elevations in a region of interior continental climate regime. Summers can be hot, while winters are bitterly cold. This alliance is found across a wide range of glacial and fluvial landforms and parent materials, including kames, eskers, glacial drift, outwash and alluvium of considerable textural variety. It also occurs on weathered-in-place materials of northern slopes, protected positions, and river valley slopes. Hulett et al. (1966) found *Elaeagnus commutata* to be most abundant on flat sandy sites in southern Saskatchewan. No other information is available on the distribution patterns of this alliance.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northwestern Great Plains from North Dakota, eastern Wyoming north to southern Manitoba, Alberta and Saskatchewan.
IVC Nations: CA,US
IVC States/Provinces: AB, MB, MT, ND, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001099 *Elaeagnus commutata / Pascopyrum smithii* Wet Shrubland** [Silverberry / Western Wheatgrass Wet Shrubland] []
  G3? (1997-11-14) AB, MB, MT, ND, SK, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.S. Reid, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2017-08-14
IVC Acknowledgments:

A3589 Sandbar Willow Wet Shrubland

[ ]
Salix interior Wet Shrubland Alliance
Great Plains Sandbar Willow Wet Shrubland

IVC Scientific Name: *Salix interior* Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found in the Great Plains along streams and rivers. Shrubs dominate the alliance. Depending on time since the last major disturbance (usually flooding), the shrubs can be short to tall (0-4 m). *Salix interior* is the dominant shrub, but other shrubs or saplings are common, including *Cornus sericea, Populus deltoides, Salix amygdaloides, Salix eriocephala, Salix lutea*, and *Salix nigra* (in the east). The understory is usually moderate to lush but can be sparse if subject to a recent major flood. The herbaceous layer is typically dominated by mid and tall graminoids such as *Carex* spp., *Pascopyrum smithii, Panicum virgatum, Spartina pectinata*, and *Schoenoplectus* spp. (in wetter areas). Other common herbaceous species include *Ambrosia artemisiifolia, Equisetum hyemale, Polygonum* spp., and *Xanthium strumarium*.
IVC Dynamics: Flooding affects stands of this alliance frequently. Scouring or deposition from flooding is necessary to maintain stands or create new habitat for this early-successional vegetation type. In the prolonged absence of floods, stands succeed to riparian woodlands or forests.
IVC Environment: Soils are poorly developed or absent. The substrate is typically alluvial sand or gravel, though finer sediments can occur in places.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the central and northern Great Plains from Kansas to southern Saskatchewan and west to southern Alberta, central Montana, and eastern Colorado.
IVC Nations: CA,US
IVC States/Provinces: AB, CO, KS, MT, ND, NE, OK, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-01-08
IVC Acknowledgments:

A3590 Buffaloberry Wet Shrubland Alliance

[ ]

Shepherdia argentea Wet Shrubland Alliance

Buffaloberry Wet Shrubland

IVC Scientific Name: *Shepherdia argentea* Wet Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The vegetation of this mesic shrubland alliance is dominated by a moderate to dense canopy of medium-tall shrubs. The most abundant of these, *Shepherdia argentea*, is typically 1.5-3 m tall. Other common shrub species are *Juniperus horizontalis, Prunus virginiana, Ribes* spp., *Rhus aromatica, Rosa woodsii*, and *Symphoricarpos occidentalis*. Graminoids and forbs may have only half the coverage of the shrub layer. Graminoids include *Poa pratensis, Pascopyrum smithii*, and *Bromus* spp. Common forbs are *Achillea millefolium, Artemisia ludoviciana*, and *Parietaria pensylvanica*. This alliance is found in the northern Great Plains of the United States and Canada. Stands occur on stream terraces, rolling uplands, and badlands, and where moisture is more plentiful than on the surrounding landscape, such as in swales, ravines, near streams, and on northwest- to east-facing slopes. This community occurs in a predominantly prairie landscape as either narrow bands along streams or in small thickets.

IVC Dynamics:

IVC Environment: The vegetation in this alliance occurs in riparian habitats in the Rocky Mountains and in moist swales in the glaciated region of the northern Great Plains. It occurs where moisture is more plentiful than on the surrounding landscape, such as in swales, ravines, near streams, and on northwest- to east-facing slopes (Hansen and Hoffman 1988, DeVelice et al. 1995). This trend is more pronounced in Wyoming where Jones and Walford (1995) found this alliance only near streams, and may be less pronounced in Saskatchewan and northern Montana. Stands are located on terraces above the floodplain of large rivers, on small and intermittent creeks, and on hillsides below springs or seeps in the Rockies and in moist depressions in rolling prairie uplands. Stands are found between 500-1600 m elevation on the plains and in the northern Rockies and between 1950-2150 m in Colorado. Soils are classified predominantly as Entisols (Fluvents) or Mollisols (Borolls). Soil textures range from well-drained loamy sands to somewhat poorly drained silty clay loams and are derived from glacial drift, siltstone, or sandstone (USFS 1992, DeVelice et al. 1995). The vegetation is tolerant of brief flooding. Adjacent riparian vegetation includes *Acer negundo, Fraxinus pennsylvanica, Populus angustifolia, Populus deltoides*, and *Salix amygdaloides* woodlands and *Cornus sericea* and *Salix exigua* shrublands.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the northern Great Plains, in the Rocky Mountains, and on the Colorado Plateau and high plateaus of Utah. The alliance is found from southern Saskatchewan and Alberta, Canada, south through the Dakotas, Montana, Wyoming, western Colorado, and Utah.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, MT, ND, NE, SD, SK, UT, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001128 *Shepherdia argentea* Wet Shrubland** [Silver Buffaloberry Wet Shrubland] []
  G3G4 (1996-02-01) AB, CO, MT, ND, NE, SD, SK, UT, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake

IVC Description Date: 2014-01-08

IVC Acknowledgments:

G568 Great Plains Riverscour Vegetation

[ ]

IVC Colloquial Name: Great Plains Riverscour Vegetation
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group encompasses sites within the scour zone of stream channels in the Great Plains from the U.S.-Canadian border region south to the U.S.-Mexican border region. It is more common in the western Great Plains than the eastern Great Plains. Examples of this group are found in watercourses that have been recently scoured by flooding. These can be beds of intermittent streams or in the floodplains of more permanent streams or rivers which have frequent flooding. Stands can have sparse cover of short shrubs or tree seedlings or herbaceous species. Frequent scouring prevents more dense vegetation from developing. *Salix* spp., and particularly *Salix interior*, are the most common shrubs. Seedlings of *Populus deltoides* can be present. The herbaceous component is diverse and can have significant amounts of exotic species. Species such as *Sporobolus cryptandrus, Artemisia campestris, Juncus articulatus, Polygonum* spp., and the exotics *Agrostis stolonifera, Bidens frondosa*, and *Trifolium repens* are common in much of the Great Plains with *Andropogon glomeratus* and *Panicum virgatum* often abundant in south Texas.

IVC Dynamics: These are disturbance-driven communities that require flooding, scour, and deposition for germination and maintenance.

IVC Environment: Stands can be found in deep-cut ravines or wide, braided channels. Soils are recently deposited or re-worked, coarse-textured alluvium. Water input is usually from overland flow, local precipitation, or groundwater discharge and not from major perennial tributary streams. Flooding is important to create sites for establishment of plants in the group and in controlling succession to other vegetation types. This group is more likely in the Western Great Plains where the water sources are less consistent and scouring flood events followed by a drop in water levels are more frequent.

DISTRIBUTION

IVC Geographic Range: This group occurs throughout the western and central Great Plains from the U.S.-Canadian border region south to the Texas-Mexico border area.

IVC Nations: CA?,MX?,US

IVC States/Provinces: AB?, CO, COA?, IA?, KS, MT, ND, NE, OK, SD, SK?, TX, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G2 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2011)

IVC Description Author: J. Drake

IVC Description Date: 2015-05-08

IVC Acknowledgments:

M303 Eastern-Southeastern North American Ruderal Marsh, Wet Meadow & Shrubland

[ ]

IVC Colloquial Name: Eastern-Southeastern North American Ruderal Marsh, Wet Meadow & Shrubland
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup includes disturbed marshes and wet meadows in the eastern and southeastern United States and southeastern Canada, which are dominated by native ruderal or exotic species. This macrogroup is composed of herbaceous- or shrub-dominated, temporarily, irregularly, seasonally or semipermanently flooded wetlands. Sites often have a history of significant disturbance such as heavy pasturing, agricultural or urban stormwater runoff, or alteration in hydrologic regimes. Along with the wide range in flooding regimes, there can be a wide variety of dominant species, some of which can form near monocultures. Some common herbaceous dominants include *Juncus effusus, Lythrum salicaria, Phalaris arundinacea*, exotic *Phragmites australis* (chloroplast haplotype M), *Fallopia japonica var. japonica, Scirpus cyperinus*, and *Typha* spp. Typical shrubs include *Ligustrum sinense, Lonicera maackii*, and in southern coastal areas *Tamarix* spp.

IVC Geographic Range: This macrogroup is widespread across the eastern and southeastern United States and southeastern Canada.

IVC Nations: CA,MX,US

IVC States/Provinces: AL, AR, CT, DC?, DE, FL, GA, IA, IL, IN, KS?, KY, LA, LB?, MA, MD, ME, MI, MN, MO, MS, NB, NC, NF?, NH, NJ, NS, NY, OH, OK, ON, PA, PE, QC, RI, SC, TAM?, TN, TX, VA, VT, WI, WV

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G556 Eastern Ruderal Wet Meadow & Marsh []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: C. Nordman and C. Lea

IVC Description Date: 2015-06-05

IVC Acknowledgments: Jim Drake of NatureServe made many contributions to our understanding of this marsh vegetation.

G556 Eastern Ruderal Wet Meadow & Marsh

[ ]

IVC Colloquial Name: Eastern Ruderal Wet Meadow & Marsh
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group includes heavily disturbed marshes and wet meadows in the eastern half of the United States north of a line running from North Carolina to Arkansas, which are usually dominated or at least have a strong component of exotic species. This group is composed of herbaceous-dominated, seasonal to semipermanently flooded wetlands. Sites often have a history of significant disturbance such as heavy pasturing, chemical and soil run-off from nearby fields or developed areas, or alteration in hydrologic regimes. Along with the wide range in flooding regimes, there can be a wide variety of dominant species, some of which can form near monocultures. Some common dominants include *Lythrum salicaria, Phalaris arundinacea, Phragmites australis, Fallopia japonica var. japonica*, and *Typha* spp.

IVC Dynamics: Hydrologic variation, increased flooding or drying, can have a great impact on these sites. The variation may be the result of natural causes or, because many sites are significantly impacted by human activities, anthropogenic in origin (flooding or drawing down impoundments, construction activity, etc.).

IVC Environment: Examples of this group occur in basins, either artificial or natural, along lakeshores or pondshores, or sometimes along slow-moving rivers or streams. They are flooded for at least some portion of the growing season. Flooding can range from short, shallow flooding that dries out during the growing season to semipermanent flooding where surface water is present year-round most years. Sites have often been disturbed, either from natural processes, such as flooding, or anthropogenic

actions. Due to their aggressive nature, the dominant species in this group do not require disturbance to remove native species before invading an area. Most sites are eutrophic, either naturally or as a result of increased nutrient input from agricultural or urban sources.

DISTRIBUTION

IVC Geographic Range: This group is widespread across the northern and central United States from the Atlantic Ocean to the Great Plains and from Virginia and Missouri north into southern Canada. It likely extends into North Carolina, Tennessee, and possibly Georgia in the Appalachian Mountains.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC?, DE, FL, GA, IA, IL, IN, KY, LA, LB?, MA, MD, ME, MI, MN, MO, MS, NB, NC, NF?, NH, NJ, NS, NY, OH, ON, PA, PE, QC, RI, SC, TN, TX, VA, VT, WI, WV

IVC Omernik Ecoregions: 5.2.1.50:P, 5.2.2.49:P, 5.3.1.58:P, 5.3.3.62:P, 8.1.1.83:P, 8.1.3.60:P, 8.1.4.51:P, 8.1.5.52:P, 8.1.6.56:P, 8.1.7.59:P, 8.1.8.82:P, 8.1.10.61:P, 8.2.1.53:P, 8.2.2.57:P, 8.2.3.54:P, 8.2.4.55:P, 8.3.1.64:P, 8.3.2.72:P, 8.3.3.71:P, 8.3.4.45:P, 8.4.1.67:P, 8.4.2.69:P, 8.4.3.70:P, 8.4.4.66:P, 8.4.5.39:P, 8.4.6.38:P, 8.4.7.37:P, 8.4.8.36:P, 8.4.9.68:P, 8.5.4.84:P, 9.2.1.46:P, 9.2.2.48:P, 9.2.3.47:P, 9.2.4.40:P, 9.3.1.42:P, 9.3.4.44:P, 9.4.2.27:P, 9.4.4.28:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2010-12-06)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1381 *Phalaris arundinacea* Eastern Ruderal Marsh Alliance** [Reed Canarygrass Ruderal Marsh Alliance] []
  This alliance is found throughout the northeastern and midwestern United States in wetlands that are dominated by *Phalaris arundinacea*, which tends to occur in monocultures or associated with *Calamagrostis canadensis*.
- **A1431 *Phragmites australis ssp. australis* Ruderal Marsh Alliance** [European Common Reed Ruderal Marsh Alliance] []
  This alliance consists of non-tidal *Phragmites australis ssp. australis* marshes with semipermanently or, rarely, seasonally flooded hydrology, occurring either in depressions or along rivers with seasonal fluctuation in water level throughout the United States and adjacent Canada.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2011)

IVC Description Author: J. Drake

IVC Description Date: 2015-05-19

IVC Acknowledgments: Sean Basquill

A1381 Reed Canarygrass Ruderal Marsh Alliance

[ ]

Phalaris arundinacea Eastern Ruderal Marsh Alliance

Eastern Ruderal Reed Canarygrass Marsh

IVC Scientific Name: *Phalaris arundinacea* Eastern Ruderal Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is found throughout the northeastern and midwestern United States, but its distribution as a natural type is complicated elsewhere. Stands are typically minerotrophic wetlands rather than river shores. Stands are dominated by *Phalaris arundinacea*, which tends to occur in monocultures or associated with *Calamagrostis canadensis*. Other associates in the Northeast include *Agrostis gigantea, Alnus incana* or *Alnus serrulata, Viburnum dentatum*, and *Viburnum nudum*. Western stands tend to be monotypic. Further work is required to resolve the natural versus introduced nature of this type in North America before a thorough alliance description can be completed.

IVC Dynamics: This alliance can be significantly impacted by severe flooding, which can reduce cover of the dominant species significantly.

IVC Environment: Stands are typically minerotrophic wetlands in basins or floodplains away from the main channel where water is still or slow-moving.

DISTRIBUTION

IVC Geographic Range: This alliance is found widely across the northeastern and midwestern United States and southern Canada.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, IA, IN, MA, MD, ME, MN, MO, NH, NJ, NY, OH, ON, PA, QC, RI, TN, VA, VT, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2015-12-11)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL006044 *Phalaris arundinacea* Eastern Ruderal Marsh** [Reed Canarygrass Eastern Ruderal Marsh] []
  GNA (1997-12-01) CT, DE, IA, IN, MA, MD, ME, MN, MO, NH, NJ, NY, OH, ON, PA, RI, TN, VA, VT, WI?, WV

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.S. Reid and L. Allen, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A1431 European Common Reed Ruderal Marsh Alliance

[ ]
Phragmites australis ssp. australis Ruderal Marsh Alliance
Ruderal Non-tidal Common Reed Marsh

IVC Scientific Name: *Phragmites australis ssp. australis* Ruderal Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of non-tidal *Phragmites australis ssp. australis* marshes with semipermanently or, rarely, seasonally flooded hydrology, occurring either in depressions or along rivers with seasonal fluctuation in water level throughout the United States and adjacent Canada. This includes semipermanently flooded marshes, ditches, impoundments, etc., which are strongly dominated by essentially monospecific stands of *Phragmites australis*, which is rapidly spreading in disturbed areas and excluding native vegetation. Stands may be composed entirely of *Phragmites australis*, with few or no other vascular plants present.
IVC Dynamics: The presence of this alliance in wetlands today generally indicates human-induced disturbance, either through direct habitat manipulation or through passive introduction of reproductive material to naturally disturbed substrates (Marks et al. 1994). Although *Phragmites australis* is apparently a native component of salt marshes (rhizomes have been noted in salt marsh sediments exceeding 3000 years in age) (Niering and Warren 1977), the expression of the species in its purely native condition was likely to have been significantly different from the dense monotypic stands that characterize most present expressions of *Phragmites australis*-dominated vegetation.
IVC Environment: This alliance is found in non-tidal marshes with semipermanently or, rarely, seasonally flooded hydrology, either in depressions or along rivers with seasonal fluctuation in water level throughout the United States and adjacent Canada. This includes semipermanently flooded marshes, ditches, impoundments, etc.

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout the eastern half of the United States and southern Canada in non-tidal settings.
IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DC?, DE, FL, GA, IA, IN, LA, LB?, MA, MD, ME, MI, MN, MS, NC, NF?, NH, NJ, NS?, NY, OH, ON, PA, PE?, QC, RI, SC, TX, VA, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2015-02-17)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL004141 *Phragmites australis ssp. australis* Eastern Ruderal Marsh** [European Common Reed Eastern Ruderal Marsh] []
  This reed marsh, usually strongly dominated by *Phragmites australis ssp. australis*, with few or no other vascular plants present, is found across the east-temperate regions of the United States and Canada. GNA (1997-11-23) AL, AR, CT, DE, FL, GA, IA, IN, LA, MA, MD, ME, MI, MN, MS, NC, NH, NJ, NY, OH, ON, PA, RI, SC, TX, VA, VT, WI, WV
- **CEGL004187 *Phragmites australis ssp. australis* Tidal Ruderal Marsh** [European Common Reed Tidal Ruderal Marsh] []
  This community is a dense tall grassland indicative of disturbance, characterized by dense stands of *Phragmites australis ssp. australis*, an exotic taxon which tends to grow in colonies of tall, stout, leafy plants often to the exclusion of all other vascular plant species. GNA (1997-11-22) AL, CT, DC?, DE, FL, GA, LA, LB?, MA, MD, ME, MS, NC, NF?, NH, NJ, NS?, NY, PA, PE?, QC?, RI, SC, TX, VA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D.J. Allard, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake and M. Pyne

IVC Description Date: 2015-10-21

IVC Acknowledgments:

M067 Atlantic & Gulf Coastal Plain Wet Prairie & Marsh

[ ]

IVC Colloquial Name: Atlantic & Gulf Coastal Plain Wet Prairie & Marsh

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: Common taxa of these marshes and wet prairies include species of *Eleocharis, Fimbristylis, Panicum, Rhynchospora, Sarracenia*, and *Xyris*. Also included are warm-temperate shrub swamps dominated by the shrubs *Cephalanthus occidentalis, Vaccinium corymbosum, Vaccinium formosum*, or *Vaccinium fuscatum*. These wetlands occur on the Atlantic and Gulf coastal plains in depressions and basins, seepage slopes, interdunal swales and poorly drained wet flats. The vegetation ranges from floating-leaved aquatics in deeper basins, to emergent marsh in semipermanent water, to drawdown zones with diverse small graminoid and forb vegetation, to shrub swamp and shrub edges. Wet prairie vegetation is also found on extensive wet flats and consists of primarily herbaceous wetland vegetation with relatively thick cover of graminoid species. Examples occupy low, flat plains on poorly drained soils, often saturated for 50-100 days per year. In addition to saturation or flooding, occasional to frequent fires, including during the early growing season, promote the maintenance of this vegetation.

IVC Geographic Range: This macrogroup occurs primarily in the warm-temperate climatic zone on the Atlantic and Gulf coastal plains, including the Mississippi Embayment. It ranges from Massachusetts to Florida and Texas, and also rarely occurs in the Great Lakes region of the United States and Canada (Ontario).

IVC Nations: CA,MX?,US

IVC States/Provinces: AL, AR, CT, DC, DE, FL, GA, IN, KY, LA, MA, MD, ME, MI, MS, NC, NH, NJ, NS?, NY, OK, ON, PA?, QC, RI, SC, TAM?, TN, TX, VA, VT, WI, WV

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G752 North Atlantic Coastal Interdunal Wetland []**
- **G916 North Atlantic Coastal Plain Pondshore []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: C.W. Nordman and A.S. Weakley

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G752 North Atlantic Coastal Interdunal Wetland

[ ]

IVC Colloquial Name: North Atlantic Coastal Interdunal Wetland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group comprises small-patch non-forested wetlands exclusive of those that are tidally flooded in maritime and coastal areas of the northeast and mid-Atlantic states. It includes small-patch wetlands generally known as "interdunal swales" as well as other non-forested coastal wetlands that are not tidally flooded. Characteristic species include *Fimbristylis castanea, Morella cerifera, Morella pensylvanica, Panicum virgatum, Schoenoplectus pungens, Vaccinium corymbosum, Vaccinium macrocarpon*, and species of *Juncus*.

IVC Dynamics: Groundwater and rainwater are the only sources of inundation, and water levels decrease or standing water may absent later in the growing season. Some interdunal swales are slightly saline as a result of occasional overwash.

IVC Environment: These small-patch wetlands occur in shallow, seasonally flooded basins occurring in hollows of major dune systems. They also occur on the shores of larger, sometimes deeper ponds that occur on morainal deposits in the glaciated part of the region.

DISTRIBUTION

IVC Geographic Range: This group ranges from Maine south along the immediate coast to South Carolina discontinuously to Florida. This group may also occur in southern Canada.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, MA, MD, ME, NC, NH, NJ, NY, QC, RI, SC, VA
IVC Omernik Ecoregions: 8.1.7.59:C, 8.1.8.82:C, 8.5.1.63:C, 8.5.4.84:C

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G2G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range restricted, long-term decline moderate to high, and threats high from development, all-terrain vehicles, and from invasive species.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3653 *Schoenoplectus pungens - Spartina patens* Interdunal Marsh Alliance** [Common Threesquare - Saltmeadow Cordgrass Interdunal Marsh Alliance] []
  This alliance contains interdunal swale vegetation characterized by *Spartina patens* and *Schoenoplectus pungens*. It ranges from freshwater to slightly brackish, the latter resulting from occasional overwash or brackish groundwater influence, and occurs from southern New England along the coast to Virginia.
- **A3651 *Vaccinium macrocarpon* Coastal Wet Shrubland Alliance** [Cranberry Coastal Wet Shrubland Alliance] []
  This alliance is made up of interdunal swales, as well as peaty basin wetlands underlain by morainal deposits, from New England south to Delaware. The dwarf-shrub *Vaccinium macrocarpon* forms a low thicket, sometimes overtopped and obscured by other shrubs and tall herbs. Scattered *Morella pensylvanica, Vaccinium corymbosum, Clethra alnifolia*, and other shrubs may be prominent.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: P.C. Swain and J.B. Kearsley (2011); G.P. Fleming et al. (2013)
IVC Description Author: L.A. Sneddon
IVC Description Date: 2015-05-13
IVC Acknowledgments:

A3653 Common Threesquare - Saltmeadow Cordgrass Interdunal Marsh Alliance

[ ]
Schoenoplectus pungens - Spartina patens Interdunal Marsh Alliance
Common Threesquare Interdunal Swale

IVC Scientific Name: *Schoenoplectus pungens - Spartina patens* Interdunal Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance contains interdunal swale vegetation characterized by *Spartina patens* and *Schoenoplectus pungens*. Associates include a mixture of freshwater and brackish species such as *Cyperus polystachyos, Distichlis spicata, Eleocharis parvula, Hibiscus moscheutos, Juncus canadensis, Pluchea odorata, Sabatia stellaris, Schoenoplectus americanus, Solidago sempervirens*, and *Thelypteris palustris*. It ranges from freshwater to slightly brackish, resulting from occasional overwash or brackish groundwater influence, and occurs from southern New England along the coast to Virginia. The substrate is sand with an organic layer of variable depth.

IVC Dynamics: This wetland vegetation is seasonally flooded by groundwater, rainwater, and occasional overwash. The depression may hold standing water early in the growing season or following lunar tidal flooding, but generally dries as the water table drops through the growing season.

IVC Environment: This alliance occurs in interdunal swales with fresh to slightly brackish conditions. The substrate is sand with an organic layer of variable depth.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from southern New England along the coast to Virginia.

IVC Nations: CA,US

IVC States/Provinces: DE, MA, MD, NJ, NY, QC, VA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006935** ***Schoenoplectus pungens var. pungens - Juncus canadensis*** **Marsh** [Common Threesquare - Canadian Rush Marsh] [] GNR. MA, NJ, NY
- **CEGL006342** ***Spartina patens - Eleocharis parvula*** **Marsh** [Saltmeadow Cordgrass - Dwarf Spikerush Marsh] [] G2G4 (2013-09-06) DE, MA, MD, NJ, NY, VA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: New York Natural Heritage Program (2013s)

IVC Description Author: L. Sneddon

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A3651 Cranberry Coastal Wet Shrubland Alliance

[ ]

Vaccinium macrocarpon Coastal Wet Shrubland Alliance

Coastal Cranberry Wet Shrubland

IVC Scientific Name: *Vaccinium macrocarpon* Coastal Wet Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is made up of interdunal swales, as well as and peaty basin wetlands underlain by morainal deposits, from New England south to Delaware. The dwarf-shrub *Vaccinium macrocarpon* forms a low thicket, sometimes overtopped and obscured by other shrubs and tall herbs. Scattered *Morella pensylvanica, Vaccinium corymbosum, Clethra alnifolia*, and other shrubs may be prominent. *Morella pensylvanica*, although a minor component of the vegetation and generally restricted to the wetland edge, characterizes this community as coastal. Associated species commonly include *Cladium mariscoides, Xyris torta, Xyris difformis, Rhynchospora capitellata, Rhynchospora alba, Cyperus* spp., *Drosera rotundifolia, Drosera intermedia, Drosera filiformis, Woodwardia virginica, Onoclea sensibilis, Pogonia ophioglossoides*, and scattered clumps of *Schoenoplectus pungens* or *Scirpus cyperinus* in small wet pockets. *Sphagnum* spp. (*Sphagnum rubellum, Sphagnum compactum*, and possibly others) cover the substrate. This alliance occurs most frequently in a maritime interdunal swale setting, seasonally flooded by groundwater and rainwater. It also occurs less commonly in saturated peaty basins of moraines, usually on coastal islands where *Chamaedaphne calyculata* is absent.

IVC Dynamics: On coastal dunes, this vegetation is relatively stable, occurring in protected backdune swales. Groundwater and rainwater provide the source of seasonal flooding, and drying occurs as the water table drops during the growing season. On morainal bogs, the water table is more constant, and the substrate is generally deeper peat.

IVC Environment: This alliance occurs most frequently in a maritime interdunal swale setting, seasonally flooded by groundwater and rainwater. It also occurs less commonly in saturated peaty basins of moraines, usually on coastal islands where *Chamaedaphne calyculata* is absent.

DISTRIBUTION

IVC Geographic Range: This alliance occurs from New England south to Delaware.
IVC Nations: CA,US
IVC States/Provinces: DE, MA, NH, NJ, NY, QC, RI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006141 *Cladium mariscoides / Vaccinium macrocarpon - Morella pensylvanica* Wet Dwarf-shrubland** [Smooth Sawgrass / Cranberry - Northern Bayberry Wet Dwarf-shrubland] []
  G2G3 (2007-01-31) DE, MA, NJ, NY, RI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Lundgren et al. (2002)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

G916 North Atlantic Coastal Plain Pondshore

[ ]

IVC Colloquial Name: North Atlantic Coastal Plain Pondshore
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These eastern coastal plain depression wetlands occur in the North Atlantic coastal plain, from Virginia north to Nova Scotia, and inland to Michigan and Wisconsin. The vegetation in depressions usually ranges from open water or floating-leaved aquatics in the center of the deepest basins, to emergent marsh zones in semipermanent water, to drawdown zones with diverse small graminoid and forb vegetation, to dense shrub or woodland edges. Wet prairie vegetation is found on extensive wet flats and consists of primarily herbaceous wetland vegetation with relatively thick cover of grasses and sedge species. Examples occupy low, flat plains on poorly drained soils, often saturated for 50-100 days per year. Occasional to frequent fires, including growing-season burns, are essential for maintenance of this vegetation. Some examples have a sparse tree or shrub component, such as *Pinus rigida* and *Morella pensylvanica* to the north. Common taxa include *Rhynchospora* spp., *Eleocharis* spp., and *Xyris* spp. These often occur with other graminoids such as species of *Andropogon, Aristida, Carex, Eriocaulon*, and *Panicum*.
IVC Dynamics: Water table fluctuations are probably the most important factor affecting examples of this vegetation (Bridges and Orzell 1989a). In depressions, hydroperiod can vary substantially from year to year, and vegetation can similarly vary significantly in aspect and dominants. Fire is also an important natural dynamic process, especially when sites are saturated, without standing water at the surface. On barrier islands, ponds usually occur in stable portions of the islands, where they may last for decades.
IVC Environment: *Climate:* From eastern Virginia northward to the Maritimes, the climate is humid, cool temperate.
Soil/substrate/hydrology: This vegetation occupies low, flat plains on poorly drained soils (Collins et al. 2001); some of these soils have an argillic horizon which impedes drainage and contributes to high water tables. The vegetation also occurs in small basins, primarily in sandy terrain of the Atlantic Coastal Plain.

DISTRIBUTION

IVC Geographic Range: These eastern coastal plain depression wetlands occur in the North Atlantic coastal plain, from Virginia north to Nova Scotia, and inland to Michigan and Wisconsin. Sites are typically poorly drained flats, or in limesinks in areas influenced by karst. The vegetation is dominated by graminoid herbs such as *Rhynchospora* spp., *Eleocharis* spp., and *Xyris* spp. with other graminoid herbs such as species of *Andropogon, Aristida, Carex, Eriocaulon*, and *Panicum*.

IVC Nations: CA,US

IVC States/Provinces: AL, CT, DE, IN, MA, MD, ME, MI, NC, NH, NJ, NS?, NY, ON, QC?, RI, SC, VA, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, long-term decline high from development, and threats high from all-terrain vehicles, lack of fire and invasive species.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1429 *Eleocharis* spp. - *Eriocaulon aquaticum* Coastal Plain Pondshore Marsh Alliance** [Spikerush species - Seven-angle Pipewort Coastal Plain Pondshore Marsh Alliance] []
  This alliance includes short graminoid vegetation of semipermanently flooded zones of northern Atlantic Coastal Plain pondshores dominated or codominated by *Eleocharis* spp., *Eriocaulon aquaticum*, or *Xyris difformis*.
- **A4404 *Rhynchospora macrostachya - Cladium mariscoides - Rhexia virginica* Marsh Alliance** [Tall Horned Beaksedge - Smooth Sawgrass - Virginia Meadowbeauty Marsh Alliance] []
  This inland coastal plain marsh community is found in the central Great Lakes region.
- **A3397 *Rhynchospora* spp. - *Calamagrostis canadensis - Rhexia virginica* Coastal Plain Pondshore Marsh Alliance** [Beaksedge species - Bluejoint - Virginia Meadowbeauty Coastal Plain Pondshore Marsh Alliance] []
  Depression ponds with herbaceous graminoid wetland vegetation on the Northern Atlantic Coastal Plain, not including the wetland vegetation of coastal interdunal swales.
- **A1384 *Rhynchospora* spp. - *Panicum rigidulum - Panicum verrucosum* Pondshore Marsh Alliance** [Beaksedge species - Redtop Panicgrass - Warty Panicgrass Pondshore Marsh Alliance] []
  These herbaceous graminoid depression ponds are dominated by *Panicum rigidulum, Panicum verrucosum, Rhexia virginica, Rhynchospora* spp., and *Saccharum giganteum*, occurring on the Atlantic Coastal Plain from Nova Scotia south to Virginia, and disjunct in the Great Lakes area, the Great Valley of Virginia, northern Alabama, and central Tennessee.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author: C.W. Nordman, D. Faber-Langendoen and J. Lundgren

IVC Description Date:

IVC Acknowledgments:

A1429 Spikerush species - Seven-angle Pipewort Coastal Plain Pondshore Marsh Alliance

[ ]

Eleocharis spp. - *Eriocaulon aquaticum* Coastal Plain Pondshore Marsh Alliance

Northern Coastal & Inland Sandy Lakeshore Marsh

IVC Scientific Name: *Eleocharis* spp. - *Eriocaulon aquaticum* Coastal Plain Pondshore Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes short graminoid vegetation of semipermanently flooded zones of northern Atlantic Coastal Plain pondshores dominated or codominated by *Eleocharis* spp., *Eriocaulon aquaticum*, or *Xyris difformis*. These wetlands occur in New England and possibly in Nova Scotia.

IVC Dynamics: Stands of this alliance are prone to seasonal flooding, and drying in the summer and during periods of drought.

IVC Environment: This short graminoid vegetation occurs in semipermanently flooded zones of coastal plain pondshores.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northeastern U.S. from Maine to Delaware, and possibly in Nova Scotia and elsewhere in Canada.

IVC Nations: CA,US

IVC States/Provinces: CT, MA, ME, NH, NJ, NY, ON?, QC?, RI, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006345 *Juncus militaris - Eriocaulon aquaticum* Marsh** [Bayonet Rush - Seven-angle Pipewort Marsh] []
  GNR. MA, ME, NH, NY, ON?, RI
- **CEGL006346 *Eriocaulon aquaticum - Lobelia dortmanna* Marsh** [Seven-angle Pipewort - Dortmann's Cardinal-flower Marsh] []
  GNR. CT, MA, ME, NH, NY, ON?, RI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: C. Nordman, in Faber-Langendoen et al. (2013)

IVC Description Author: C. Nordman

IVC Description Date: 2014-01-08

IVC Acknowledgments:

A4404 Tall Horned Beaksedge - Smooth Sawgrass - Virginia Meadowbeauty Marsh Alliance

[ ]

Rhynchospora macrostachya - Cladium mariscoides - Rhexia virginica Marsh Alliance

Great Lakes Coastal Plain Marsh

IVC Scientific Name: *Rhynchospora macrostachya - Cladium mariscoides - Rhexia virginica* Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This inland coastal plain marsh community is found in the central Great Lakes region. Stands occur on sandy pitted outwash plains and glacial lakeplains. This plant community typically forms a distinct zonation in concentric bands: open water (when present); shallow water to recently emerged shore dominated by annual plant species and emergents; moist meadow typically dominated by *Calamagrostis canadensis* and sometimes *Cladium mariscoides, Rhynchospora capitellata, Carex scoparia*, etc.; and shrub tree margin (when present), often with *Acer rubrum, Nyssa sylvatica, Quercus palustris, Aronia melanocarpa, Vaccinium corymbosum, Cornus* spp., or *Cephalanthus occidentalis*. A number of common indicator species from the northern Atlantic Coastal Plain are either disjunct or range west into the Lower Great Lakes region, including *Eleocharis melanocarpa, Euthamia gymnospermoides, Fuirena squarrosa, Dichanthelium spretum, Lycopodiella appressa, Polygala cruciata, Rhynchospora scirpoides, Rhynchospora macrostachya, Rotala ramosior, Scleria reticularis, Stachys hyssopifolia, Symphyotrichum dumosum,* and *Triadenum virginicum*. About 48 species, including 11 indicators, are common components of

this community; species include *Dichanthelium meridionale, Eriocaulon aquaticum, Fimbristylis autumnalis, Lipocarpha micrantha, Rhexia virginica, Schoenoplectiella smithii, Viola lanceolata*, and *Xyris difformis*. The level topography of these plains produces gently sloping, shallow basins with no outlets and sometimes no inlets. Some stands in Michigan are found along lakeshores. The water table fluctuates seasonally and yearly. It is highest in late winter and spring, and during years of high precipitation. The soils in this community are derived mainly from nutrient-poor to circumneutral, acidic (pH 4.4-7.0) sands and peats. The peat mixes with sand or forms more or less pure deposits.

IVC Dynamics: The water table fluctuates seasonally and yearly. It is highest in late winter and spring, and during years of high precipitation. A succession of wet or dry years can cause the vegetation zones to shift slightly up- or downslope. Longer term climatic effects and migration patterns are discussed by Reznicek (1994) and Jackson and Singer (1997). In particular, Jackson and Singer (1987) report that coastal plain disjuncts in northwestern Indiana probably arrived about 5700 years BP, during the mid-Holocene warming, but some species, such as *Fuirena pumila* and *Eleocharis equisetoides*, have since gone extinct, probably prior to human occupation of the basin.

IVC Environment: Stands occur on sandy pitted outwash plains and glacial lakeplains, in depressions or, less commonly, along lakeshores. The level topography of these plains produces gently sloping, shallow basins with no outlets and sometimes no inlets, with fluctuating water tables. The soils in this community are derived mainly from nutrient-poor to circumneutral, acidic (pH 4.4-7.0) sands. These conditions inhibit microbial decomposition and considerable organic material accumulates as peat. The peat mixes with sand or forms more-or-less pure deposits.

DISTRIBUTION

IVC Geographic Range: This inland coastal plain marsh community is found in the central Great Lakes region, including Wisconsin, Indiana, Michigan, Ontario, and possibly New York and Québec.

IVC Nations: CA,US

IVC States/Provinces: IN, MI, NY, ON, QC?, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005091 *Chamaedaphne calyculata / Carex oligosperma / Sphagnum* spp. Acidic Peatland** [Leatherleaf / Few-seed Sedge / Peatmoss species Acidic Peatland] []
  G3Q (1998-06-22) MI, ON?, WI
- **CEGL005108 *Rhynchospora capitellata - Rhexia virginica - Rhynchospora scirpoides - Schoenoplectiella hallii* Marsh** [Brownish Beaksedge - Virginia Meadowbeauty - Longbeak Beaksedge - Hall's Bulrush Marsh] []
  G2? (1998-06-22) IN, MI, ON, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021c)

IVC Description Author: D. Faber-Langendoen, J. Drake

IVC Description Date:

IVC Acknowledgments:

A3397 Beaksedge species - Bluejoint - Virginia Meadowbeauty Coastal Plain Pondshore Marsh Alliance

[ ]

Rhynchospora spp. - *Calamagrostis canadensis* - *Rhexia virginica* Coastal Plain Pondshore Marsh Alliance

Mid-Atlantic Coastal Pondshore Marsh

IVC Scientific Name: *Rhynchospora* spp. - *Calamagrostis canadensis* - *Rhexia virginica* Coastal Plain Pondshore Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These are depression ponds with herbaceous graminoid wetland vegetation on the Northern Atlantic Coastal Plain. These do not include the wetland vegetation of coastal interdunal swales. This alliance includes seasonally flooded wetland depressions, often dominated by *Calamagrostis canadensis, Rhexia virginica, Rhynchospora* spp., and *Woodwardia virginica*, which occur in acidic sands of the Coastal Plain. Additional associates include *Carex striata, Decodon verticillatus, Hypericum mutilum*, and *Triadenum virginicum*. More information is needed on the expression of this small-scale alliance. The vegetation may be tall, reaching up to 1.5 m in height. It is attributed to various states in the Atlantic Coastal Plain from Virginia to Massachusetts, as well as Maine and Ontario.

IVC Dynamics: These wetland depressions are prone to flooding, especially in the winter when evapotranspiration is low. They tend to dry out in the summer, especially during drought.

IVC Environment: Stands of this alliance are seasonally flooded wetland depressions or ponds which occur in acidic sands of the Northern Atlantic Coastal Plain.

DISTRIBUTION

IVC Geographic Range: This alliance is found on the Northern Atlantic Coastal Plain from Virginia to Massachusetts. Two associations included here also range north to Maine and Ontario.

IVC Nations: CA,US

IVC States/Provinces: CT, DE, MA, MD, NC, NJ, NY, RI, SC, VA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: C. Nordman, in Faber-Langendoen et al. (2013)

IVC Description Author: C. Nordman

IVC Description Date: 2014-01-08

IVC Acknowledgments:

A1384 Beaksedge species - Redtop Panicgrass - Warty Panicgrass Pondshore Marsh Alliance

[ ]

Rhynchospora spp. - *Panicum rigidulum* - *Panicum verrucosum* Pondshore Marsh Alliance

Northern Coastal Sandplain Pondshore Marsh

IVC Scientific Name: *Rhynchospora* spp. - *Panicum rigidulum* - *Panicum verrucosum* Pondshore Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance accommodates a variety of seasonally flooded vegetation of pondshore and lakeshore environments. Occurrences of this alliance are usually small and dominated by herbaceous graminoid species such as *Panicum rigidulum, Panicum verrucosum, Rhexia virginica, Rhynchospora* spp., and *Saccharum giganteum*. Many other graminoid species are common in these depressions. Some associations may include a zone dominated by taller graminoids, including *Saccharum* spp. or *Scirpus cyperinus*. Many species are annual or short-lived perennial plants. They persist for years in the seedbank until the hydrologic conditions are right for germination. Thus, species composition of particular stands may change from year to year. In interior stations of this alliance, many of these seedbank plants are species significantly disjunct from their main range on the Atlantic Coastal Plain. There are two major vegetation zones that occur in this environment: Zone 1 is a seasonally flooded zone of sparse cover by graminoids; and Zone 2 is a saturated zone of dense graminoid cover. These ponds have a pronounced seasonal fluctuation in water level, filling in the winter and drying in the summer. The water table fluctuates seasonally and yearly. It is highest in late winter and spring, and during years of high precipitation. The soils are derived mainly from sand, which is poor in nutrients and is acidic, with pH ranging from 4.4-7.0. These conditions inhibit microbial decomposition and

considerable organic material accumulates as peat. This alliance occurs primarily along the Atlantic Coastal Plain from Nova Scotia, Canada, south to Virginia, with inland stations in the central Great Lakes area, the Great Valley of Virginia, northern Alabama, and central Tennessee.

IVC Dynamics: These depression wetlands occur in shallow basins with no outlets and sometimes no inlets. The water table fluctuates seasonally and yearly. It is highest in late winter and spring, and during years of high precipitation. The soils are derived mainly from sand. The sand is poor in nutrients and is acidic, with pH ranging from 4.4-7.0. These conditions inhibit microbial decomposition and considerable organic material accumulates as peat. The peat mixes with sand or forms more-or-less pure deposits. In some basins, an impermeable layer of clay develops 2-5 m below the surface. This layer may hold the local water table above the regional water table for long periods.

In central Tennessee (Interior Low Plateau; southeastern Highland Rim), vegetation of this alliance is found in depression ponds which have a pronounced seasonal fluctuation in water level, filling in the winter and often drying completely in the summer (Russo 1997). In these upland depressions, water is ponded by an impermeable substrate (e.g., Guthrie silt loam soils with fragipans, also Holston loam). The variation in amount and duration of flooding may promote herb dominance while restricting the number of trees and shrubs that can survive. In the past, fire may have been another natural disturbance favoring graminoid herbs rather than trees and shrubs.

IVC Environment: In the Great Lakes area, stands of this alliance are found on sandy pitted outwash plains and glacial lakeplains. The level topography of these plains produces gently sloping, shallow basins with no outlets and sometimes no inlets. The water table fluctuates seasonally and yearly. It is highest in late winter and spring and during years of high precipitation. The soils are derived mainly from sand. The sand is poor in nutrients and is acidic, with pH ranging from 4.4-7.0. These conditions inhibit microbial decomposition and considerable organic material accumulates as peat. The peat mixes with sand or forms more-or-less pure deposits. Basin shorelines typically have stretches of pure sand in areas where wave action is greatest, pure peat in protected areas, and a mixture of the two substrates in other areas. In some basins, an impermeable layer of clay develops 2-5 m below the surface. This layer may hold the local water table above the regional water table for long periods. In the South, this alliance is found in upland depression ponds of the Interior Low Plateau (Eastern Highland Rim) of Tennessee (Russo 1997), and seasonally flooded depressions in the Atlantic Coastal Plain of Virginia north to southern Ontario and possibly Nova Scotia.

DISTRIBUTION

IVC Geographic Range: This alliance is found in New England, including Massachusetts, Rhode Island, New Jersey, New York, Maryland, Virginia, northern Alabama (ALNHP unpubl. data 2017), Tennessee (Russo 1997), and possibly Kentucky. It also occurs in Canada in southern Ontario (Keddy and Sharp 1989) and possibly Nova Scotia and is disjunct in the Great Lakes area (Brodowicz 1989).

IVC Nations: CA,US

IVC States/Provinces: CT, DE, MA, MD, ME, NH, NJ, NS?, NY, ON, QC?, RI, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006243** ***Calamagrostis canadensis - Dichanthelium meridionale*** **- (Mixed Shrub) Marsh** [Bluejoint - Matting Rosette Grass - (Mixed Shrub) Marsh] []
  GNR. CT, MA, ME, NH, NY?, ON, RI?
- **CEGL006210** ***Rhynchospora capitellata - Cyperus dentatus - Rhexia virginica - Xyris difformis*** **Marsh** [Brownish Beaksedge - Toothed Flatsedge - Virginia Meadowbeauty - Bog Yellow-eyed-grass Marsh] []
  G2 (1998-12-10) CT, MA, ME, NH, NJ?, NS?, NY, ON, RI, VT
- **CEGL006035** ***Lysimachia terrestris - Dulichium arundinaceum - Rhexia virginica*** **Marsh** [Earth Loosestrife - Threeway Sedge - Virginia Meadowbeauty Marsh] []
  G2G3 (1998-11-23) CT, MA, ME, NH, ON, VT
- **CEGL006261** ***Eleocharis (obtusa, flavescens) - Eriocaulon aquaticum*** **Marsh** [(Blunt Spikerush, Yellow Spikerush) - Seven-angle Pipewort Marsh] []
  G3G5 (1997-12-01) MA, ME, NH, NS?, NY, RI?, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: C. Nordman, in Faber-Langendoen et al. (2013)
IVC Description Author: C.W. Nordman
IVC Description Date: 2017-08-15
IVC Acknowledgments:

M066 Atlantic & Gulf Coastal Fresh-Oligohaline Tidal Marsh

[ ]

IVC Colloquial Name: Atlantic & Gulf Coastal Fresh-Oligohaline Tidal Marsh

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: These fresh and oligohaline tidal marshes constitute the primary vegetation between outer tidal salt and brackish marshes and inland non-tidally influenced vegetation (upland or wetland). Examples are found from Newfoundland to Texas along the Atlantic and Gulf coasts of the United States and adjacent Canada. They may grade into uplands or non-tidal freshwater marshes and swamps. Most examples of this vegetation are characterized by a mixture of annual and perennial grasses, forbs, sedges, rushes, other grass-like plants, floating or submerged aquatics, shrubs, and scattered tree saplings. Dominance patterns change seasonally, yearly, and geographically. In addition to regional variability, freshwater tidal marshes may also exhibit floristic zonation based on age, water depth, tidal regime, and other factors, into a low and high marsh. This vegetation supports broad-leaved emergent plants such as *Nuphar advena, Nuphar orbiculata, Nuphar sagittifolia, Peltandra virginica, Pontederia cordata*, and *Sagittaria* spp.; annual and perennial grasses such as *Calamagrostis canadensis, Leersia oryzoides, Panicum hemitomon, Spartina cynosuroides, Spartina patens, Zizania aquatica, Zizaniopsis miliacea*; sedges and rushes such as *Carex* spp., *Cladium mariscus ssp. jamaicense, Eleocharis* spp., *Fuirena* spp., *Schoenoplectus pungens, Schoenoplectus tabernaemontani*; other grass-like plants and annual and perennial forbs such as *Acorus calamus, Amaranthus cannabinus, Ambrosia trifida, Bidens* spp., *Impatiens capensis, Hibiscus moscheutos, Kosteletzkya virginica, Polygonum* spp., *Sium suave, Typha* spp.; and scattered shrubs such as *Cephalanthus occidentalis* and *Morella cerifera*.

IVC Geographic Range: Vegetation of this macrogroup extends from the Atlantic provinces of Canada south to the inland portions of the Hudson, Connecticut, Merrimack, Kennebec, and Penobscot rivers and their tributaries, as well as the rivers of southern New Jersey, to include the Chesapeake Bay and Delaware Bay drainages. It also includes the embayed region of North Carolina and Virginia. It continues from the vicinity of Morehead City, North Carolina (south of the Embayed Region), south around Florida, and along the northern Gulf of Mexico in northwestern Florida, southern Alabama, and southeastern Mississippi. Large expanses are found in the deltaic and chenier plains of Louisiana. It extends along the Gulf coast south to approximately Corpus Christi Bay. These marshes are estimated to cover about 164,000 ha along the Atlantic Coast (Odum et al. 1984), and 468,000 ha in Louisiana (Chabreck 1972). Approximately one-half of the coastal tidal freshwater marshes that exist along the middle Atlantic seaboard occur in New Jersey (Odum et al. 1984). Not included here are estimates of area occupied by freshwater tidal marshes in the remaining coastal areas of the northeastern Gulf of Mexico and Canada.

IVC Nations: CA,MX?,US

IVC States/Provinces: AL, CT, DC, DE, FL, GA, LA, LB, MA, MD, ME, MS, NB, NC, NF, NH, NJ, NS, NY, PA, PE?, QC, RI, SC, TX, VA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G914 North Atlantic Coastal Tidal Freshwater Marsh []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: W.J. Mitsch and J.G. Gosselink 1986c (and later editions 1993, 2000); R.W. Tiner (2013)

IVC Description Author: J. Teague

IVC Description Date: 2015-06-15

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by D. Faber-Langendoen and M. Pyne.

G914 North Atlantic Coastal Tidal Freshwater Marsh

[ ]

IVC Colloquial Name: North Atlantic Coastal Tidal Freshwater Marsh

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation of this fresh and oligohaline marsh group constitutes the primary vegetation between oceanward salt and brackish marshes and inland, non-tidally influenced vegetation from Newfoundland south to North Carolina along the Atlantic and coast. These freshwater marshes are characterized by fresh to oligohaline waters which are driven by lunar and wind tides. The environment includes areas well inside the mouths of tidal creeks and rivers, where there is adequate riverflow and discharge to maintain fresh to oligohaline conditions, while still within tidal range. This group typically occurs as complexes of several associations characterized by a mixture of annual and perennial grasses, forbs, sedges, rushes, other grass-like plants, floating or submerged aquatics, shrubs, and scattered tree saplings. Dominance patterns change seasonally, yearly, and geographically. In addition to regional variability, freshwater tidal marshes may also exhibit floristic zonation based on age, water depth, tidal regime, and other factors, into a low and high marsh. This vegetation supports broad-leaved emergent plants such as *Nuphar advena, Nuphar orbiculata, Nuphar sagittifolia, Peltandra virginica, Pontederia cordata*, and *Sagittaria* spp.; annual and perennial grasses such as *Calamagrostis canadensis, Leersia oryzoides, Panicum hemitomon, Spartina cynosuroides, Spartina patens, Zizania aquatica,* sedges and rushes such as *Carex* spp., *Eleocharis* spp., *Fuirena* spp., *Schoenoplectus pungens,* and *Schoenoplectus tabernaemontani*; other grass-like plants and annual and perennial forbs such as *Acorus calamus, Amaranthus cannabinus, Ambrosia trifida, Bidens* spp., *Impatiens capensis, Hibiscus moscheutos, Polygonum* spp., *Sium suave,* and *Typha* spp.; and scattered shrubs such as *Cephalanthus occidentalis* and *Morella cerifera*. Some dominants are tolerant of brackish water, but they are associated with plants restricted to oligohaline or freshwater. Irregular flooding and fire are both important forces in this group, and rising sea level is a particularly important driver of long-term trends.

IVC Dynamics: Hydrology is the most important driving process, with the constant saturation determining the potential vegetation, and the variable flooding and variations in salinity in the fresh to brackish range a primary disturbance. Variations in flooding, sedimentation rates, erosion, scouring, wrack deposition and salinity are regular disturbances (Tiner 2013). Seed bank dynamics also drive the temporal and spatial diversity (Leck et al. 2009). Herbivory and competition also play an important role in vegetation patterns and some components (e.g., *Typha* and *Peltandra virginica*) are reported to be allelopathic (Bonasera et al. 1979). Rising sea level is an important driver of longer term vegetation trends, including expansion into adjacent swamp areas. Fire is also an important natural process in all but the smallest and most isolated patches. Marshes often show evidence of transition to or from treed communities, in the form of young invading trees and shrubs or standing dead older trees (Odum et al. 1984, Tiner 2013). Lack of fire appears to be allowing sufficient tree invasion to eventually produce a swamp forest in some upstream examples, but the trend in most places is toward development of marshes in former swamp areas. More research is needed to interpret the complex interactions between temporal and spatial disturbance patterns (e.g., hydrology, salinity, sedimentation, erosion, herbivory, hurricanes, etc.), geomorphology, species life histories, and other factors to better elucidate the range-wide and local patterns in vascular plant communities of freshwater tidal marshes. It is unclear how subsidence, freshwater withdrawal, sea level rise, and climate change will impact this ecosystem, but changes are expected.

IVC Environment: Tidal fresh marshes exist along low-relief coastlines and upper reaches of tidal rivers and creeks where there is sufficient freshwater input from rain and rivers, and enough tidal amplitude to reach upstream into marshes along bays and rivers (e.g., Hudson River, Delaware River, Cape Fear River). Both lunar and wind tides are important. Along the Atlantic Coast this vegetation is often found on rivers where there is a geomorphological constriction that increases tidal amplitude (Odum et al. 1984). Within any specific region tidal marshes occur along elevational gradients that result in varying water depths. Tidal freshwater marshes tend to be common along the coastal edge of river systems with large watersheds and no dams (Tiner 2013). Most of the Atlantic Coast freshwater tidal marshes are riverine (Odum et al. 1984). They formed as sea level rose after the last glaciation. Sediment carried by streams and rivers filled drowned river valleys that were downcut during the Pleistocene glaciations. Marshes built up and expanded as streams and rivers deposited their sediment load and the tides helped to extend the area of available habitat. Hydrology and salinity are the most important driving processes determining the range of potential vegetation in this group. Variations in flooding, sedimentation rates, erosion, scouring, wrack deposition and salinity are regular disturbances (Tiner 2013).

Tidal freshwater marshes occur in a variety of settings, including "mature marshes," marshes that may be more than 500 years old with a well-developed peat substrate, and "new marshes" in areas where sedimentation by rivers is exceeding erosion and subsidence such as prograding deltas (found throughout the range) (Odum et al. 1984, Mitsch and Gosselink 1986c, 2000, Mitsch et al. 2009, Tiner 2013). In some areas, marshes have expanded in the recent past because of streams and rivers carrying and depositing higher sediment loads because of inland erosion (Odum et al. 1984). Soils in older marshes tend to be high in organic matter and those in younger marshes high in clays and silts (Odum et al. 1984).

Common characteristics of tidal freshwater marshes include variable rates of sedimentation and vertical accretion of sediments and organic matter (Perry et al. 2009). In many places, this is often offset by subsidence, reduced sedimentation due to water diversion, and a rising sea level. The substrate of tidal wetlands varies from primarily black, fibrous organic muck over sandy or silt clay loam occasionally mixed with woody peat, underlain by deep coastal plain quartzite sand deposits in New Jersey (Tedrow 1986), to thin or thick mats of floating roots and peat over muck and clay in Louisiana (Sasser et al. 2009). The New Jersey Geological Survey publication by Waksman et al. (1943) entitled "The Peats of New Jersey and Their Utilization"

distinguishes marine salt marsh peats found along the coast and in bays that have fine mud rich in organic matter derived of decomposed grasses from the freshwater tidal marshes of drowned estuarine streams with freshwater alluvial peat and sedge-and-reed-peat characterized by coarse fibrous organic material often with wood particles and large amounts of mineral sediment (Walz et al. 2007). Odum et al. (1984) described the substrate underlying most tidal freshwater marshes in the eastern U.S. as "a dark, mucky soil" with high levels of silts and clays in the low marsh and higher levels of organic matter in the high marsh.

Tidal freshwater and oligohaline marshes are complex entities that are affected by movement of the salt line resulting from seasonal fluctuations in precipitation as well as changes in the periodicity and amplitude of tidal inundation (lunar and wind). Sea level rise due to global warming, and the resulting change in salt intrusion, vegetation composition, marsh acreage, and function, are serious concerns for the future of these critically important estuarine wetlands (Walz et al. 2007).

More research is needed to interpret the complex interactions between temporal and spatial disturbance patterns (e.g., hydrology, salinity, sedimentation, erosion, herbivory, hurricanes, etc.), geomorphology, species life histories, and other factors to better elucidate the rangewide and local patterns in vascular plant communities of freshwater tidal marshes. It is unclear how subsidence, freshwater withdrawal, sea level rise, and climate change will impact this ecosystem, but changes are expected. Though causation is unclear, vegetation changes have already been documented in New Jersey (Leck et al. 2009).

DISTRIBUTION

IVC Geographic Range: This group extends from the Atlantic provinces of Canada south to the inland portions of the Hudson, Connecticut, Merrimack, Kennebec, and Penobscot rivers and their tributaries, as well as the rivers of southern New Jersey, to include the Chesapeake Bay and Delaware Bay drainages; it also includes the embayed region of North Carolina and Virginia.

These marshes are estimated to cover about 164,000 ha along the Atlantic Coast (Odum et al. 1984). Approximately one-half of the coastal tidal freshwater marshes that exist along the middle Atlantic seaboard occur in New Jersey (Odum et al. 1984).

IVC Nations: CA?,US

IVC States/Provinces: CT, DC, DE, GA?, LB?, MA, MD, ME, NB?, NC, NF?, NH, NJ, NS?, NY, PA, PE?, QC?, RI, SC, VA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate. Effects of sea level rise and recreation need further review.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4376 *Alnus incana* - *Cornus amomum* Tidal Shrub Swamp Alliance** [Gray Alder - Silky Dogwood Tidal Shrub Swamp Alliance] []
  This alliance comprises tall alluvial and freshwater tidal shrublands dominated or characterized by *Alnus* spp. and *Cornus* spp. in the northeastern United States and temperate regions of eastern Canada.
- **A3579 *Isoetes riparia* - *Eriocaulon parkeri* Intertidal Freshwater Marsh Alliance** [Riverbank Quillwort - Estuary Pipewort Intertidal Freshwater Marsh Alliance] []
  This freshwater tidal vegetation of the eastern U.S. and possibly Canada occurs on sandy or gravelly shores that are exposed only at low tide, such as on the upper limits of freshwater intertidal shores; stands are dominated by *Isoetes riparia* and *Eriocaulon parkeri*.
- **A4017 *Peltandra virginica* - *Pontederia cordata* - *Sagittaria* spp. Oligohaline Tidal Marsh Alliance** [Green Arrow-arum - Pickerelweed - Arrowhead species Oligohaline Tidal Marsh Alliance] []
  This alliance comprises vegetation of oligohaline marshes occurring on tidal rivers beyond significant influence by saline waters. The vegetation is widely variable and characterized by small to large leafy forbs and graminoids, including *Acorus calamus, Amaranthus cannabinus, Peltandra virginica, Pontederia cordata, Hibiscus moscheutos, Impatiens capensis*, and *Thelypteris palustris*. This alliance occurs in coastal areas from Maine to Virginia and may occur in Quebec and maritime Canada.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: J. Teague and D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by M. Pyne.

A4376 Gray Alder - Silky Dogwood Tidal Shrub Swamp Alliance

[ ]
Alnus incana - Cornus amomum Tidal Shrub Swamp Alliance
Tidal Alder - Dogwood Shrub Swamp

IVC Scientific Name: *Alnus incana - Cornus amomum* Tidal Shrub Swamp Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance comprises tall alluvial and freshwater tidal shrublands in the northeastern and north-central United States and temperate regions of eastern Canada. These tall shrublands are dominated or characterized by *Alnus serrulata, Alnus incana*, or *Alnus maritima ssp. maritima* and *Cornus amomum* or *Cornus sericea*. The substrate can be muck overlying mineral soils or cobble, gravel and sandy silt to silt mixes. The soils tend to dry out over the course of the year.
IVC Dynamics:
IVC Environment: This alliance comprises tall alluvial and freshwater tidal shrublands. The substrate can be muck overlying mineral soils or cobble, gravel and sandy silt to silt mixes. Flooding occurs typically on at least an annual basis, and soils tend to dry out over the course of the year.

DISTRIBUTION

IVC Geographic Range: This alliance is currently described in the northeastern United States and temperate regions of eastern Canada. It may be expected to occur in the north-central United States.
IVC Nations: CA?,US
IVC States/Provinces: CT, DE, MA, MD, ME, NJ, NY, PA, QC?, VA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL006337 *Alnus (incana ssp. rugosa, serrulata) - Cornus amomum* Tidal Shrub Swamp** [(Speckled Alder, Hazel Alder) - Silky Dogwood Tidal Shrub Swamp] []
  GNR. CT, DE, MA, MD, ME, NJ, NY, PA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021b)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3579 Riverbank Quillwort - Estuary Pipewort Intertidal Freshwater Marsh Alliance

[ ]
Isoetes riparia - Eriocaulon parkeri Intertidal Freshwater Marsh Alliance
Riverbank Quillwort - Estuary Pipewort Intertidal Freshwater Marsh

IVC Scientific Name: *Isoetes riparia - Eriocaulon parkeri* Intertidal Freshwater Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance represents freshwater tidal vegetation dominated by the characteristic species *Eriocaulon parkeri* and *Isoetes riparia*. Associated species may include *Cyperus bipartitus, Elatine minima, Eleocharis obtusa, Isoetes riparia, Sagittaria calycina*, and *Sagittaria subulata*. In more muddy areas, *Schoenoplectiella smithii* occurs. Some of this vegetation is restricted to areas that receive substantial scour during spring floods, since *Eriocaulon parkeri* is very susceptible to siltation. The vegetation can be quite sparse, with few plants growing in patches within the open sand. This alliance is found in coastal areas from North Carolina north to Maine, and possibly Canada. Examples occur on sandy or gravelly shores that are exposed only at low tide, such as on the upper limits of freshwater intertidal shores.

IVC Dynamics: This vegetation type is restricted to areas that receive substantial scour during spring floods.

IVC Environment: This alliance is freshwater tidal vegetation occurring on sandy or gravelly shores that are exposed only at low tide. This vegetation type is restricted to areas that receive substantial scour during spring floods.

DISTRIBUTION

IVC Geographic Range: This alliance is found in coastal areas from North Carolina north to Maine, and may possibly occur in South Carolina and New Brunswick, Canada.

IVC Nations: CA?,US

IVC States/Provinces: CT, DE, MA, MD, ME, NB?, NC, NJ, NY, PA, QC?, RI, SC?, VA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006352 *Eriocaulon parkeri* - *Polygonum punctatum* Tidal Marsh** [Estuary Pipewort - Dotted Smartweed Tidal Marsh] []
  G2 (1998-11-09) CT, DE, MA, MD, ME, NB?, NC, NJ, NY, SC?, VA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: C. Nordman, in Faber-Langendoen et al. (2013)

IVC Description Author: M. Pyne

IVC Description Date: 2014-12-18

IVC Acknowledgments: We have incorporated significant information developed and compiled by A.S. Weakley, the Virginia Natural Heritage Program, and by the Eastern Ecology Group of NatureServe.

A4017 Green Arrow-arum - Pickerelweed - Arrowhead species Oligohaline Tidal Marsh Alliance

[ ]

Peltandra virginica - Pontederia cordata - Sagittaria spp. Oligohaline Tidal Marsh Alliance

Mixed Forb Oligohaline Tidal Marsh

IVC Scientific Name: *Peltandra virginica - Pontederia cordata - Sagittaria* spp. Oligohaline Tidal Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance comprises vegetation of oligohaline marshes occurring on tidal rivers beyond significant influence by saline waters, as evidenced by the absence of halophytic species. The vegetation is widely variable and characterized by small to large leafy forbs and graminoids. Associations occur at various microtopographic positions, ranging from high marsh to low marsh and tidal flats. *Peltandra virginica, Pontederia cordata*, and *Sagittaria* spp. are characteristic and dominant to codominant. Other characteristic species are diverse and numerous, and may include *Acorus calamus, Amaranthus cannabinus,*

Hibiscus moscheutos, Impatiens capensis, and *Thelypteris palustris*, as well as species of *Carex, Polygonum, Sagittaria*, and *Schoenoplectus*. This alliance occurs in coastal areas from Maine to Virginia and may occur in Quebec and maritime Canada.

IVC Dynamics: Freshwater tidal marshes are naturally dynamic systems that are best developed where there is a major input of freshwater, a daily tidal range of at least 0.5 m, and a geomorphology that tends to constrict and magnify tidal influence in the upper reaches of the estuary (Odum et al. 1984). They are subject to diurnal flooding by tides and seasonal and episodic flooding from river discharge. Plant composition of freshwater tidal marshes generally occurs as a mosaic of patches dominated by a few or a single species. Species composition is determined by species life history characteristics, especially lifeform, phenology and mode of regeneration in response to microhabitat conditions and the frequency and duration of flooding. Plant composition has seasonal variation.

IVC Environment: These are oligohaline marshes occurring on tidal rivers beyond significant influence by saline waters.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in coastal areas from Maine to Virginia and may occur in Quebec and maritime Canada.
IVC Nations: CA?,US
IVC States/Provinces: CT, DC, DE, LB?, MA, MD, ME, NB?, NF?, NH, NJ, NS?, NY, PA, PE?, QC?, RI, VA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006325** ***Impatiens capensis - Peltandra virginica - Polygonum arifolium - Bolboschoenus fluviatilis - Typha angustifolia*** **Tidal Marsh** [Orange Jewelweed - Green Arrow-arum - Halberd-leaf Tearthumb - River Bulrush - Narrowleaf Cattail Tidal Marsh] [] G3 (2016-07-14) CT, DC, DE, MA, MD, ME, NJ, NY, PA, QC?, VA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L. Sneddon, in Faber-Langendoen et al. (2013)
IVC Description Author: L. Sneddon and M. Pyne
IVC Description Date: 2014-12-18
IVC Acknowledgments: We have incorporated significant information developed and compiled by S.L. Neid and by the Eastern and Southeastern Ecology Groups of NatureServe.

M894 North American Boreal Marsh, Wet Meadow & Shrubland

[ ]

IVC Colloquial Name: North American Boreal Marsh, Wet Meadow & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This marsh, sedge wet meadow and wet shrubland macrogroup is found throughout the boreal regions of North America in low-lying wet areas. Two primary structural variants occur: sedge meadow-marsh and tall shrub thicket. The sedge meadow-marsh vegetation is dominated by *Calamagrostis canadensis, Carex aquatilis, Carex lasiocarpa, Carex utriculata, Equisetum palustre*, and *Eriophorum angustifolium*. The shrub variant is dominated by *Alnus incana ssp. tenuifolia*, *Myrica gale, Salix bebbiana* and other *Salix* spp. Both variants occur on floodplains, depressions, pond and lake margins, oxbows and abandoned channels. Frequent river channel migration and associated flooding and fluvial processes constitute the major disturbances. Wetland succession and species composition are variable due to diverse environmental conditions such as water depth, substrate, and nutrient input.

IVC Geographic Range: This macrogroup occurs throughout the North American boreal region, from Alaska to Newfoundland and Labrador.

IVC Nations: CA,US

IVC States/Provinces: AB, AK, BC, ID, LB, MB, MN, MT, ND, NF, NT, NU, ON, QC?, SK, YT

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G768 Eastern North American Boreal Freshwater Marsh, Wet Meadow & Shrubland []**
- **G528 Western Boreal Wet Meadow & Marsh []**
- **G865 Western Boreal Wet Birch - Willow Low Shrubland []**
- **G866 Western Boreal Wet Alder - Willow Tall Shrub Swamp []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2019a)

IVC Description Author:

IVC Description Date: 2020-01-06

IVC Acknowledgments:

G768 Eastern North American Boreal Freshwater Marsh, Wet Meadow & Shrubland

[ ]

IVC Colloquial Name: Eastern North American Boreal Freshwater Marsh, Wet Meadow & Shrubland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA

IVC States/Provinces: AB, LB, MB, NF, ON, QC?, SK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G528 Western Boreal Wet Meadow & Marsh

[ ]

IVC Colloquial Name: Western Boreal Wet Meadow & Marsh
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group is widespread in the boreal and boreal transitional areas of Alaska and British Columbia, extending east into Alberta, Saskatchewan, and Manitoba and south into Idaho, Montana, North Dakota and Minnesota. Vegetation is largely graminoid-dominated. Common species include *Calamagrostis canadensis, Carex aquatilis, Carex lasiocarpa, Carex utriculata, Equisetum palustre*, and *Eriophorum angustifolium*. Shrubs may be a minor component of the canopy cover (less than 25%) and include *Myrica gale, Alnus incana ssp. tenuifolia*, and *Salix* spp. It occurs on floodplains, depressions, pond and lake margins, oxbows and abandoned channels. Frequent river channel migration and associated flooding and fluvial processes constitute the major disturbances. Wetland succession and species composition are variable due to diverse environmental conditions such as water depth, substrate, and nutrient input. Floodplain wetland vegetation includes freshwater marsh and wet low shrub. Patch size is small to large and often linear. Moisture regime varies from saturated to semipermanently flooded.
IVC Dynamics: This group requires a source of freshwater. Seasonal flooding is characteristic of inland deltas. Marsh zonation is related to water depth and duration of flooding. A typical sequence progresses from open water to emergent deep marsh to shallow marsh to wet meadow or fen. Floating marsh mats may be seral to fens. River channel migration, flooding and other fluvial processes constitute the major disturbance in this group.
IVC Environment: Freshwater marshes are found throughout the boreal transition and boreal regions of Alaska and British Columbia, extending east into Alberta, Saskatchewan, and Manitoba and south into Idaho, Montana, North Dakota and Minnesota. They are characterized by emergent herbaceous vegetation. Freshwater marshes typically occur with other wetland groups. They occur on the margins of abandoned channels, floodplains, ponds, lakes, and riparian systems and on inland deltas where rivers drain into large lakes. Inland marshes are mostly small-patch, confined to limited areas in suitable floodplain or basin topography. They are typically saturated or semipermanently flooded, but some marshes have seasonal flooding. Water is at or above the surface for most of the growing season (typically 10 cm above the surface). Soils are muck or mineral, and water is nutrient-rich. These systems are highly productive and have high rates of decomposition.

DISTRIBUTION

IVC Geographic Range: This group occurs throughout the boreal transition and boreal regions of Alaska and British Columbia, extending east into Alberta, Saskatchewan, and Manitoba and south into Idaho, Montana, North Dakota and Minnesota.
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4308 *Calamagrostis canadensis* Western Boreal Wet Meadow Alliance** [Bluejoint Western Boreal Wet Meadow Alliance] []
- **A3823 *Carex aquatilis - Carex* spp. - *Eriophorum angustifolium* Sedge Meadow Alliance** [Water Sedge - Sedge species - Tall Cottongrass Sedge Meadow Alliance] []
  This herbaceous alliance consists of sedge-dominated, mineral soil wetlands where *Carex aquatilis, Carex lacustris, Carex rostrata, Carex stricta, Carex utriculata, Carex vesicaria*, and *Equisetum fluviatile* provide the dominant cover (singly or in various combinations); it is found in the boreal and boreal transition climates.
- **A4310 *Carex aquatilis - Salix fuscescens* Alpine Wet Meadow Alliance** [Water Sedge - Alaska Bog Willow Alpine Wet Meadow Alliance] []
- **A4309 *Equisetum fluviatile* Western Boreal Marsh Alliance** [Water Horsetail Western Boreal Marsh Alliance] []
- **A3824 *Typha latifolia - Schoenoplectus* spp. Western Boreal Marsh Alliance** [Broadleaf Cattail - Bulrush species Western Boreal Marsh Alliance] []
  Bulrush and cattail marshes within boreal and boreal transition climates whose stands are generally low in species diversity and are typically dominated by species of *Typha* or *Scirpus* and/or *Schoenoplectus*. These marshes are generally flooded with emergent canopies but do experience seasonal fluctuations in water levels, including complete drawdown from time to time.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, K. Boggs, P. Comer, M. Reid, D. Faber-Langendoen, in Faber-Langendoen et al. (2011)
IVC Description Author: M.E. Hall, G. Kittel and T. Boucher
IVC Description Date: 2016-01-19
IVC Acknowledgments:

A4308 Bluejoint Western Boreal Wet Meadow Alliance

[ ]
Calamagrostis canadensis Western Boreal Wet Meadow Alliance
Western Boreal Bluejoint Wet Meadow

IVC Scientific Name: *Calamagrostis canadensis* Western Boreal Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3823 Water Sedge - Sedge species - Tall Cottongrass Sedge Meadow Alliance

[ ]

Carex aquatilis - Carex spp. - *Eriophorum angustifolium* Sedge Meadow Alliance

Western Boreal Sedge Wet Meadow

IVC Scientific Name: *Carex aquatilis - Carex* spp. - *Eriophorum angustifolium* Sedge Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This wetland alliance is dominated wider-leaved sedges, with a mixture of forbs. Dominant species include *Carex aquatilis, Carex lacustris, Carex rostrata, Carex stricta, Carex utriculata, Carex vesicaria*, and *Equisetum fluviatile*. Other species such as *Alopecurus aequalis, Eleocharis palustris, Glyceria grandis, Polygonum amphibium, Scirpus* and/or *Schoenoplectus* spp., *Typha* spp., and the forbs *Bidens cernua, Epilobium leptophyllum, Galium trifidum, Mentha arvensis*, and *Scutellaria galericulata* may be present. *Scolochloa festucacea* may be found in drier stands. Woody species are rare. It is found in the boreal and boreal transition of Alaska, British Columbia, extending east into Alberta, Saskatchewan and Manitoba, and south into northern Idaho, Montana, North Dakota and Minnesota. Stands typically occur in depressions, around ponds or lakes, and adjacent to streams or rivers. Sites are flooded for some time during the growing season in most years. Stands are found on mostly mineral soils in fresh or slightly saline shallow marshes. These marshes occur on wave-washed lakeshores, stream floodplains and back-levees where waterflow prevents peat accumulation and provides for high nutrients.

IVC Dynamics: This alliance can be early-seral and some sedge communities are known to invade margins of newly formed beaver ponds, as well as the freshly exposed silt beds of drained beaver ponds (Padgett et al. 1989). With time, these types will grade into drier grass-dominated types such as *Calamagrostis canadensis* (Cooper 1986a). This successional shift in species composition can also be initiated by a change in the physical environment where flooding results in sedimentation raising the surface above the water table (Cooper 1986a). As aggradation, or buildup, of the floodplain proceeds, the site becomes drier and the dominant graminoid cover changes from sedge-dominated to grass-dominated stands. Abandoned beaver ponds also go through a similar succession. With time, ponds fill in with silt, and *Carex* spp. establish on the new saturated substrate. As the site becomes firm and raised above the old pond level, other *Carex* species may invade as with time *Calamagrostis canadensis* may become established. Successional changes can shift between different communities within this alliance. Wilson (1969) reports that *Carex aquatilis* associations trap sediment from overbank flows which forms a clay pan, eventually raising the water table. This process drives retrogressive succession and a plant association dominated by *Carex utriculata* often takes over on these sites (Wilson 1969).

IVC Environment: This alliance consists of wet meadow communities that occur around the edges of lakes and beaver ponds, along the margins of slow-moving reaches of streams and rivers, and in marshy swales and overflow channels on broad floodplains left by migrating stream channels. Stands also occur in valley bottoms with perennial seeps (Hansen et al. 1995). The vegetation occurs in standing water or on sites that become relatively dry during the latter part of the growing season. Many sites are located in old beaver ponds that have filled with sediment. The surface may occasionally be mounded. Mounds result from a buildup of *Carex* spp. sod and downcutting of small channels by overland flow during spring runoff (Hansen et al. 1995). A wide range of soils are associated with this alliance. Histosols are most common. Mollisols and Entisols are also associated with this type. Soil texture varies widely from loamy clay to sandy loam. Mottling often occurs within a few centimeters of the surface. Organic layers may be present but are less than 40 cm and often much thinner, these wetlands are not fens or bogs. Soils are saturated to moist, and water tables can be above or below the soil surface throughout the growing season. Most years the water tables drop late in the season allowing for the breakdown of dead organic matter and the release of nutrients. Soil reaction is slightly acidic to neutral (pH 6.0-7.0) (Looman 1981a, 1982, Hansen et al. 1995).

DISTRIBUTION

IVC Geographic Range: This alliance is found in boreal and transitional boreal Alaska, British Columbia, Alberta, Idaho, Montana, Saskatchewan, North Dakota, and Minnesota.
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005289 *Carex aquatilis* Boreal Wet Meadow** [Water Sedge Boreal Wet Meadow] []
  GNR. AB, AK, BC, SK?
- **CEGL005288 *Carex utriculata* Boreal Wet Meadow** [Northwest Territory Sedge Boreal Wet Meadow] []
  GNR. AB, AK, BC, SK?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel, D. Culver, M. Damm, L. Allen
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A4310 Water Sedge - Alaska Bog Willow Alpine Wet Meadow Alliance

[ ]
Carex aquatilis - Salix fuscescens Alpine Wet Meadow Alliance
Western Boreal Alpine Wet Meadow

IVC Scientific Name: *Carex aquatilis - Salix fuscescens* Alpine Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4309 Water Horsetail Western Boreal Marsh Alliance

[ ]
Equisetum fluviatile Western Boreal Marsh Alliance
Western Boreal Herb Marsh

IVC Scientific Name: *Equisetum fluviatile* Western Boreal Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005292 *Equisetum fluviatile* Western Boreal Marsh** [Water Horsetail Western Boreal Marsh] []
  GNR. AB, AK, BC, SK?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3824 Broadleaf Cattail - Bulrush species Western Boreal Marsh Alliance

[ ]
Typha latifolia - Schoenoplectus spp. Western Boreal Marsh Alliance
Western Boreal Cattail - Bulrush Marsh

IVC Scientific Name: *Typha latifolia - Schoenoplectus* spp. Western Boreal Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Stands of this marsh alliance tend to be of low plant diversity with only species of *Typha* or *Scirpus* and/or *Schoenoplectus* dominant, although the two often occur together, with few other species, including *Lemna* spp., *Carex utriculata*, and others. Bulrush and cattail marshes occur throughout the boreal and boreal transition of Alaska, British Columbia, Alberta, Saskatchewan and Manitoba, and south into northern Idaho, Montana, North Dakota and Minnesota. Stands occur on wave-exposed lake-embayments with water movement, grassland potholes, and roadside ditches. Stands have occasional substrate exposure which allows for aeration and limits organic accumulation. They are generally flooded and emergent most of the growing season, but often experience wide water level fluctuations seasonally. Open water is often adjacent.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance is found in boreal and boreal transition Alaska, British Columbia, east into Alberta, Saskatchewan, and Manitoba, south into Idaho, Montana, North Dakota and Minnesota.

IVC Nations: CA,US

IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-03-14

IVC Acknowledgments:

G865 Western Boreal Wet Birch - Willow Low Shrubland

[ ]

IVC Colloquial Name: Western Boreal Wet Birch - Willow Low Shrubland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: AB, AK, BC, MB, NT, NU, SK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4305 *Betula nana - Salix pulchra / Eriophorum vaginatum* Wet Shrubland Alliance** [Dwarf Birch - Tealeaf Willow / Tussock Cottongrass Wet Shrubland Alliance] []
- **A4306 *Salix pulchra / Calamagrostis canadensis* Wet Shrubland Alliance** [Tealeaf Willow / Bluejoint Wet Shrubland Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4305 Dwarf Birch - Tealeaf Willow / Tussock Cottongrass Wet Shrubland Alliance

[ ]
Betula nana - Salix pulchra / Eriophorum vaginatum Wet Shrubland Alliance
Alaskan-Yukon Boreal Wet Low Birch Shrubland

IVC Scientific Name: *Betula nana - Salix pulchra / Eriophorum vaginatum* Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4306 Tealeaf Willow / Bluejoint Wet Shrubland Alliance

[ ]

Salix pulchra / Calamagrostis canadensis Wet Shrubland Alliance

Alaskan-Yukon Boreal Wet Low Willow Shrubland

IVC Scientific Name: *Salix pulchra / Calamagrostis canadensis* Wet Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G866 Western Boreal Wet Alder - Willow Tall Shrub Swamp

[ ]

IVC Colloquial Name: Western Boreal Wet Alder - Willow Tall Shrub Swamp

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, ID, MB, MN, MT, ND, NT, NU, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5

was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3825 *Alnus incana ssp. tenuifolia - Salix pulchra / Carex aquatilis* Shrub Swamp Alliance** [Thinleaf Alder - Tealeaf Willow / Water Sedge Shrub Swamp Alliance] []
  This alliance covers herbaceous wetlands with open or patchy shrub cover (up to 25% cover); shrub species include *Myrica gale, Alnus incana ssp. tenuifolia*, or *Salix* spp. and is limited to boreal and boreal transition climates.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A3825 Thinleaf Alder - Tealeaf Willow / Water Sedge Shrub Swamp Alliance

[ ]
Alnus incana ssp. tenuifolia - Salix pulchra / Carex aquatilis Shrub Swamp Alliance
Western Boreal Alder - Willow Shrub Swamp

IVC Scientific Name: *Alnus incana ssp. tenuifolia - Salix pulchra / Carex aquatilis* Shrub Swamp Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These are herbaceous wetlands with an open shrub canopy (10-25% cover) found on mostly seasonally saturated mineral soils in boreal and boreal transition climates. The shrubs tend to be low-statured. The herbaceous cover is high (>60%).
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance is found in boreal and boreal transition Alaska, British Columbia, east into Alberta, Saskatchewan, and Manitoba, south into Idaho, Montana, North Dakota and Minnesota.
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, ID, MB, MN, MT, ND, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Standard
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CNVC00336 *Alnus incana - Salix bebbiana / Calamagrostis canadensis*** [Gray Alder - Bebb's Willow / Bluejoint] [Aulne blanc - Saule de Bebb / Calamagrostide du Canada]
  GNR.
- **CNVC00131 *Alnus incana / Equisetum arvense*** [Gray Alder / Field Horsetail] [Aulne blanc / Prêle des champs]
  GNR.

- **CNVC00185** ***Salix lucida - Cornus stolonifera / Equisetum pratense*** [Shining Willow - *Cornus stolonifera* / Meadow Horsetail] [Saule brillant - Cornouiller stolonifère / Prêle des prés]
  GNR.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-03-14
IVC Acknowledgments:

M870 Arctic Freshwater Marsh, Wet Meadow, & Shrubland

Marais d'eau douce et prairies humides des zones arctique et subarctique de l'Amérique du Nord

IVC Colloquial Name: Arctic Freshwater Marsh, Wet Meadow, & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: North American Arctic freshwater marshes, wet meadows and wet shrublands generally occur as small patches, typically on the margins of ponds, lakes and beaded streams (channels with regularly spaced deep pools connected by narrow runs) and along water tracks within permafrost landscapes. They are also found on large to small floodplains where various wetlands form in oxbows, wet depressions, low-lying areas, and in landscapes with permafrost along subsurface water channels known as water tracks and abandoned channels. Occurrences are typically dominated by grasses and sedges, low shrubs, or high forb cover in some instances. This includes freshwater marshes, wet meadows, ribbed fens, and wet shrublands. Dominant species include *Arctophila fulva, Carex aquatilis, Eriophorum angustifolium*, and/or *Salix pulchra*. Additional dominants occur in the subarctic including *Comarum palustre, Hippuris vulgaris, Lysimachia thyrsiflora, Carex utriculata, Schoenoplectus tabernaemontani, Typha latifolia, Menyanthes trifoliata*, and *Equisetum fluviatile*. Soils are muck or mineral, and water is often nutrient-rich. In floodplains, permafrost is absent. Wet meadows occur in valley bottoms, basins, low-center polygons, oxbows, wet depressions, low-lying areas, abandoned channels, water tracks and adjacent to streams. Sites are typically sedge-dominated, and species include *Carex aquatilis, Eriophorum angustifolium, Carex glareosa, Carex rotundata, Carex rariflora, Carex chordorrhiza, Carex rostrata, Carex saxatilis, Carex utriculata, Eriophorum russeolum*, and *Eriophorum scheuchzeri*. More elevated perimeters support low shrubs and tussocks. Common shrubs include *Alnus viridis, Betula nana, Salix fuscescens, Salix pulchra, Ledum palustre ssp. decumbens, Andromeda polifolia, Vaccinium vitis-idaea, Vaccinium uliginosum*, and *Empetrum nigrum*. Soils range from acidic to non-acidic, are saturated during the summer, and have an organic horizon over silt with permafrost, although on floodplains, permafrost is absent. Low-statured wet shrublands follow well-developed water tracks in areas with permafrost and are often dominated by *Salix pulchra* and *Eriophorum angustifolium*, with *Carex aquatilis* and *Eriophorum russeolum*. Important mosses include *Calliergon stramineum, Sphagnum girgensohnii*, and *Sphagnum warnstorfii*. Tall willow shrublands can be found within these landscapes in floodplains and riparian corridors. *Salix alaxensis* is the dominant shrub with canopy heights often exceeding 2 m.

IVC Geographic Range: This wetland and riparian macrogroup occurs throughout arctic, subarctic, and boreal alpine regions of North America in both Alaska and Canada.

IVC Nations: CA,GL,US

IVC States/Provinces: AK, LB, NT, NU, QC, YT

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G370 North American Arctic Freshwater Marsh []**
- **G617 North American Arctic Wet Meadow []**
- **G830 North American Arctic Wet Shrubland []**
- **G368 North American Arctic Tall Willow Wet Shrubland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K. Boggs, J. Jorgenson, M. Raynolds, in Faber-Langendoen et al. (2015)

IVC Description Author: K. Boggs, D. Faber-Langendoen and G. Kittel

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G370 North American Arctic Freshwater Marsh

[ ]

IVC Colloquial Name: North American Arctic Freshwater Marsh

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group occurs as small patches throughout arctic and subarctic North America, typically on the margins of ponds, lakes and beaded streams. It is also found on large to small floodplains where various wetlands form in oxbows, wet depressions, low-lying areas, and abandoned channels, including freshwater marshes. Soils are muck or mineral, and water is often nutrient-rich. In floodplains, permafrost is absent. Occurrences are typically dominated by grasses and sedges, but may have high forb cover in some instances. Dominant species include *Arctophila fulva, Carex aquatilis*, or *Eriophorum angustifolium*. Additional dominants occur in the subarctic, including *Comarum palustre, Hippuris vulgaris, Lysimachia thyrsiflora, Carex utriculata, Schoenoplectus tabernaemontani, Typha latifolia, Menyanthes trifoliata*, and *Equisetum fluviatile*.

IVC Dynamics: This group occurs within a variety of successional processes, including thaw lakes, ice-wedge polygons, and oriented lakes. Seral stages and the rate of succession are unclear.

IVC Environment: Freshwater marshes occur as small patches throughout arctic and subarctic North America, typically on the margins of ponds, lakes, beaded streams, and ponds on large to small floodplains. Water is at or above the surface for most of the growing season (typically >10 cm above the surface).

DISTRIBUTION

IVC Geographic Range: This group occurs throughout arctic and subarctic Alaska and Canada.

IVC Nations: CA,US

IVC States/Provinces: AK, LB, NT, NU, QC, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K. Boggs, J. Jorgenson, M. Raynolds, in Faber-Langendoen et al. (2011)

IVC Description Author: K. Boggs and M. Hall

IVC Description Date: 2016-01-08

IVC Acknowledgments:

G617 North American Arctic Wet Meadow

[ ]

IVC Colloquial Name: North American Arctic Wet Meadow

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is found in arctic and subarctic Canada and in arctic Alaska, from the Bristol Bay lowlands in southwestern Alaska to the North Slope on the Arctic Ocean in valley bottoms, basins, low-center polygons, oxbows, wet depressions, low-lying areas, abandoned channels, watertracks and adjacent to streams. This group also includes patterned wetlands such as ribbed fens. Soils range from acidic to non-acidic, are saturated during the summer, and have an organic horizon over silt with permafrost, although on floodplains, permafrost is absent. Sites are typically sedge-dominated, and species include *Carex aquatilis, Eriophorum angustifolium, Carex glareosa, Carex rotundata, Carex rariflora, Carex chordorrhiza, Carex rostrata, Carex*

saxatilis, Carex utriculata, Eriophorum russeolum, and *Eriophorum scheuchzeri*. More elevated perimeters support low shrubs and tussocks. Common shrubs include *Betula nana, Salix fuscescens, Salix pulchra, Ledum palustre ssp. decumbens, Andromeda polifolia, Vaccinium vitis-idaea, Vaccinium uliginosum*, and *Empetrum nigrum*.

IVC Dynamics:

IVC Environment: This group is found throughout arctic and subarctic Alaska and Canada, in valley bottoms, basins, low-center polygons, oxbows, wet depressions, low-lying areas, abandoned channels, sideslope watertracks and adjacent to streams. Soils range from acidic to non-acidic, are saturated during the summer, and usually have an organic horizon over mineral soil. In the Arctic, the organic horizon may be thick enough that the active layer does not reach the mineral horizon.

DISTRIBUTION

IVC Geographic Range: This group is found throughout arctic and subarctic Alaska and Canada. Its characteristics in Canada need to be determined.

IVC Nations: CA,US

IVC States/Provinces: AK, LB, NT, NU, QC, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2120 *Carex aquatilis* - *Dupontia fisheri* Wet Meadow Alliance** [Water Sedge - Fisher'S Tundragrass Wet Meadow Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K. Boggs, M. Raynolds, J. Jorgenson, in Faber-Langendoen et al. (2011)

IVC Description Author: K. Boggs and M. Hall

IVC Description Date: 2016-01-08

IVC Acknowledgments:

A2120 Water Sedge - Fisher'S Tundragrass Wet Meadow Alliance

[ ]

Carex aquatilis - Dupontia fisheri Wet Meadow Alliance

North American Arctic Graminoid Wet Meadow

IVC Scientific Name: *Carex aquatilis - Dupontia fisheri* Wet Meadow Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is tentatively proposed to represent arctic wet meadows.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: AK, MB, ON, QC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002556 *Eleocharis acicularis* Freshwater Wet Meadow** [Needle Spikerush Freshwater Wet Meadow] []
  GNR. MB, ON?
- **CEGL002552 *Dupontia fisheri - Calamagrostis (deschampsioides, stricta)* Wet Meadow** [Fisher's Tundragrass - (Circumpolar Reedgrass, Western Bluejoint) Wet Meadow] []
  GNR. MB, ON
- **CEGL002546 *Carex aquatilis - Eriophorum* spp. Wet Meadow** [Water Sedge - Cottongrass species Wet Meadow] []
  GNR. MB
- **CEGL002550 *Carex aquatilis - Carex glareosa - Triglochin maritima* Wet Meadow** [Water Sedge - Lesser Saltmarsh Sedge - Seaside Arrow-grass Wet Meadow] []
  GNR. MB, ON?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G830 North American Arctic Wet Shrubland

[ ]

IVC Colloquial Name: North American Arctic Wet Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This concept describes gently sloping water tracks that form linear drainage networks in the foothills of northern Alaska. Water track wetlands conduct surface water from seasonal thaw and summer rainfall events. In these wetland features, runoff is confined to near surface due to shallow permafrost. Low-shrub wetlands characterize vegetation in well-developed water tracks. The dominant vegetation community is *Salix pulchra / Eriophorum angustifolium*. Important wetland sedges include *Carex aquatilis* and *Eriophorum russeolum*. Important mosses include *Calliergon stramineum, Sphagnum girgensohnii*, and *Sphagnum warnstorfii*.
IVC Dynamics:
IVC Environment: Freshwater Arctic shrublands follow water tracks, subsurface channels in landscapes with permafrost, and are curvilinear shallow depressions associated with groundwater movement above the permafrost but below the ground surface (Trochim et al. 2016). They are "characterized by deeper seasonal thaw depth, warmer soil temperatures, and higher soil moisture and nutrient content relative to adjacent tundra. Consequently, enhanced vegetation productivity, and dominance by tall deciduous shrubs, are typical in water tracks" (Salvatore et al. 2016). These are found in the foothills of northern Alaska, and are gently sloping water track drainage networks.

DISTRIBUTION

IVC Geographic Range: This wet shrubland group occurs in the foothills of northern Alaska along gently sloping water track drainage networks.
IVC Nations: CA?,US
IVC States/Provinces: AK, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Alaska Natural Heritage Program, in Faber-Langendoen et al. (2016)
IVC Description Author: L. Flagstad and G. Kittel
IVC Description Date: 2017-03-29
IVC Acknowledgments:

G368 North American Arctic Tall Willow Wet Shrubland

[ ]

IVC Colloquial Name: North American Arctic Tall Willow Wet Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group is defined by tall willow shrublands found in floodplains and riparian corridors throughout the arctic, subarctic, and alpine boreal regions of Alaska. *Salix alaxensis* is the dominant shrub with canopy heights often exceeding 2 m. Other common willows are *Salix arbusculoides, Salix glauca, Salix niphoclada, Salix pulchra*, and *Salix richardsonii*. Dwarf-shrubs include *Arctostaphylos* and *Dryas* species. In the herbaceous layer *Eurybia sibirica, Chamerion latifolium*, and *Equisetum arvense* have high constancy as do the grasses *Bromus inermis var. pumpellianus* and *Festuca rubra* and the legumes *Hedysarum alpinum, Astragalus alpinus, Lupinus arcticus*, and *Oxytropis campestris*. Mosses and lichens are uncommon in the ground layer.
IVC Dynamics: Flooding regime is the primary driver of tall willow communities in the Arctic. This group is successional on floodplains where they commonly develop from seral herbs and are eventually replaced by wet sedge or tussock tundra as flooding decreases, organic matter builds and permafrost aggrades.
IVC Environment: This group is defined by tall willow shrublands found in floodplains and riparian corridors throughout the arctic, subarctic, and boreal alpine regions of Alaska. Shrublands on broad floodplains of the Arctic Coastal Plain as well as narrow riparian zones in mountainous environments are included in this group. Patch size is linear following the terrace and point bar pattern along river courses. Soils are composed of well-drained sands and gravels and permafrost is absent or deeper than 1.5 m below the surface.

DISTRIBUTION

IVC Geographic Range: This group occurs in floodplains and riparian corridors throughout the arctic, subarctic, and boreal alpine regions of Alaska. Its distribution in Canada needs to be determined.
IVC Nations: CA,GL?,US
IVC States/Provinces: AK, LB?, NT?, NU?, QC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Boggs, M. Raynolds, J. Jorgenson, in Faber-Langendoen et al. (2011)
IVC Description Author: T. Boucher and K. Boggs
IVC Description Date: 2016-01-20
IVC Acknowledgments: M. Hall and L. Flagstad

2.C.5. Salt Marsh

Salt Marsh is a wetland that has shallow water and levels that usually fluctuate due primarily to tides along the coast or changes in water depth in depressions. Coastal salt marshes are primarily intertidal; that is, they are found in areas at least occasionally inundated by high tide but not flooded during low tide, including estuaries, lagoons, and the lee side of barrier islands. The vegetation comprises emergent shrubs and herbs with at least 10% cover, especially saline or halophytic species. They occur at all latitudes around the globe, but are concentrated in the temperate mid-latitudes (23-70°N and S).

Macrogroups in Canada:

- **M079 North American Atlantic & Gulf Coastal Salt Marsh [Marais salés de la région atlantique et du golfe de l'Amérique du Nord]**
  This macrogroup comprises all regularly and irregularly flooded tidal marshes of the North Atlantic and Gulf coasts in North America, ranging from polyhaline (salt) marshes to mesohaline (brackish) marshes, dominated or characterized by an abundance of halophytic species, including *Distichlis spicata, Spartina alterniflora, Spartina patens*, and species of *Salicornia* and *Sarcocornia*.
- **M081 North American Pacific Coastal Salt Marsh [Marais salés de la côte pacifique de l'Amérique du Nord]**
  This macrogroup consists of coastal intertidal salt marshes dominated by *Allenrolfea occidentalis, Batis maritima, Carex lyngbyei, Glaux maritima, Jaumea carnosa, Suaeda* spp., and/or *Salicornia depressa*, among many other species along the Pacific Coast of North America, spanning boreal salt marshes from Alaska to Baja California in Mexico.
- **M077 Great Plains Saline Wet Meadow & Marsh [Prairies humides salines et marais des Grandes Plaines]**
  This macrogroup consists of graminoid-dominated saline shallow depressions and mudflats dominated by *Distichlis spicata, Hordeum jubatum, Pascopyrum smithii*, or *Salicornia rubra*, as well as other flood- and saline-tolerant species. It occurs throughout the Great Plains from southern Canada to the panhandle of Texas and west into the plains of Montana, Wyoming and Colorado.
- **M082 Warm & Cool Desert Alkali-Saline Marsh, Playa & Shrubland [Marais alcalins-salins, bassins endoréiques et arbustaies des régions désertiques tièdes et froides]**
  This macrogroup consists of alkaline and saline wetlands with salt-tolerant plant growth where dominant and characteristic plant species include *Atriplex* spp., *Distichlis spicata, Salicornia* spp., *Sarcobatus vermiculatus, Sesuvium verrucosum, Sporobolus* spp., *Suaeda moquinii*, and *Triglochin maritima*. These are located in playas, washes, mudflats and depressional wetlands where evaporation far exceeds precipitation and/or where bedrock and soil properties contribute to alkaline/saline conditions. Sites are found throughout the western U.S. and southwestern Canada.
- **M403 Arctic Tidal Salt Marsh [Marais salés de la côte arctique de l'Amérique du Nord]**
  This macrogroup consists of tidal saltwater herbaceous marshes dominated by *Carex glareosa, Carex ramenskii, Carex subspathacea, Carex ursina, Cochlearia groenlandica, Dupontia fisheri, Puccinellia phryganodes*, and *Stellaria humifusa* found along Alaska's Arctic coastline from the Bering Sea to the Arctic Ocean.

M079 North American Atlantic & Gulf Coastal Salt Marsh

Marais salés de la région atlantique et du golfe de l'Amérique du Nord

IVC Colloquial Name: North American Atlantic & Gulf Coastal Salt Marsh

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup encompasses eastern North American tidal marshes along the Atlantic and Gulf coasts, ranging in halinity from salt to brackish, and in tidal regime from regularly twice-daily flooding on low marshes to irregularly flooded high marshes, as well as hypersaline pannes. It also includes saline inland prairie. *Distichlis spicata, Spartina alterniflora, Spartina patens*, and species of *Salicornia* and *Sarcocornia* are characteristic throughout the range. These species are present but less abundant in brackish marshes that occur along tidal rivershores or in other settings receiving freshwater mixing. Here, additional species include *Spartina cynosuroides, Schoenoplectus americanus, Typha angustifolia*, and others. Associated species vary across the north-to-south expanse of this macrogroup. Towards the north, common associates include *Juncus gerardii, Limonium carolinianum, Plantago maritima var. juncoides*, and *Triglochin maritima*. From the Chesapeake and mid-Atlantic south, *Batis maritima, Juncus roemerianus, Monanthochloe littoralis, Sesuvium portulacastrum, Spartina spartinae*, and *Typha domingensis* become increasingly common associates. Salt marshes and pannes are regularly to irregularly flooded by shallow polyhaline waters as a result of lunar, wind and storm tides. Brackish tidal marshes develop along estuaries where freshwater mixes with ocean saltwater moving up the estuary from the tidal force. Waters in brackish marshes are generally in the salinity range of 0.5-18 ppt, and the vegetation is subject to flooding from the twice-daily tides. This macrogroup ranges along the Atlantic Coast and Gulf of Mexico region from the New England states and the southern Maritime Provinces of Canada south to northern Mexico.

IVC Geographic Range: This vegetation is found along the North American Atlantic and Gulf of Mexico coasts from the Bay of Fundy south to Texas and possibly northern Mexico.

IVC Nations: CA,MX,US

IVC States/Provinces: AL, CT, DC, DE, FL, GA, LA, LB, MA, MD, ME, MS, NB, NC, NF, NH, NJ, NS, NY, PA, PE?, QC, RI, SC, TAM, TX, VA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G122 Atlantic & Gulf Coastal Low Salt Marsh []**
- **G123 Atlantic & Gulf Coastal Tidal Flat & Panne []**
- **G121 Atlantic & Gulf Coastal High Salt Marsh []**
- **G120 Atlantic & Gulf Coastal Brackish Salt Marsh []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: H.T. Odum and B.J. Copeland (1974)

IVC Description Author: S.C. Gawler and L.A. Sneddon

IVC Description Date: 2015-05-20

IVC Acknowledgments:

G122 Atlantic & Gulf Coastal Low Salt Marsh

[ ]

IVC Colloquial Name: Atlantic & Gulf Coastal Low Salt Marsh

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group encompasses salt marsh vegetation that is flooded twice daily by polyhaline waters and dominated by *Spartina alterniflora*. *Spartina alterniflora* is constant, dominant, and sometimes monospecific. Halophytic forbs (or forblike woody plants in the case of *Sarcocornia*) such as *Sarcocornia perennis* may be present though not abundant, and individuals of species more common in the high marsh, such as *Limonium carolinianum, Juncus roemerianus*, and *Distichlis spicata*, may also

occur. Other species include *Limonium carolinianum, Plantago maritima, Salicornia* spp., *Spartina patens*, and *Spergularia canadensis*. Macroalgae such as *Ascophyllum nodosum* may be present (though sparse) particularly in the northern part of the group's range. It is often found fringing tidal creeks, and in places forms extensive flats of low marsh vegetation.

IVC Dynamics: Storm tides often deposit sand on salt marsh surfaces where overwash breaches the barrier dune. Flood-deposited wrack can smother the underlying marsh, converting it to an unvegetated flat. Decline of low salt marsh has been documented on the Atlantic and Gulf coasts in recent decades; loss is attributed to intense grazing by a nocturnal crab, which is most pronounced at tidal creek edges (Smith 2009).

IVC Environment: *Climate:* Cool-temperate to warm-temperate maritime climate. *Soil/substrate/hydrology:* Tides bring nutrients, making the regularly flooded marshes fertile. Salt marshes generally develop on fine-grained sediments, but can develop over sands as well. Production exceeds decomposition, leading to the buildup of marsh peat. Low marsh is flooded twice daily by polyhaline waters as a result of lunar, wind and storm tides.

DISTRIBUTION

IVC Geographic Range: This vegetation is found along the North American Atlantic and Gulf of Mexico coasts from the Bay of Fundy south to Texas and possibly Mexico.

IVC Nations: CA,MX,US

IVC States/Provinces: AL, CT, DE, FL, GA, LA, LB, MA, MD, ME, MS, NB, NC, NF, NH, NJ, NS, NY, QC, RI, SC, TAM?, TX, VA

IVC Omernik Ecoregions: 8.1.7.59:C, 8.1.8.82:C, 8.5.1.63:C, 8.5.2.73:C, 8.5.3.75:C, 8.5.4.84:C, 9.5.1.34:C

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate. Effects of invasive species and sea level rise needs further review, as well as effects of poor landscape context.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4498 *Spartina alterniflora* North Atlantic Low Salt Marsh Alliance** [Smooth Cordgrass North Atlantic Low Salt Marsh Alliance] [] This alliance includes low, regularly flooded tidal salt marshes of the north Atlantic coast, from Virginia to Labrador, and is dominated by *Spartina alterniflora*.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, L. Sneddon, and C. Nordman, in Faber-Langendoen et al. (2011)

IVC Description Author: S.C. Gawler, L. Sneddon, M. Pyne and D. Faber-Langendoen

IVC Description Date: 2015-06-05

IVC Acknowledgments: Sean Basquill

A4498 Smooth Cordgrass North Atlantic Low Salt Marsh Alliance

[ ]

Spartina alterniflora North Atlantic Low Salt Marsh Alliance

North Atlantic Smooth Cordgrass Low Salt Marsh

IVC Scientific Name: *Spartina alterniflora* North Atlantic Low Salt Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance includes low, regularly flooded tidal salt marshes of the north Atlantic coast, from Virginia to Labrador. There is little variation in vascular plant species composition across the range. It occurs in nearly pure stands of *Spartina*

alterniflora, with occasional low-growing species such as *Spergularia salina, Salicornia* spp., *Suaeda maritima*, and seaweeds such as *Ulva lactuca* and other algae such as *Fucus vesiculosus* and *Ascophyllum nodosum*, which grow at the bases of the *Spartina* plants. Herbs of *Salicornia depressa* and *Salicornia bigelovii* can be quite common mixed in with the *Spartina*, often becoming more apparent later in the growing season. *Limonium carolinianum* is another characteristic herb, but only as scattered individuals. Stands are generally limited to the zone between mean sea level and the mean high-water level. The habitat occurs in protected inlets behind barrier beaches, drowned river valleys, and along the margin of large bays. Peat depth ranges from a few feet, if the community formed over a mudflat, to 24 m (80 feet) in drowned river valleys. *Spartina alterniflora* is limited to the low marsh zone by moderate salinity; it can withstand longer submergence than other salt marsh grasses, but still requires periodic exposure of the substrate. It also requires moderately high levels of iron (7-15 ppm).

IVC Dynamics:

IVC Environment: Stands are generally limited to the zone between mean sea level and the mean high-water level. The habitat occurs in protected inlets behind barrier beaches, drowned river valleys, and along the margin of large bays. Peat depth ranges from a few feet, if the community formed over a mudflat, to 24 m (80 feet) in drowned river valleys. *Spartina alterniflora* is limited to the low marsh zone by moderate salinity; it can withstand longer submergence than other salt marsh grasses, but still requires periodic exposure of the substrate. It also requires moderately high levels of iron (7-15 ppm).

DISTRIBUTION

IVC Geographic Range: This alliance includes low, regularly flooded tidal salt marshes of the north Atlantic coast, from Virginia to Labrador.

IVC Nations: CA,US

IVC States/Provinces: CT, DE, LB, MA, MD, ME, NB, NC, NF, NH, NJ, NS, NY, QC, RI, VA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL004192 *Spartina alterniflora* North Atlantic Salt Marsh** [Smooth Cordgrass North Atlantic Salt Marsh] []
  G5 (1997-12-01) CT, DE, MA, MD, ME, NB, NC, NH, NJ, NS, NY, RI, VA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author: L Sneddon and D. Faber-Langendoen

IVC Description Date:

IVC Acknowledgments:

G123 Atlantic & Gulf Coastal Tidal Flat & Panne

[ ]

IVC Colloquial Name: Atlantic & Gulf Coastal Tidal Flat & Panne

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation of this group occupies tidally-influenced hypersaline areas along the Atlantic Coast and Gulf of Mexico region from the New England states and the Canadian Maritime Provinces, along the southeastern coast and south to northern Mexico. Examples of this vegetation may occur in patches throughout this relatively large range. The southern limit depends on where the temperate-tropical line is set in relation to this division. These irregularly tidally-flooded marshes are generally somewhat hypersaline from evaporation of seawater after storm surges or exceptionally high tides. They vary somewhat locally in expression, but all tend to exhibit low vascular plant diversity, dominated by halophytic species. There are relatively few plant species which are able to occupy these environments. These include various species of the succulent genera *Salicornia* spp. and *Sarcocornia* spp., as well as several grasses (which may be stunted), including *Distichlis spicata, Spartina alterniflora, Spartina*

spartinae, and/or *Sporobolus virginicus*. Some more southerly associations may contain or be dominated by *Batis maritima*. Common associates include *Atriplex* spp., *Limonium carolinianum, Monanthochloe littoralis, Plantago maritima var. juncoides, Suaeda maritima*, and *Triglochin maritima*. Total vegetative cover is quite variable, from near total absence of vascular plants to a dense cover of vascular and nonvascular plants; however, unlike high marsh *Spartina* vegetation, pannes do not feature dense *Spartina* cover. Algal mats are characteristically present, visible even in densely vegetated pannes. In some cases, blue-green algae may contribute significantly more biomass than vascular species.

IVC Dynamics: Salt pannes are part of the shifting mosaic of plant communities of the salt marsh complex. They tend to occur more frequently on the high marsh, but are present in the low marsh as well. Pannes are variable in shape and likely variable in origin. Formation can result from ice-scouring or rafting flotsam that scrapes away or smothers existing vegetation, or from peat compaction, mosquito ditch levees, or tidal creekbank erosion that blocks or impedes drainage. Lack of vegetation decreases local sedimentation, which also maintains lower micro-relief (Redfield 1972). Evaporation from these poorly drained shallow depressions leads to hypersaline conditions (Niering and Warren 1980, Bertness et al. 1992). Gradients of salinity and standing water depth and duration correlate to vegetative cover and composition. The lowest portions of pannes tend to be wetter and more saline and can have little or no vegetation. As duration of wetness and salinity decrease across the micro-relief, forb-dominated species assemblages tend to dominate followed by mixed graminoid-forb assemblages at the outer, higher edges (Redfield 1972). Pannes can be ephemeral features on the marsh, and vegetation cover and composition can vary from year to year. Unvegetated, soft-bottomed pannes generally have plentiful worm and crab burrows (Godfrey et al. 1978).

IVC Environment: Vegetation of this association tends to develop in shallow depressions in salt marshes where drainage is poor. They tend to occur more frequently on the high marsh but occur within low marsh as well. Pannes form in depressions that range from 2-30 cm lower than the elevation of the marsh. The depressions are regularly to irregularly flooded by tides, and as the water evaporates during low tide, the salinity concentration increases, forming "salt pannes." Substrate is soft, silty muck or peat of variable density.

DISTRIBUTION

IVC Geographic Range: This hypersaline vegetation is found along the Atlantic Coast and Gulf of Mexico region from the New England states and the southern Maritime Provinces of Canada south to northern Mexico. The southern limit depends on where the temperate-tropical line is set in relation to this division.

IVC Nations: CA,MX,US

IVC States/Provinces: AL, CT, DE, FL, GA, LA, MA, MD, ME, MS, NB, NC, NH, NJ, NS, NY, QC, RI, SC, TAM, TX, VA

IVC Omernik Ecoregions: 8.1.7.59:C, 8.1.8.82:C, 8.5.1.63:C, 8.5.2.73:C, 8.5.3.75:C, 8.5.4.84:C, 9.5.1.34:C

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate. Effects of invasive species and sea level rise needs further review, as well as effects of poor landscape context.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3955 *Batis maritima* - *Sarcocornia* spp. - *Salicornia* spp. Intertidal Salt Flat Alliance** [Turtleweed - Swampfire species - Saltwort species Intertidal Salt Flat Alliance] []
  This wide-ranging vegetation of hypersaline flats is dominated by halophytic herbs, including *Distichlis spicata, Salicornia bigelovii, Salicornia depressa, Sarcocornia perennis*, and stunted *Spartina alterniflora*. In the in the southern portion of the range these tidal flats are dominated by *Batis maritima*.
- **A4487 *Salicornia depressa* - *Salicornia maritima* Intertidal Salt Flat Alliance** [Virginia Glasswort - Slender Grasswort Intertidal Salt Flat Alliance] []
  These salt marshes are hypersaline flats or very shallow depressions (pannes) dominated by succulents and other halophytic herbs, including *Salicornia depressa, Salicornia bigelovii, Salicornia maritima*, and stunted *Spartina alterniflora*, that occur in salt marshes of the North American Atlantic coast.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: W.R. Miller and F.E. Egler (1950)
IVC Description Author: M. Pyne and D. Faber-Langendoen
IVC Description Date: 2015-06-05
IVC Acknowledgments: Sean Basquill

A3955 Turtleweed - Swampfire species - Saltwort species Intertidal Salt Flat Alliance

[ ]

Batis maritima - *Sarcocornia* spp. - *Salicornia* spp. Intertidal Salt Flat Alliance

South Atlantic Coast Intertidal Salt Flat & Panne

IVC Scientific Name: *Batis maritima* - *Sarcocornia* spp. - *Salicornia* spp. Intertidal Salt Flat Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Examples of this alliance are dominated by halophytic herbs, including *Distichlis spicata, Salicornia bigelovii, Salicornia depressa, Sarcocornia perennis, Sesuvium verrucosum, Suaeda linearis*, and stunted *Spartina alterniflora*, as well as by *Batis maritima* in the southern portion of the range. Other species can include *Borrichia frutescens, Blutaparon vermiculare, Limonium carolinianum, Lycium carolinianum, Monanthochloe littoralis, Sesuvium portulacastrum, Spartina spartinae, Sporobolus virginicus*, and *Suaeda linearis*. Its habitat is small to large tidally flooded hypersaline flats, very shallow depressions, or tidal flats. This alliance is especially well-developed in salt panne situations, where tidal saltwater evaporates, augmenting salinity. This wide-ranging alliance is found along the Atlantic Coast of the United States from Maine to Florida and along the Gulf Coast to Texas and the Mexican state of Tamaulipas. Its considerable variation across this wide range is accommodated in the associations.
IVC Dynamics:
IVC Environment: Vegetation of this alliance tends to develop in shallow depressions within high salt marshes where drainage is poor. The depressions are flooded by high tides, but as the water evaporates during low tide, the salinity concentration increases forming "salt pannes." Formation of the pannes may result from ice-scouring, rafting flotsam, peat compaction, shifting barrier island environments, or by mosquito ditch levees which create small impoundments. These communities are regularly to irregularly flooded by nearby brackish water. Bare peat and/or mucky soils are prevalent (up to 85% bare soils), and standing water covers these communities at high tide.

DISTRIBUTION

IVC Geographic Range: This wide-ranging alliance is found along the Atlantic Coast of the United States from Maine to Florida and along the Gulf Coast to Texas and the Mexican state of Tamaulipas.
IVC Nations: CA,MX,US
IVC States/Provinces: AL, CT, DE, FL, GA, LA, MA, MD, ME, MS, NB, NC, NH, NJ, NS, NY, QC, RI, SC, TAM, TX, VA
IVC Omernik Ecoregions: 9.5.1.34:C

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M. Pyne, in Faber-Langendoen et al. (2013)
IVC Description Author: M. Pyne
IVC Description Date: 2014-01-08
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by Alan Weakley and Karen Patterson.

A4487 Virginia Glasswort - Slender Grasswort Intertidal Salt Flat Alliance

[ ]

Salicornia depressa - Salicornia maritima Intertidal Salt Flat Alliance

North Atlantic Intertidal Salt Flat & Panne

IVC Scientific Name: *Salicornia depressa - Salicornia maritima* Intertidal Salt Flat Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These salt marshes are hypersaline flats or very shallow depressions (pannes) dominated by succulents and other halophytic herbs, including *Salicornia depressa, Salicornia bigelovii, Salicornia maritima*, and stunted *Spartina alterniflora*, that occur in salt marshes of the North American Atlantic coast. Vegetation of this association tends to develop in shallow depressions within high or salt marshes where drainage is poor. Total cover is variable in pannes, from near total absence of vascular plants to a dense cover of *Salicornia depressa, Salicornia bigelovii, Salicornia maritima*, or *Spartina alterniflora* (short form). Common associates include *Limonium carolinianum, Plantago maritima* var. *juncoides, Triglochin maritima, Spartina patens, Suaeda maritima*, and *Atriplex* spp. *Borrichia frutescens* can be an occasional component in Virginia. Algal mats are characteristically present, visible even in densely vegetated pannes. Blue-green algae are an important component of these mats, in some cases contributing significantly more biomass to the community than do vascular species. Diagnostic species include *Salicornia bigelovii* and *Salicornia depressa*. The depressions are regularly to irregularly flooded by high tides, but as the water evaporates during low tide, the salinity concentration increases forming "salt pannes." Formation of the pannes may result from ice scouring, rafting flotsam, peat compaction, mosquito ditch levees, or erosion of tidal creek banks, which create small, sparsely vegetated to unvegetated impoundments. Bare peat and/or mucky soils are prevalent (up to 85% bare soils).

IVC Dynamics: Salt pannes are part of the shifting mosaic of plant communities of the salt marsh complex. They tend to occur more frequently on the high marsh. They are also variable in shape and likely variable in origin. Formation can result from ice scouring or rafting flotsam that scrapes away or smothers existing vegetation, or from peat compaction, mosquito ditch levees, or tidal creek bank erosion that blocks or impedes drainage. Lack of vegetation decreases local sedimentation, which also maintains lower micro-relief (Redfield 1972). Evaporation from these poorly drained shallow depressions leads to hypersaline conditions (Bertness et al. 1992, Niering and Warren 1980). Gradients of salinity and standing water depth and duration correlate with vegetative cover and composition; the lowest portions of pannes tend to be wetter and more saline and can have little or no vegetation. As duration of wetness and salinity decreases, forb-dominated species assemblages tend to dominate, followed by mixed graminoid-forb assemblages at the outer, higher edges (Redfield 1972). Pannes can be ephemeral features on the marsh, and vegetation cover and composition can vary from year to year. Unvegetated, soft-bottomed pannes generally have plentiful worm and crab burrows (Godfrey et al. 1978).

IVC Environment: Vegetation tends to develop in shallow depressions in salt marshes where drainage is poor, and occurs more frequently on the high marsh. Pannes form in depressions that range from 2-30 cm lower than the elevation of the marsh. The depressions are regularly to irregularly flooded by tides, and as the water evaporates during low tide, the salinity concentration increases forming "salt pannes." Substrate is soft, silty muck or peat of variable density.

DISTRIBUTION

IVC Geographic Range: This alliance occurs along the Mid- and North Atlantic Coast from the Canadian Maritime provinces south to North Carolina and possibly South Carolina and Georgia.

IVC Nations: CA,US

IVC States/Provinces: CT, DE, GA?, MA, MD, ME, NB, NC, NH, NJ, NS, NY, QC?, RI, SC?, VA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL004308 *Salicornia (depressa, bigelovii, maritima) - Spartina alterniflora* Salt Marsh** [(Virginia Glasswort, Dwarf Saltwort, Slender Grasswort) - Smooth Cordgrass Salt Marsh] []
  G5 (1997-12-01) CT, DE, GA?, MA, MD, ME, NB, NC, NH, NJ, NS, NY, RI, SC?, VA
- **CEGL006370 *Ruppia maritima - Stuckenia pectinata* Aquatic Vegetation** [Widgeongrass - Sago Pondweed Aquatic Vegetation] []
  GNR. CT, MA, NH, NJ, NY, RI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: S.L. Neid, L.A. Sneddon, A.S. Weakley, D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments: A. Berdine

G121 Atlantic & Gulf Coastal High Salt Marsh

[ ]

IVC Colloquial Name: Atlantic & Gulf Coastal High Salt Marsh
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group encompasses vegetation in the regularly flooded, upper herbaceous or herb-shrub zones of salt marshes of the Atlantic Coast of temperate North America subject to polyhaline tidal waters. Dominance is most often by graminoids, with *Spartina patens* usually present and often dominant. Other characteristic species include *Distichlis spicata* and *Salicornia* spp. A fringe of shrub-herb vegetation, or sometimes more extensive areas of salt-tolerant shrubs, is common at the upper edges of the high marsh zone. High marsh vegetation generally develops between the levels of an area's mean daily high tides and spring tides. Wind tides may be important in marshes associated with barrier island systems. Associated species vary across the north-to-south expanse of this group. Towards the north, in the Gulf of Maine, common associates include *Juncus gerardii, Solidago sempervirens, Symphyotrichum novi-belgii*, and *Limonium carolinianum*; from the Chesapeake south, *Juncus roemerianus* is common and other associates such as *Baccharis halimifolia* are characteristic.
IVC Dynamics: High marshes develop in areas above mean high water that still receive tidal influence from lunar spring tides, wind tides, or other events. For marshes on the back of barrier islands, overwash in storms may deposit sand in the marsh.
IVC Environment: *Climate:* Cool-temperate to warm-temperate maritime climate. *Soil/substrate/hydrology:* Tides bring nutrients, making the regularly flooded marshes fertile. Salt marshes generally develop on fine-grained sediments, but can develop over sands as well. Production exceeds decomposition, leading to the buildup of marsh peat. High marsh, above mean high tide, is regularly to irregularly flooded by shallow polyhaline waters as a result of lunar, wind and storm tides.

DISTRIBUTION

IVC Geographic Range: These marshes are found along the North American Atlantic and Gulf of Mexico coasts from the Bay of Fundy south and west to Texas and adjacent Mexico.
IVC Nations: CA,MX,US
IVC States/Provinces: AL, CT, DE, FL, GA, LA, MA, MD, ME, MS, NB, NC, NH, NJ, NS, NY, QC, RI, SC, TAM?, TX, VA
IVC Omernik Ecoregions: 8.1.7.59:C, 8.1.8.82:C, 8.5.1.63:C, 8.5.2.73:C, 8.5.3.75:C, 8.5.4.84:C, 9.5.1.34:C

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate. Effects of invasive species and sea level rise needs further review, as well as effects of poor landscape context.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S.W. Nixon (1982)
IVC Description Author: S.C. Gawler and D. Faber-Langendoen
IVC Description Date: 2015-06-05
IVC Acknowledgments: Sean Basquill

G120 Atlantic & Gulf Coastal Brackish Salt Marsh

[ ]

IVC Colloquial Name: Atlantic & Gulf Coastal Brackish Salt Marsh
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Brackish tidal marshes develop where saltwater mixes with freshwater, primarily in estuaries but also sometimes on the lee side of barrier islands or in other settings. The vegetation is primarily herbaceous, but there may be areas of shrub dominance. Graminoids are prominent and typically include tall species such as *Typha angustifolia, Typha domingensis, Schoenoplectus americanus, Schoenoplectus pungens, Bolboschoenus robustus*, and *Spartina cynosuroides*. The salt marsh grasses *Spartina patens* and *Spartina alterniflora* may also be present, but generally are mixed with other species instead of exhibiting strong dominance as they do in the salt marsh setting. Those *Spartina* are typically most abundant where brackish marsh is transitioning to salt marsh, for example at the estuary mouth. Some brackish tidal marshes are forb-dominated; common species in these settings include *Sagittaria subulata, Limosella australis, Lilaeopsis chinensis, Sagittaria calycina var. spongiosa, Polygonum arifolium, Polygonum hydropiperoides, Zannichellia palustris, Eleocharis parvula*, and *Amaranthus cannabinus*. Some of these forbs also occur as associates where graminoids are dominant.

In Atlantic Canada, the brackish marshes have a somewhat different character. They are characterized by *Carex paleacea, Hierochloe odorata, Juncus arcticus ssp. littoralis, Spartina pectinata*, and/or *Schoenoplectus maritimus/pungens*; *Solidago sempervirens* is frequent; freshwater species, such as *Typha latifolia, Typha angustifolia, Solidago uliginosa*, among others, are typical; *Carex mackenziei, Cladium mariscoides, Eleocharis parvula, Hordeum jubatum, Limosella australis, Samolus valerandi*, and *Teucrium canadense* may be present. Coastal plain species such as *Schoenoplectus americanus, Eleocharis rostellata*, and *Lilaeopsis chinensis* (more typical in low salt marsh) are only found in western Nova Scotia.

IVC Dynamics: Wave and ice-scour can have a significant influence on the year-to-year appearance of the vegetation, and also influences variations in physiognomy and composition along estuary reaches.

IVC Environment: *Climate:* Cool-temperate to warm-temperate maritime climate. *Soil/substrate/hydrology:* Brackish tidal marshes develop along estuaries where freshwater mixes with ocean saltwater moving up the estuary from the tidal force. Waters in brackish marshes are generally in the 0.5-18 ppt salinity range, and the vegetation is subject to flooding from the twice-daily tides.

DISTRIBUTION

IVC Geographic Range: This group occurs along the North American Atlantic and Gulf of Mexico coasts from the Bay of Fundy to Texas.

IVC Nations: CA,US

IVC States/Provinces: AL, CT, DC, DE, FL, GA, LA, LB?, MA, MD, ME, MS, NB, NC, NF?, NH, NJ, NS, NY, PA, PE?, QC, RI, SC, TX, VA

IVC Omernik Ecoregions: 8.1.7.59:C, 8.1.8.82:C, 8.5.1.63:C, 8.5.2.73:C, 8.5.3.75:C, 8.5.4.84:C, 9.5.1.34:C

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate to high. Effects of sea level rise needs further review.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4493 *Spartina alterniflora* - *Spartina cynosuroides* - *Carex paleacea* Brackish Tidal Marsh Alliance** [Smooth Cordgrass - Big Cordgrass - Chaffy Sedge Brackish Tidal Marsh Alliance] []
  This alliance comprises brackish tidal marshes of the North Atlantic coast and characterized by *Spartina alterniflora* and/or *Spartina cynosuroides*, generally occurring on tidal rivers.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, L. Sneddon, and C. Nordman, in Faber-Langendoen et al. (2011)
IVC Description Author: S.C. Gawler and D. Faber-Langendoen
IVC Description Date: 2015-06-05
IVC Acknowledgments: Sean Basquill

A4493 Smooth Cordgrass - Big Cordgrass - Chaffy Sedge Brackish Tidal Marsh Alliance

[ ]
Spartina alterniflora - *Spartina cynosuroides* - *Carex paleacea* Brackish Tidal Marsh Alliance
Northern Atlantic Cordgrass Brackish Tidal Marsh

IVC Scientific Name: *Spartina alterniflora* - *Spartina cynosuroides* - *Carex paleacea* Brackish Tidal Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance comprises brackish tidal marshes of the North Atlantic coast, generally occurring on tidal rivers. Typical dominants include *Spartina alterniflora* and/or *Spartina cynosuroides*. Associates include *Typha angustifolia*. In addition to the nominals, additional halophytic species such as *Spartina patens* and *Iva frutescens* indicate brackish (mesohaline) conditions. Characteristic species of these environments are *Amaranthus cannabinus, Baccharis halimifolia, Crassula aquatica (= Tillaea aquatica), Echinochloa walteri, Eleocharis halophila, Eleocharis parvula, Hibiscus moscheutos, Kosteletzkya virginica, Lilaeopsis chinensis, Pluchea odorata, Sagittaria calycina, Samolus valerandi* ssp. *parviflorus (= Samolus parviflorus), Schoenoplectus americanus, Bolboschoenus maritimus (= Schoenoplectus maritimus),* and *Bolboschoenus robustus (= Schoenoplectus robustus). Carex paleacea* is characteristic in northern New England and the Canadian maritime provinces.
IVC Dynamics: This alliance comprises vegetation of environmental settings that experiences a wide fluctuation in salinity. This includes the mesohaline reaches of tidal rivers where saltwater from the ocean intermixes with freshwater input from inland, or at the upland interface of tidal marshes that receives significant freshwater input. Flooding regime varies with respect to height from river channel, with more regular flooding occurring adjacent to the river, and irregular flooding on terraces.
IVC Environment: This type generally occurs on tidal rivers as opposed to regularly flooded salt marshes forming behind barrier beaches. Substrates vary from sand or gravel on tidal rivershores, poorly drained peat overlying sand and mucky sand, to silty mud along meanders in tidal rivers and guts in the interiors of extensive marshes where there is significant freshwater input. Tidal flow also varies from regularly flooded low marsh to intermittently flooded high marsh on terraces and levees. Microtopography is relatively flat and lacks pronounced hummocks and hollows.

DISTRIBUTION

IVC Geographic Range: This alliance comprises brackish tidal marshes of the North and Mid-Atlantic coasts, generally occurring on tidal rivers, from Maine to the Carolinas.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, GA, LB?, MA, MD, ME, NB?, NC, NF?, NH, NJ, NS?, NY, PA, PE?, QC, RI, SC, VA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL004473** ***Sagittaria subulata - Limosella australis*** **Tidal Marsh** [Awl-leaf Arrowhead - Welsh Mudwort Tidal Marsh] []
  G2G4 (2006-01-19) CT, DE, LB?, MA, MD, ME, NB?, NF?, NH, NJ, NS?, NY, PA, PE?, QC?, RI
- **CEGL006368** ***Spartina patens - Festuca rubra - (Spartina pectinata)*** **Salt Marsh** [Saltmeadow Cordgrass - Red Fescue - (Prairie Cordgrass) Salt Marsh] []
  GNR. MA, ME, NH, QC
- **CEGL006365** ***Spartina patens - Agrostis stolonifera*** **Salt Marsh** [Saltmeadow Cordgrass - Creeping Bentgrass Salt Marsh] []
  GNR. CT, MA, NH, NJ?, NY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: L. Sneddon and D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

M081 North American Pacific Coastal Salt Marsh

Marais salés de la côte pacifique de l'Amérique du Nord

IVC Colloquial Name: North American Pacific Coastal Salt Marsh

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup consists of the intertidal salt marshes and brackish marshes found throughout the North American Pacific Coast. Vegetation ranges from very dense thickets to open and sparse. Dominant plant species include *Batis maritima, Carex lyngbyei, Carex ramenskii, Distichlis spicata, Eleocharis palustris, Glaux maritima, Hippuris tetraphylla, Honckenya peploides, Hordeum brachyantherum, Jaumea carnosa, Juncus arcticus ssp. littoralis, Limonium californicum, Monanthochloe littoralis, Plantago macrocarpa, Puccinellia pumila, Salicornia depressa, Salicornia* spp., *Spergularia canadensis, Suaeda* spp., *Triglochin maritima*, and/or *Triglochin* spp. These marshes occur in bays, behind sand spits or other locations protected from wave action. In the Mediterranean region, the salt marshes are dominated by low shrubs, including *Salicornia depressa*.

IVC Geographic Range: This macrogroup occurs from Kodiak Island and south-central Alaska, south along the Pacific Coast throughout British Columbia, Washington, Oregon, California, Baja California and the Sonoran coast along the Gulf of California, including coastal marshes along the Colorado River delta and other river deltas such as the Rio Yaqui.

IVC Nations: CA,MX,US

IVC States/Provinces: AK, BC, BCN, BCS, CA, NV?, OR, SON, UT?, WA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G499 Temperate Pacific Salt Marsh []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel, K. Boggs, and C. Chappell

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G499 Temperate Pacific Salt Marsh

[ ]

IVC Colloquial Name: Temperate Pacific Salt Marsh

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group consists of the intertidal salt marshes and brackish marshes found throughout the North American Pacific coast. Vegetation ranges from very dense thickets to open and sparse. Dominant plant species change from north to south, but communities have many species in common, including *Batis maritima, Carex lyngbyei, Carex ramenskii, Distichlis spicata, Eleocharis palustris, Glaux maritima, Hippuris tetraphylla, Honckenya peploides, Jaumea carnosa, Limonium californicum, Monanthochloe littoralis, Puccinellia* spp., *Salicornia depressa, Salicornia* spp., *Spergularia canadensis, Suaeda* spp., *Triglochin maritima*, and/or *Triglochin* spp. Primarily associated with estuaries or coastal lagoons, salt marshes are limited to bays, behind sand spits or other locations protected from wave action. These occur from Kodiak Island and south-central Alaska, south along the coast throughout British Columbia, Washington, Oregon, California, Baja California and the Sonoran coast along the Gulf of California, including coastal marshes along the Colorado River delta and other river deltas such as the Rio Yaqui.

IVC Dynamics:

IVC Environment: *Climate:* Ranges from temperate to Mediterranean to warm desert. *Soil/substrate/hydrology:* The frequency of tidal flooding and salinity vary widely. Soils are usually fine-textured and saturated. Primarily associated with estuaries or coastal lagoons, salt marshes are limited to bays, behind sand spits or other locations protected from wave action. These marshes form when there is a freshwater source that mixes with coastal ocean saltwater. Occurrences can be small or large

patch, and individual associations are confined to specific environments defined by ranges of salinity, tidal inundation regime, and soil texture. Summer-dry periods result in decreased freshwater inputs from inland. Hypersaline environments within salt marshes occur in "salt pans" where tidal water collects and evaporates, and the vegetation can be sparse. Substrates are typically fine-textured and saline alluvium. Vegetation ranges from very dense thickets to open and sparse. Sharp gradients and abrupt shifts in species composition across complex moisture and salinity gradients make for fine-scale patches or bands of vegetation.

Most cool temperate and warm temperate coastal salt marshes are influenced by daily tides and also by seasonal or unpredictable inundations at highest elevation levels of the marsh. Gradients in elevation influence gradients in moisture and in salinity, with highest portions being drier and having higher surface concentrations of salt. High marshes in the warm temperate to subtropical zones have more in common with interior saline and alkaline systems such as playa margins, alkali seeps, and springs.

"High" salt marshes in cooler areas with higher summer precipitation (e.g., the Pacific Northwest) tend to have more in common with brackish or even freshwater meadows, while high marshes in warm temperate Mediterranean or subtropical dry coasts tend to have more in common with desert alkaline or saline settings. Tidal fluctuation is very important and maintains constant moderate salinity and moisture conditions. The species that are indicative of this tidal salt marsh environment are the core of this group. They tend to sort based on moisture and water depth and not on salinity gradients.

Low marshes are located in areas that flood every day and are dominated by a variety of low-growing forbs and low to medium-height graminoids.

In the warm summer-dry climes of central California to Baja California and the Sonoran coast, marshes can be sparsely vegetated and are composed of halophytic species.

Environmental data were compiled from Shreve and Wiggins (1964), Sparks et al. (1977), Brown (1982), Barbour and Major (1988), National Wetlands Working Group (1988), Viereck et al. (1992), Holland and Keil (1995), Sawyer and T. Keeler-Wolf (1995), and Boggs (2000).

DISTRIBUTION

IVC Geographic Range: This group is found throughout the Pacific coast, from Kodiak Island and south-central Alaska, south along the coast throughout British Columbia, Washington, Oregon, California, Baja California and the Sonoran coast along the Gulf of California, including coastal marshes along the Colorado River Delta and other river deltas such as the Rio Yaqui. Tidal marshes have a limited distribution along the Gulf of Alaska and British Columbia coastline due to the topography and geomorphology of the coast, which features steep slopes and deep fjords and offers limited protection from wave action (National Wetlands Working Group 1988).

IVC Nations: CA,MX,US

IVC States/Provinces: AK, BC, BCN, BCS, CA, NV?, OR, SON, UT?, WA

IVC Omernik Ecoregions: 7.1.7.2:P, 7.1.8.1:P, 11.1.1a.6:P, 11.1.1b.85:P, 11.1.2.7:P

CONSERVATION RANKING

IVC Rank: G1G3 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G1G2 rank that was calculated from closely related ecological system global ranks. A rank of G2 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range extent moderately extensive, ecological integrity moderate in northern parts of the range ((WA, BC, AK), and threats moderate to high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3898 *Argentina egedii - Calamagrostis nutkaensis - Juncus arcticus ssp. littoralis* Salt Marsh Alliance** [Pacific Silverweed - Pacific Reedgrass - Baltic Rush Salt Marsh Alliance] []
  This alliance contains estuarine tidal marshes of Washington, Oregon and possibly British Columbia dominated by *Argentina egedii, Calamagrostis nutkaensis*, and/or *Juncus arcticus ssp. littoralis*. Other associated species include *Angelica lucida, Heracleum maximum*, and *Sidalcea hendersonii*.
- **A3903 *Bolboschoenus maritimus - Schoenoplectus californicus* Salt Marsh Alliance** [Cosmopolitan Bulrush - California Bulrush Salt Marsh Alliance] []
  This is an herbaceous tidal salt marsh alliance dominated by *Schoenoplectus americanus, Schoenoplectus californicus, Bolboschoenus maritimus*, and/or *Schoenoplectus pungens*. Stands may be of a single species or a mix of species. It occurs along the Pacific coast of North America.

- **A2622 *Carex lyngbyei* Brackish Salt Marsh Alliance** [Lyngbye's Sedge Brackish Salt Marsh Alliance] []
  This alliance consists of brackish estuarine tidal marshes dominated by *Carex lyngbyei*, along tidal flats and tidal river channel margins of the northern Pacific Coast.
- **A3899 *Deschampsia cespitosa - Festuca rubra* Brackish Salt Marsh Alliance** [Tufted Hairgrass - Red Fescue Brackish Salt Marsh Alliance] []
  This alliance consists of salt marshes dominated by *Deschampsia cespitosa* and/or *Festuca rubra*, that occur on high salt marshes with infrequent (less than daily) tidal flooding. It occur along the coast of Oregon, Washington, British Columbia and southeastern Alaska.
- **A3900 *Distichlis spicata* Salt Marsh Alliance** [Saltgrass Salt Marsh Alliance] []
  This alliance consists of tidally flooded salt marshes dominated by *Distichlis spicata*. It occurs in large and small estuaries on sand/or mud in slight depressions, along the Pacific Coast of North America.
- **A3902 *Sarcocornia pacifica - Spartina foliosa - Glaux maritima* Salt Marsh Alliance** [Pacific Swampfire - California Cordgrass - Sea-milkwort Salt Marsh Alliance] []
  This alliance consists of tidal salt marshes dominated by *Salicornia depressa, Spartina foliosa*, and/or *Glaux maritima* that occur on regularly flooded ("low marsh") areas of estuaries of the Pacific coast of North America.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Boggs, C. Chappell, G. Kittel, in Faber-Langendoen et al. (2011)
IVC Description Author: G. Kittel
IVC Description Date: 2015-12-02
IVC Acknowledgments: K. Boggs, C. Chappell, T. Keeler-Wolf, M.S. Reid

A3898 Pacific Silverweed - Pacific Reedgrass - Baltic Rush Salt Marsh Alliance

[ ]
Argentina egedii - Calamagrostis nutkaensis - Juncus arcticus ssp. littoralis Salt Marsh Alliance
Pacific Silverweed Salt Marsh

IVC Scientific Name: *Argentina egedii - Calamagrostis nutkaensis - Juncus arcticus ssp. littoralis* Salt Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of estuarine high intertidal marshes dominated by the herbaceous species *Argentina egedii, Calamagrostis nutkaensis*, and/or *Juncus arcticus ssp. littoralis*. Other associated species include *Angelica lucida, Heracleum maximum*, and *Sidalcea hendersonii*. It occurs in the transition zone between uplands and estuarine intertidal, along upper tidal river and stream reaches where salinities are low and tidal inundation is infrequent. It occurs along the western North American Pacific Coast north of California.
IVC Dynamics:
IVC Environment: These occur at the transition zone between uplands and estuarine intertidal wetlands along upper tidal river and stream reaches where salinities are low and tidal inundation is infrequent. Water is brackish, and tidal influence occurs daily.

DISTRIBUTION

IVC Geographic Range: This alliances is found along the coast of Washington, Oregon and possibly British Columbia.
IVC Nations: CA?,US
IVC States/Provinces: BC?, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003288 *Argentina egedii - Symphyotrichum subspicatum* Salt Marsh** [Pacific Silverweed - Douglas' Aster Salt Marsh] []
  G3G4 (2002-09-30) BC?, OR, WA
- **CEGL003382 *Argentina egedii - Juncus arcticus ssp. littoralis* Salt Marsh** [Pacific Silverweed - Baltic Rush Salt Marsh] []
  G3G4 (2002-09-30) BC?, WA
- **CEGL003421 *Calamagrostis nutkaensis - Argentina egedii - Juncus arcticus ssp. littoralis* Salt Marsh** [Pacific Reedgrass - Pacific Silverweed - Baltic Rush Salt Marsh] []
  G1 (2002-10-17) BC?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel and M.S. Reid
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3903 Cosmopolitan Bulrush - California Bulrush Salt Marsh Alliance

[ ]
Bolboschoenus maritimus - Schoenoplectus californicus Salt Marsh Alliance
Pacific Coastal Bulrush Salt Marsh

IVC Scientific Name: *Bolboschoenus maritimus - Schoenoplectus californicus* Salt Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of tidal salt marshes dominated by *Schoenoplectus americanus, Schoenoplectus californicus, Bolboschoenus maritimus*, and/or *Schoenoplectus pungens*. Stands may be a mix of species or may be monotypic. Other species present may include *Calamagrostis nutkaensis, Juncus effusus, Polygonum amphibium*, and *Typha domingensis*. Marshes are brackish to highly saline and found on estuaries, deflation plains and mudflats where numerous tidal streams have cut channels. Some stands are not flooded by tides but are flooded during storm surges. They occur along the Pacific coast of North America.
IVC Dynamics:
IVC Environment: These are tidal marshes that are brackish to highly saline and found on estuaries, deflation plains and mudflats where numerous tidal streams have cut channels. Some stands are not flooded by tides but are flooded during storm surges Substrates are silt loam to moderately fine clay loam to fine sands.

DISTRIBUTION

IVC Geographic Range: This alliance occurs along the coast of California, Oregon, Washington, and British Columbia.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G5 (2013-09-27)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003287 *Bolboschoenus maritimus* Tidal Salt Marsh** [Cosmopolitan Bulrush Tidal Salt Marsh] []
  G3 (2002-09-30) BC?, CA, OR, WA
- **CEGL003367 *Schoenoplectus (americanus, pungens)* Tidal Salt Marsh** [(Chairmaker's Bulrush, Common Threesquare) Tidal Salt Marsh] []
  G3 (2002-09-30) BC, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A2622 Lyngbye's Sedge Brackish Salt Marsh Alliance

[ ]
Carex lyngbyei Brackish Salt Marsh Alliance
Lyngbye's Sedge Brackish Salt Marsh

IVC Scientific Name: *Carex lyngbyei* Brackish Salt Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of estuarine tidal marshes dominated by *Carex lyngbyei* with low species diversity, but codominants can occur, such as *Argentina egedii, Bidens cernua, Cicuta douglasii, Deschampsia cespitosa, Distichlis spicata, Eleocharis palustris*, and/or *Triglochin maritima*. Sites are tidal flats and tidal river channel margins that have fluctuations of brackish water, active sedimentation, diurnal flooding and diurnal soil exposure, along the northern Pacific Coast of North America.
IVC Dynamics:
IVC Environment: It occurs where there are strong fluctuations of brackish water, active sedimentation and diurnal flooding and exposure locations such as tidal flats and tidal river channel margins. Soils are silty, clayey or fine-sandy. Mineral layers are often embedded with sedge roots and shoots. They occur on sites that experience continual erosion and deposition but do not occur on less dynamic sites.

DISTRIBUTION

IVC Geographic Range: This common and widespread estuarine alliance is found along the coast of British Columbia south into California, but is more common in the north (British Columbia and Washington) than the south (Oregon and California).
IVC Nations: CA,US
IVC States/Provinces: AK, BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL003289 *Carex lyngbyei - Argentina egedii* Salt Marsh** [Lyngbye's Sedge - Pacific Silverweed Salt Marsh] []
  G4 (2002-09-30) BC, OR, WA
- **CEGL003369 *Carex lyngbyei* Salt Marsh** [Lyngbye's Sedge Salt Marsh] []
  G4 (2002-09-30) AK, BC, OR, WA
- **CEGL003285 *Carex lyngbyei - (Distichlis spicata, Triglochin maritima)* Salt Marsh** [Lyngbye's Sedge - (Saltgrass, Seaside Arrow-grass) Salt Marsh] []
  G4 (2002-09-30) AK, BC, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.S. Reid, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel and M.S. Reid
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3899 Tufted Hairgrass - Red Fescue Brackish Salt Marsh Alliance

[ ]
Deschampsia cespitosa - Festuca rubra Brackish Salt Marsh Alliance
Tufted Hairgrass - Red Fescue Brackish Salt Marsh

IVC Scientific Name: *Deschampsia cespitosa - Festuca rubra* Brackish Salt Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of high tidal salt marshes dominated by *Deschampsia cespitosa* and/or *Festuca rubra* with one or more other more salt-tolerant species. It occurs on high salt marshes with infrequent (less than daily) tidal flooding. These occur along the coast of Oregon, Washington, British Columbia and southeastern Alaska.
IVC Dynamics:
IVC Environment: It occurs in high salt marshes with intermittent tidal flooding. Regular (daily) tidal flooding creates broad mudflats laced by tidal streams. High marshes are areas that experience tidal flooding less than daily, and have higher salt levels. Storm surges also bring saltwater to high marsh locations.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in estuaries along the coast of Oregon, Washington, British Columbia and southeastern Alaska.
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003383** ***Deschampsia cespitosa - Argentina egedii*** **Salt Marsh** [Tufted Hairgrass - Pacific Silverweed Salt Marsh] []
  G3G4 (2002-09-30) BC?, OR, WA
- **CEGL003357** ***Deschampsia cespitosa - (Carex lyngbyei, Distichlis spicata)*** **Salt Marsh** [Tufted Hairgrass - (Lyngbye's Sedge, Saltgrass) Salt Marsh] []
  G3G4 (2002-09-30) BC?, OR, WA
- **CEGL003424** ***Festuca rubra - (Argentina egedii)*** **Salt Marsh** [Red Fescue - (Pacific Silverweed) Salt Marsh] []
  G1 (2002-10-18) BC?, WA
- **CEGL003384** ***Deschampsia cespitosa - Sidalcea hendersonii*** **Salt Marsh** [Tufted Hairgrass - Henderson's Checkerbloom Salt Marsh] []
  G2 (2002-09-30) BC?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel and M.S. Reid
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3900 Saltgrass Salt Marsh Alliance

[ ]

Distichlis spicata Salt Marsh Alliance

Western Saltgrass Salt Marsh

IVC Scientific Name: *Distichlis spicata* Salt Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance covers tidally flooded salt marshes dominated by *Distichlis spicata* and other species such as *Ambrosia chamissonis, Argentina egedii, Atriplex lentiformis, Atriplex watsonii, Carex lyngbyei, Schoenoplectus americanus*, and *Suaeda californica*. Due to microtopography and changing degrees of salinity, the community structure can be spatially heterogeneous. Examples occur along the Pacific Coast from southern California well into British Columbia.

IVC Dynamics: Occasional storm surges flood this alliance with seawater, redistributing sediments and depositing large driftwood logs. Associations within this alliance are considered early-seral and one of the first to appear on freshly exposed mud or sand with or without algae. When dry, stands may be vulnerable to damage by off-road vehicles. Wind can shift sands such that how tides flood areas becomes unpredictable (Christy et al. 1998).

IVC Environment: It occurs in large estuaries on sand/or mud in slight depressions in deflation plains, usually cut with channels of tidal creeks. The soil surface can have variable microtopography and changing degrees of salinity, so the community structure can be spatially heterogeneous. This alliance is very salt-tolerant.

DISTRIBUTION

IVC Geographic Range: This alliance occurs along the Pacific Coast from British Columbia to California.

IVC Nations: CA?,US

IVC States/Provinces: BC?, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003356 *Distichlis spicata - (Salicornia depressa)* Salt Marsh** [Saltgrass - (Virginia Glasswort) Salt Marsh] []
  G4 (2002-09-30) BC?, OR, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A3902 Pacific Swampfire - California Cordgrass - Sea-milkwort Salt Marsh Alliance

[ ]

Sarcocornia pacifica - Spartina foliosa - Glaux maritima Salt Marsh Alliance

Pacific Salt Marsh

IVC Scientific Name: *Sarcocornia pacifica - Spartina foliosa - Glaux maritima* Salt Marsh Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance consists of herbaceous tidal salt marshes dominated by *Salicornia depressa*, *Spartina foliosa*, and/or *Glaux maritima*. Associate species include *Distichlis spicata, Jaumea carnosa, Salicornia bigelovii, Suaeda californica*, and/or *Triglochin maritima*. These are tidally inundated salt marshes with high salinity and daily flooding, which comprises the "low marsh" of estuaries. It is found along the coast of California, Oregon, Washington, and British Columbia.

IVC Dynamics: Stands are critical habitat for several rare and listed salt marsh species such as the salt marsh harvest mouse (*Reithrodontomys raviventris*), *Castilleja ambigua ssp. humboldtiensis*, and *Cordylanthus mollis ssp. mollis* (Sawyer et al. 2009).

IVC Environment: These are tidally inundated salt marshes with high salinity and daily flooding, which comprises the "low marsh" of estuaries, as well as diked, non-tidal salt marshes in central California.

DISTRIBUTION

IVC Geographic Range: This alliance is found along the coast of California, Oregon, Washington and British Columbia.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, NV?, OR, UT?, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003366 *Salicornia depressa - Distichlis spicata - Triglochin maritima - (Jaumea carnosa)* Salt Marsh** [Virginia Glasswort - Saltgrass - Seaside Arrow-grass - (Marsh Jaumea) Salt Marsh] []
  G3 (2002-09-30) BC?, OR, WA
- **CEGL003381 *Triglochin maritima - (Salicornia depressa)* Salt Marsh** [Seaside Arrow-grass - (Virginia Glasswort) Salt Marsh] []
  G4 (2002-09-30) BC?, OR, WA
- **CEGL003286 *Glaux maritima* Salt Marsh** [Sea-milkwort Salt Marsh] []
  Tidal salt marshes dominated by *Glaux maritima*. G3 (2002-09-30) BC, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel, T. Keeler-Wolf, and M.S. Reid
IVC Description Date: 2014-09-26
IVC Acknowledgments:

M077 Great Plains Saline Wet Meadow & Marsh

Prairies humides salines et marais des Grandes Plaines

IVC Colloquial Name: Great Plains Saline Wet Meadow & Marsh

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup covers graminoid-dominated saline shallow depressions and mudflats found throughout the Great Plains. The most abundant species at a site typically include *Distichlis spicata* or *Hordeum jubatum*. Other common associates or dominants are *Atriplex patula, Eleocharis* spp., *Iva annua, Pascopyrum smithii, Poa arida, Puccinellia nuttalliana, Salicornia rubra, Bolboschoenus maritimus, Sporobolus airoides*, and *Suaeda calceoliformis*. Soils are saline and any standing water is brackish. This macrogroup occurs throughout the Great Plains from southern Canada to the panhandle of Texas and west into the plains of Montana, Wyoming and Colorado.

IVC Geographic Range: This macrogroup occurs throughout the Great Plains from southern Canada to the panhandle of Texas and west into the plains of Montana, Wyoming and Colorado. The eastern limit of this macrogroup is in western Minnesota, eastern Nebraska, northwestern Missouri, and eastern Kansas. Rare saline marshes in the southern and eastern Great Lakes area are also included in this macrogroup.

IVC Nations: CA,MX?,US

IVC States/Provinces: AB, CA, CO, IL, KS, MB, MI, MN, MO, MT, ND, NE, NM, NV?, OK, ON, QC, SD, SK, TX, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G324 Great Plains Saline Wet Meadow & Marsh []**
- **G534 Western Great Plains Saline Wet Meadow []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: J. Drake

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G324 Great Plains Saline Wet Meadow & Marsh

[ ]

IVC Colloquial Name: Great Plains Saline Wet Meadow & Marsh

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group occurs in shallow-sloped basins in the Great Plains that experience seasonal flooding. Stands are dominated by short to medium-tall herbaceous species tolerant of flooding and salinity. The most abundant species at a site typically include *Distichlis spicata* or *Hordeum jubatum*. Other common associates or dominants are *Atriplex patula, Eleocharis* spp., *Poa arida, Puccinellia nuttalliana, Bolboschoenus maritimus, Schoenoplectus pungens, Sporobolus airoides, Suaeda calceoliformis*, and *Iva annua*. Where flooding is less frequent and where salinity is not high, *Pascopyrum smithii* is often present to dominant. Strongly saline mudflats usually have a high proportion of *Salicornia rubra*. Soils are saline and create brackish water.

IVC Dynamics: Variations in water and salinity levels have a strong impact on this group. Plants that are abundant are tolerant of at least moderate salinity and periodic flooding. Unusually wet periods or high spring snowmelt may flush some salt away, shifting the boundaries temporarily until more salt accumulates. Salinity varies during the growing season, decreasing in the spring or after heavy rains and increasing during dry periods. The increased salinity due to concentration of the salt as the water evaporates - common in the late summer and early fall - creates a seasonally shifting environment. Species composition is strongly linked to salinity and soil moisture so there is usually notable zonation within this group with the species tolerant of the wettest and most saline conditions in the center, grading towards midgrass prairie at the edges (Ungar 1967, 1970). Fire may

spread into this system from adjacent upland prairies and can burn areas with higher vegetation cover but the low vegetation cover and wet soils typical of many stands do not carry fire well.

IVC Environment: This group occurs in shallow-sloped basins that experience seasonal flooding. Sites may dry out by the end of the growing season. Soils are saline and create brackish water. Salt brought to the surface by water that later evaporates may form crusts. This group is found in basins and low parts of floodplains where water collects. The soils and water are moderately to strongly saline (>0.5-1%) (Ungar 1967, 1970). The salts are leached from saline soils in the watershed or, rarely, come from saline groundwater discharge. Salts accumulate as the water in which they were dissolved evaporates. Salt crusts are present on the soil surface of some stands. Soils are fine-grained, typically with a silt or clay component, and poorly drained. The wettest examples are flooded through most or all of the growing season and can support aquatic species. Other aspects can be flooded or saturated for short periods (Dodd and Coupland 1966, Stewart and Kantrud 1971).

DISTRIBUTION

IVC Geographic Range: This group occurs throughout the Great Plains from southern Canada to the panhandle of Texas. The group extends to the mixedgrass and shortgrass prairies of central Montana, eastern Wyoming, and eastern Colorado. The eastern limit of the main part of this group is in western Minnesota, eastern Nebraska, northwestern Missouri, and eastern Kansas. There are rare saline marshes in the southern and eastern Great Lakes area that are included in this group.

IVC Nations: CA,MX?,US

IVC States/Provinces: AB, CA, CO, IL, KS, MB, MI, MN, MO, MT, ND, NE, NM, NV?, OK, ON, QC, SD, SK, TX, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1341 *Distichlis spicata - Hordeum jubatum* Wet Meadow Alliance** [Saltgrass - Foxtail Barley Wet Meadow Alliance] []
  This alliance occurs throughout the Great Plains on saline sites with a mixture of short and mid grasses; *Distichlis spicata* is the most consistently abundant species.
- **A1354 *Pascopyrum smithii - Distichlis spicata - Hordeum jubatum* Wet Meadow Alliance** [Western Wheatgrass - Saltgrass - Foxtail Barley Wet Meadow Alliance] []
  This alliance is found in the northern Great Plains on moderately saline, temporarily flooded sites dominated by mid grasses, typically *Distichlis spicata, Hordeum jubatum*, and *Pascopyrum smithii*.
- **A4071 *Salicornia rubra* Wet Meadow Alliance** [Red Swampfire Wet Meadow Alliance] []
  This alliance is dominated by *Salicornia rubra*, sometimes with little else present. It is found throughout the northern Great Plains and into the Great Basin on highly alkaline wetlands or the margins of alkaline lakes where total vegetation cover ranges from low to moderate.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: S. Menard and K. Kindscher, in Faber-Langendoen et al. (2011)

IVC Description Author: J. Drake

IVC Description Date: 2015-05-08

IVC Acknowledgments:

A1341 Saltgrass - Foxtail Barley Wet Meadow Alliance

[ ]

Distichlis spicata - Hordeum jubatum Wet Meadow Alliance

Great Plains Saltgrass Saline Wet Meadow

IVC Scientific Name: *Distichlis spicata - Hordeum jubatum* Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance occurs throughout the Great Plains where saline soils create conditions suitable for it. Dominant vegetation is a mixture of short and mid grasses and can have moderately sparse to dense cover. Vegetation height and cover and species diversity tend to vary inversely with salinity. *Distichlis spicata* is the most abundant species in stands across the range of this alliance. Other species include *Bassia scoparia, Grindelia squarrosa* (in the northern portion of this alliance's range), *Hordeum jubatum, Iva annua, Pascopyrum smithii* (on less saline stands), *Poa arida, Puccinellia nuttalliana* (in the north), *Salicornia rubra* (on more saline stands), *Bolboschoenus maritimus, Sporobolus airoides, Suaeda calceoliformis* (on more saline stands). Widely scattered low shrubs, especially *Atriplex patula* and *Sarcobatus vermiculatus*, can be found on sites in the western and central Great Plains. Trees are not found. Stands of this alliance are found in depressions and along the margins of saline lakes and ponds. Most of the stands are flooded or saturated for a few weeks in the spring and after heavy rains; some have water present for most of the growing season. The soils range from sand to clay and from moderately well-drained to poorly drained. Most are deep and moderately to strongly saline. Stands that have good drainage in the surface soils usually have a deeper impermeable or slowly permeable layer that allows retention of water. Fires which spread from upland prairies may have moved through the more dense stands, but many stands did not have sufficient vegetation to support fires.

IVC Dynamics: Stands in this alliance are flooded for part of the growing season but most are dry for most of the summer.

IVC Environment: Stands of this alliance are found in depressions and along the margins of saline lakes and ponds. Most of the stands are flooded or saturated for a few weeks in the spring and after heavy rains; some have water present for most of the growing season. The soils range from sand to clay and from moderately well-drained to poorly drained. Most are deep and moderately to strongly saline (Redmann 1972, USFS 1992). Stands that have good drainage in the surface soils usually have a deeper impermeable or slowly permeable layer that allows retention of water (Rolfsmeir and Steinauer 2010). Fires which spread from upland prairies may have moved through the more dense stands, but many stands did not have sufficient vegetation to support fires (Rolfsmeir and Steinauer 2010).

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout much of the Great Plains and western tallgrass prairie from southern Canada to Texas.

IVC Nations: CA,MX?,US

IVC States/Provinces: KS, MB, MN, MO, MT, ND, NE, NM, OK, SD, SK, TX, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005286 *Hordeum jubatum* Great Plains Wet Meadow** [Foxtail Barley Great Plains Wet Meadow] []
  G4 (2010-05-24) ND, SD, SK
- **CEGL002273 *Distichlis spicata - Hordeum jubatum - Puccinellia nuttalliana - Suaeda calceoliformis* Wet Meadow** [Saltgrass - Foxtail Barley - Nuttall's Alkali Grass - Pursh Seepweed Wet Meadow] []
  G2G3 (2000-01-27) MB, MN, MT, ND, SD, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake

IVC Description Date: 2014-01-08

IVC Acknowledgments:

A1354 Western Wheatgrass - Saltgrass - Foxtail Barley Wet Meadow Alliance

[ ]

Pascopyrum smithii - Distichlis spicata - Hordeum jubatum Wet Meadow Alliance

Great Plains Wheatgrass Saline Wet Meadow

IVC Scientific Name: *Pascopyrum smithii - Distichlis spicata - Hordeum jubatum* Wet Meadow Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Stands are dominated by graminoids, the tallest of which may rarely reach 1 m. Most of the vegetation is 0.6 m or less. The depth to the clay layer affects the height and amount of vegetation. The deeper the clay layer is buried, the more dense the vegetation. The dominants are *Distichlis spicata, Hordeum jubatum*, and *Pascopyrum smithii*. Other common graminoids include *Bouteloua gracilis, Carex duriuscula, Hesperostipa comata*, and *Koeleria macrantha*. Forbs that may be present include Asteraceae spp., *Gutierrezia sarothrae, Helianthus petiolaris, Iva annua*, and *Plantago patagonica*. Woody plants are rare. Some stands may have scattered *Artemisia cana, Artemisia frigida*, or *Symphoricarpos occidentalis*. This alliance is found in depressions and on stream terraces on moderately saline silt loam and sandy loam soils, sometimes with a clay subsoil. The soils are wet for part of the year and may flood periodically. It is found in the northern Great Plains.

IVC Dynamics: The temporary flooding regime combined with high evaporation rates in these dry climates causes accumulations of soluble salts in the soil. Total vegetation cover (density and height), species composition, and soil salinity depend on the amount and timing of precipitation and flooding. In playas, growth-inhibiting salt concentrations are diluted when the soil is saturated allowing the growth of less salt-tolerant species such as *Pascopyrum smithii*. As the saturated soils dry, the salt concentrates until it precipitates on the soil surface (Dodd and Coupland 1966). Vegetation forms zones at some saline sites, where species abundance is stratified by salt tolerance. In playas, the soil salinity at field capacity generally increases from the edge to the center allowing for several different vegetation stands to co-occur (Ungar 1967, 1969, 1970). Also within a vegetation type, more mesic or salt-tolerant species such as *Eleocharis acicularis, Eleocharis palustris, Juncus arcticus ssp. littoralis*, and *Alopecurus* spp. will be more common at lower topographic levels where flooding is more frequent, than the dry-mesic species such as *Pascopyrum smithii*. *Pascopyrum smithii* is rhizomatous and is tolerant of moderate grazing. If severely overgrazed, *Pascopyrum smithii* will decline and may be replaced by less desirable warm-season grasses and exotic species such as *Poa pratensis*.

IVC Environment: This northwestern Great Plains alliance occurs at low to moderate elevations, from about 760 m to over 1100 m. Climate is temperate continental, semi-arid to subhumid. Much of the precipitation falls during the winter and spring as snow or rain. Summer precipitation falls as rain during convective thunderstorms. Stands are found in playas and on stream terraces that are temporarily flooded for part of the growing season. Sites are flat to gently sloping on any aspect. Substrates are moderately saline, often poorly drained, ranging in soil texture from clay and silty clay to silty loam and sandy loam with a clay subsoil (Hanson and Whitman 1938, Johnston 1987, Jones and Walford 1995). In Wyoming playas, stands are found on clay and clay loam soils (Jones and Walford 1995). In playas, this clay or clay loam subsoil impedes infiltration and allows for mesic moisture regimes. Johnston (1987) reports alkaline pHs ranging from 7.2-8.3, and acidic pHs ranging from 5.8-6.5, but his source for this information is unclear. Much of the ground is bare (up to 75% in some stands).

DISTRIBUTION

IVC Geographic Range: Grasslands included in this alliance occur mostly in the northern Great Plains, from Wyoming and Nebraska to North Dakota and into Alberta and Saskatchewan, Canada. The alliance may occur in the southern Great Plains, as well, but has not documented there.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, MT, ND, NE, SD, SK, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001582 *Pascopyrum smithii - Hordeum jubatum* Wet Meadow** [Western Wheatgrass - Foxtail Barley Wet Meadow] []
  G4 (1996-02-01) AB, CO, MT, ND, NE, SK?, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.S. Reid and K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2017-08-14
IVC Acknowledgments:

A4071 Red Swampfire Wet Meadow Alliance

[ ]
Salicornia rubra Wet Meadow Alliance
Great Plains Swampfire Saline Wet Meadow

IVC Scientific Name: *Salicornia rubra* Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is found throughout the northern Great Plains and into the Great Basin. Total vegetation cover ranges from open to moderate. *Salicornia rubra* may make up to 100% of the vegetation cover within these areas. Other species which may be found associated with *Salicornia rubra* include *Chenopodium rubrum, Distichlis spicata, Hordeum jubatum, Puccinellia nuttalliana, Suaeda calceoliformis*, and *Triglochin maritima*. It occurs on highly alkaline wetlands or the margins of alkaline lakes. It often borders intermittent open water or is found on the exposed mud of alkali flats. Stands are found in shallow, broad depressions with poor drainage and high salt concentrations and on extensive mudflats of alkaline deltaic sediments. Most soils are clay to silty loam and may have salt encrustations on the surface after drying out in midsummer. The surface soil has an average salt concentration of 4.8%. Water often collects on the surface in the spring or after heavy rains, but by midsummer the soil can be dry to moist. Total vegetation cover is sparse to moderate with exposed soil. The harsh conditions provided by the saline soil, spring flooding, and summer drought limit the number of species capable of growing in this alliance. Stands that have more stable water tables can have moderate diversity.

IVC Dynamics: These vegetation types have a wide distribution in the Great Plains and Rocky Mountain regions, but often occur in small stands at the bottom of hypersaline basins, having very specific habitat needs (Ungar 1974). Hypersaline wetland basins which support the alliance have been impacted by water diversion, livestock grazing, and land conversion in many places. Saline wetlands in the Great Plains and upper Midwest have been described as especially vulnerable to habitat fragmentation and loss due to increasing population and agricultural development (Gersib and Steinauer 1991). The maintenance of stands requires protection of hydrological processes such as seasonal inundation, evaporative dry-down, and mineral accumulation, as well as preservation of suitable habitat.

IVC Environment: Plant associations within this alliance are found in saline depressions in the western United States and northern Great Plains and north into the Boreal Plains of Alberta on extensive mudflats of alkaline deltaic sediments. Elevations range from 700 to 2200 m. These vegetation types occur in shallow, broad depressions with poor drainage and high salt concentrations (Ungar 1970, Walker and Coupland 1970) and have also been documented on the broad mudflats exposed after seasonal flooding. Stands are found in exposed mud of alkali flats of saline wetland depressions during the dry or drawdown phase. Stands can also be found in the peripheral shallow-marsh zone of subsaline semipermanent ponds and lakes (Stewart and Kantrud 1971). In some areas, the major source of salinity is groundwater discharge (Dodd and Coupland 1966). These communities require moist to wet hypersaline soils which are seasonally flooded. Most soils are clay to silty loam and may have salt encrustations on the surface after drying out in midsummer (Dodd and Coupland 1966). Ungar (1970) found the surface soil to have average salt concentrations of 4.8% and pH levels that average 8.4. Water often collects on the surface in the spring or after heavy rains, but by midsummer the soil can be dry to moist.

DISTRIBUTION

IVC Geographic Range: This community is associated with highly alkaline wetlands or lakes in the northern Great Plains and Great Basin of the United States and adjacent Canada, north into the Boreal Plains, ranging from western Minnesota to Saskatchewan and Alberta, south to Colorado and possibly Nevada and California.

IVC Nations: CA,US
IVC States/Provinces: AB, CA?, CO, MB, MN, MT, ND, NV?, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002581 Northern Tallgrass Saline Mudflats Sparse Vegetation** [Northern Tallgrass Saline Mudflats Sparse Vegetation] []
  GNR. MB, MN
- **CEGL001999 *Salicornia rubra* Salt Flat** [Red Swampfire Salt Flat] []
  G2G3 (2000-01-31) AB, CA?, CO, MB, MN, MT, ND, NV?, SD, SK, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-01-08
IVC Acknowledgments:

G534 Western Great Plains Saline Wet Meadow

[ ]

IVC Colloquial Name: Western Great Plains Saline Wet Meadow
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This saline wet meadow group is found in the northern, southern and western Great Plains and in the Rocky Mountain foothills. Dominant grasses include *Distichlis spicata, Muhlenbergia porteri, Panicum obtusum, Puccinellia nuttalliana, Scleropogon brevifolius*, and/or *Sporobolus airoides*. Scattered shrubs may include *Allenrolfea occidentalis, Artemisia frigida, Artemisia tridentata, Atriplex canescens, Chrysothamnus* spp., *Gutierrezia sarothrae*, and *Sarcobatus vermiculatus*. Stands occur in a wide variety of lowland sites, such as stream terraces, swales, interdune basins, and alluvial flats. This group has a high water table because of land position and impermeable subsurface horizons. Soils are moderately saline and usually alkaline. Soil surface textures are sandy to clayey. The soils morphology often includes a claypan, caliche layer or other subsurface horizon that impedes water movement. Soils are saline or alkaline, but salt crusts on the surface are absent. Although periodic flooding is rare, stands of this group receive more water than the surrounding uplands through runoff.
IVC Dynamics: Periodic subsurface irrigation is needed to maintain this group.
IVC Environment: This group is not defined by a flood regime so much as that the soil often has a high water table because of land position and impermeable subsurface horizons. Soils are moderately saline and usually alkaline, but salt crusts on the surface are absent (Thilenius et al. 1995). Soil surface textures are sandy to clayey. The soils morphology often includes a claypan, caliche layer or other subsurface horizon that impedes water movement. Parent material is typically alluvium derived from limestone, shale, or sandstone.

DISTRIBUTION

IVC Geographic Range: This group is found in the Great Plains, generally western portions, but ranges from north to south throughout.
IVC Nations: CA,US
IVC States/Provinces: CO, KS, MT, ND, NE, NM, OK, SD, SK, TX, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G3 rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline moderate to high, and threats moderate to high.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3905 *Sarcobatus vermiculatus* Great Plains Wet Shrubland Alliance** [Greasewood Great Plains Wet Shrubland Alliance] []
  This alliance has high herbaceous cover and widely spaced shrubs, hence the name "scrub herbaceous." The dominant herbaceous species include *Distichlis spicata, Grindelia squarrosa, Hordeum jubatum, Pascopyrum smithii, Plantago* spp., Puccinellia nuttalliana, Salicornia rubra, and/or *Symphyotrichum ericoides*. The very open and widely spaced shrub layer is dominated by *Artemisia frigida, Artemisia tridentata*, and/or *Sarcobatus vermiculatus*. Total vegetation cover can be low to moderate and abundant bare soil can be common. Soils are often alkaline. This alliance occurs in the northern and western Great Plains and Rocky Mountain foothills.
- **A3904 *Sporobolus airoides* Great Plains Marsh Alliance** [Alkali Sacaton Great Plains Marsh Alliance] []
  This alliance consists of *Sporobolus airoides*-dominated or -codominated grasslands. The vegetation is characterized by a sparse to moderately dense graminoid layer of medium-tall bunchgrasses with smaller densities of short grasses and forbs. Widely scattered (<10% cover) xeromorphic or halophytic shrubs and dwarf-shrubs may also be present. This grassland alliance occurs in the western and southern Great Plains. Stands occur in a wide variety of lowland sites, such as stream terraces, swales, interdune basins, and alluvial flats.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al.
IVC Description Author: G. Kittel
IVC Description Date: 2015-12-03
IVC Acknowledgments:

A3905 Greasewood Great Plains Wet Shrubland Alliance

[ ]
Sarcobatus vermiculatus Great Plains Wet Shrubland Alliance
Great Plains Greasewood Wet Shrubland

IVC Scientific Name: *Sarcobatus vermiculatus* Great Plains Wet Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance covers widely scattered shrubs with a high graminoid layer, hence the name "scrub herbaceous." The shrub layer is dominated by *Sarcobatus vermiculatus*, with *Atriplex confertifolia, Artemisia tridentata*, and *Chrysothamnus viscidiflorus* in smaller amounts. *Symphoricarpos occidentalis* and *Rhus aromatica* are sometimes found in more mesic microhabitats within this community. Herbaceous cover is sparse beneath the shrubs and moderate to dense in between. The herbaceous layer typically has *Distichlis spicata* and *Puccinellia nuttalliana* that may be dominant, accompanied by *Grindelia squarrosa, Hordeum jubatum, Pascopyrum smithii, Plantago* spp., *Salicornia rubra* (on more saline inclusions), and *Symphyotrichum ericoides*. This alliance occurs in the northern and western Great Plains and Rocky Mountain foothills. It is found on terraces, floodplains, swales and other low sites where drainage is poor. The soils are moderately to strongly saline, fine-textured, and moderately deep to deep. Although periodic flooding is rare, stands of this alliance receive more water than the surrounding uplands through runoff. Stands in this alliance are found on flat to gently sloping alluvial fans, terraces, lakebeds, and floodplains.

IVC Dynamics: *Sarcobatus vermiculatus*, like many facultative halophytes, is tolerant of alkaline and saline soil conditions that allow it to occur in sites with less interspecific competition (Ungar et al. 1969, Branson et al. 1976). *Sarcobatus vermiculatus* is often found on sites with high water tables that are intermittently flooded. Hansen et al. (1995) reported that it can tolerate saturated soil conditions for up to 40 days. *Sarcobatus vermiculatus* is not ordinarily browsed, but Daubenmire (1970) found that under heavy stocking rates the shrubs will develop a compact canopy. Hansen et al. (1995) also reported browsing damage with heavy spring and summer grazing, but noted that *Sarcobatus vermiculatus* is moderately poisonous to livestock, especially in the fall, and supplemental feed is recommended to avoid livestock loss. Hanson (1929) states that *Sarcobatus vermiculatus* can form an

important part of winter forage for sheep. Fire will topkill *Sarcobatus vermiculatus*, but the shrub will promptly resprout from the root crown (Daubenmire 1970).

IVC Environment: This alliance is found on flat to gently sloping alluvial fans, terraces, floodplains, lakebeds, swales and other low sites where drainage is poor (Mueggler and Stewart 1980, Hansen and Hoffman 1988). Although periodic flooding is rare, stands of this alliance receive more water than the surrounding uplands through runoff. Sites are intermittently flooded with a shallow or perched water table often within 1 m depth (Hansen et al. 1995). The soils are moderately to strongly alkaline/saline, fine-textured, and moderately deep to deep (USFS 1992). Substrates are generally shallow, fine-textured soils (clays to silt loams), derived from alluvium, although coarse soils are possible (Hirsch 1985, USFS 1992, Jones and Walford 1995, Thilenius et al. 1995). Elevations range from 655-2400 m.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the northern and western Great Plains and Rocky Mountain foothills.
IVC Nations: CA?,US
IVC States/Provinces: MT, ND, NE, SD, SK?, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001508** ***Sarcobatus vermiculatus / Pascopyrum smithii - (Elymus lanceolatus)*** **Shrub Wet Meadow** [Greasewood / Western Wheatgrass - (Thick-spike Wheatgrass) Shrub Wet Meadow] []
  G4 (1996-02-01) MT, ND, NE, SD, SK?, WY
- **CEGL002146** ***Sarcobatus vermiculatus / Distichlis spicata - (Puccinellia nuttalliana)*** **Shrub Wet Meadow** [Greasewood / Saltgrass - (Nuttall's Alkali Grass) Shrub Wet Meadow] []
  GNR. ND, SD, SK?, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3904 Alkali Sacaton Great Plains Marsh Alliance

[ ]
Sporobolus airoides Great Plains Marsh Alliance
Great Plains Alkali Sacaton Marsh

IVC Scientific Name: *Sporobolus airoides* Great Plains Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: *Sporobolus airoides* is the dominant or codominant grass. Typical codominant grasses include *Muhlenbergia porteri, Panicum obtusum*, or *Scleropogon brevifolius*. Other common grasses are *Bouteloua dactyloides, Hordeum pusillum, Pascopyrum smithii*, and *Sporobolus cryptandrus*. Forbs and shrubs are typically sparse. Common forb associates are *Chaetopappa ericoides* and species of *Sphaeralcea, Machaeranthera, Ratibida, Helianthus*, and other Asteraceae spp. Scattered shrubs may include *Allenrolfea occidentalis, Atriplex canescens, Chrysothamnus* spp., *Gutierrezia sarothrae*, and *Sarcobatus vermiculatus*. This grassland alliance occurs in the western and southern Great Plains. Stands occur in a wide variety of lowland sites, such as stream terraces, swales, interdune basins, and alluvial flats. The soil often has a high water table because of land position and impermeable subsurface horizons. Soils are moderately saline and usually alkaline. Soil surface textures are sandy

to clayey. The soils morphology often includes a claypan, caliche layer or other subsurface horizon that impedes water movement. Parent material is typically alluvium derived from limestone, shale, or sandstone.

IVC Dynamics: *Sporobolus airoides* will decrease in abundance with increased soil salinity. If a moderate salinity level is maintained, this grass forms hummocks that accumulate sand and gradually lose salinity and moisture. This creates a microhabitat for invasion by salt-intolerant species (Ungar 1974a, as cited by Johnston 1987).

IVC Environment: Stands are reported from a variety of lowland sites, such as stream terraces, swales, toeslopes, interdune basins and alluvial flats. Elevations range from near sea level to 2100 m, but the alliance occurs primarily from 1000-1700 m. The soil often has a high water table because of land position or an impermeable subsurface horizon. Soils are non-saline to moderately saline and usually alkaline. Soil surface textures are sandy to clayey. The soil morphology often includes a claypan, caliche layer or other subsurface horizon that impedes water movement. Parent material is typically alluvium derived from limestone, shale, or sandstone.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northern, western and southern Great Plains of the U.S. and southern Canada. More associations are likely to occur and need to be researched and added to this alliance.

IVC Nations: CA,US

IVC States/Provinces: CO, KS, MT, ND, NM, OK, SD, SK, TX, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-12-18

IVC Acknowledgments:

M082 Warm & Cool Desert Alkali-Saline Marsh, Playa & Shrubland

Marais alcalins-salins, bassins endoréiques et arbustaies des régions désertiques tièdes et froides

IVC Colloquial Name: Warm & Cool Desert Alkali-Saline Marsh, Playa & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup consists of alkaline and saline wetlands dominated by salt-tolerant shrubs or herbs (or both) such as *Allenrolfea occidentalis, Artemisia tridentata, Atriplex* spp., *Distichlis spicata, Eleocharis* spp., *Juncus* spp., *Isocoma acradenia, Grayia spinosa, Krascheninnikovia lanata, Leymus cinereus, Leymus triticoides, Salicornia* spp., *Sarcobatus vermiculatus, Sesuvium verrucosum, Sporobolus airoides, Suaeda moquinii*, and/or *Triglochin maritima*. These wetlands occur near drainages, on stream terraces or flats and may form rings around drying ponds or playas. Soils are alkaline to saline that varies greatly with soil moisture and greatly affects species composition. Sites also experience intermittent, seasonal or semipermanent flooding and/or raised water tables. Sites may retain water into the growing season and dry completely only in drought years, while others dry out for the growing season. Some sites have seasonal drying that exposes mudflats which are colonized by annual wetland vegetation. Sites are found throughout the western U.S. and southwestern Canada.

IVC Geographic Range: This macrogroup is found throughout much of the western U.S. in intermountain basins and in southwestern Canada.

IVC Nations: CA,MX,US

IVC States/Provinces: AB, AZ, BC?, BCN, CA, CO, COA, ID, KS, MT, NM, NV, OR, SK, SON, TX, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G538 North American Desert Alkaline-Saline Marsh & Playa []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G538 North American Desert Alkaline-Saline Marsh & Playa

[ ]

IVC Colloquial Name: North American Desert Alkaline-Saline Marsh & Playa

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is found in the intermountain western U.S. Associations are composed of densely vegetated seasonal wetlands, saltwater emergent marshes to barren and sparsely vegetated playas (generally <10% plant cover). Characteristic species may include *Allenrolfea occidentalis, Atriplex* spp., *Distichlis spicata, Grayia spinosa, Leymus cinereus, Leymus triticoides, Muhlenbergia* spp., *Poa secunda, Puccinellia lemmonii, Salicornia* spp., *Sarcobatus vermiculatus*, and *Triglochin maritima*. Soils and standing water (if present) are alkaline. Salt crusts are common where there are actively drying ponds, that can have saltgrass beds in depressions and sparse shrubs around the margins. Playa flats are intermittently, seasonally to semipermanently flooded, usually retaining water into the growing season and drying completely only in drought years. Many are associated with hot and cold springs, located in basins with internal drainage. Soils are alkaline to saline clays with hardpans. Seasonal drying exposes mudflats colonized by annual wetland vegetation. Water is prevented from percolating through the soil by an impermeable soil subhorizon and is left to evaporate. Soil salinity varies greatly with soil moisture and greatly affects species composition. During exceptionally wet years, increased precipitation can dilute soil salt concentrations which may allow less salt-tolerant species to become established or more abundant. Some stands occur on floodplains, along the margins of perennial lakes, and in alkaline closed basins, with extremely low-gradient shorelines.

IVC Dynamics: Playas are shallow, seasonal wetlands that lie in the lowest point of a closed watershed. Their basins are lined with clay soils, which collect and hold water from rainfall and runoff events. Water evaporates, leaving high salt concentrations in the soils. Some playas will only flood with water during years with high precipitation, sometimes only once or twice in a decade. Others will have standing water every spring, except in the driest of years. During flooded years, some salt-tolerant marsh plant species may grow, such as cattails (*Typha* spp.) or bulrush (*Scirpus* and/or *Schoenoplectus* spp.) (Knight 1994).

IVC Environment: *Climate:* Cold desert. *Soil/substrate/hydrology:* This group is found on barren and sparsely vegetated playas (generally <10% plant cover). Salt crusts are common throughout, with small saltgrass beds in depressions and sparse shrubs around the margins. The flats are intermittently, seasonally to semipermanently flooded, usually retaining water into the growing season and drying completely only in drought years. Many are associated with hot and cold springs, located in basins with internal drainage. Soils are alkaline to saline clays with hardpans. Seasonal drying exposes mudflats colonized by annual wetland vegetation. Water is prevented from percolating through the soil by an impermeable soil subhorizon and is left to evaporate. Soil salinity varies greatly with soil moisture and greatly affects species composition. During exceptionally wet years, increased precipitation can dilute soil salt concentrations which may allow less salt-tolerant species to become established or more abundant. Some stands occur on floodplains, along the margins of perennial lakes, and in alkaline closed basins, with extremely low-gradient shorelines. Environmental information compiled from individual associations and Knight (1994).

DISTRIBUTION

IVC Geographic Range: This group is found throughout the intermountain western U.S.

IVC Nations: CA,MX,US

IVC States/Provinces: AB, AZ, BC?, CA, CO, COA, ID, KS, MT, NM, NV, OR, SK, TX, UT, WA, WY

IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.15.16:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.1.14:P, 10.2.2.81:P, 10.2.4.24:P, 11.1.1a.6:P, 11.1.1b.85:P, 11.1.2.7:P, 11.1.3.8:P, 12.1.1.79:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate. Effects of invasive species and hydrological alteration needs further review.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1332 *Distichlis spicata* Alkaline Wet Meadow Alliance** [Saltgrass Alkaline Wet Meadow Alliance] []
  This wetland herbaceous alliance consists of playas and ephemeral streams with sparse to dense herbaceous cover dominated by *Distichlis spicata* on deep, saline, alkaline and fine-textured soils. This alliance occurs throughout much of the semi-arid and arid western U.S. in lowland sites such as playas, swales and terraces along washes that are seasonally, temporarily or intermittently flooded.
- **A3930 *Eleocharis palustris - Eleocharis rostellata* Alkaline-Saline Marsh Alliance** [Common Spikerush - Beaked Spikerush Alkaline-Saline Marsh Alliance] []
  This alliance is characterized by a sparse to dense herbaceous layer that is dominated or codominated by *Eleocharis palustris*, a facultative wetland species, or *Eleocharis rostellata*. Other salt-tolerant species may also be present to codominant, such as *Carex aquatilis, Distichlis spicata, Glaux maritima, Juncus arcticus ssp. littoralis*, and *Muhlenbergia asperifolia*. Stands occur adjacent to salt waterbodies or on the margins of high-evaporation playas of central Intermountain West basins. Surface water, if present, is highly saline and may or may not be present during the entire growing season.
- **A3932 *Hordeum jubatum* Alkaline Wet Meadow Alliance** [Foxtail Barley Alkaline Wet Meadow Alliance] []
  This alliance consists of grasslands dominated by *Hordeum jubatum* found in lowlands with moderately to strongly saline or alkaline soils within the western U.S. and Canada.
- **A1334 *Sporobolus airoides - Muhlenbergia asperifolia - Spartina gracilis* Alkaline Wet Meadow Alliance** [Alkali Sacaton - Scratchgrass - Alkali Cordgrass Alkaline Wet Meadow Alliance] []
  This alliance is characterized by sparse to dense grasslands and meadows dominated by *Muhlenbergia asperifolia, Poa secunda, Puccinellia lemmonii, Puccinellia nuttalliana, Spartina gracilis*, and/or *Sporobolus airoides*, any of which may form nearly pure stands. It occurs in lowland habitats such as playas, swales, terraces along intermittently flooded washes, and flats that are

alkaline or moderately saline. This alliance is found on plains, in mountain parks and valleys, and in canyons and plateaus of the western U.S.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al.
IVC Description Author: G. Kittel
IVC Description Date: 2015-12-02
IVC Acknowledgments: J. Kagan and P. Comer

A1332 Saltgrass Alkaline Wet Meadow Alliance

[ ]
Distichlis spicata Alkaline Wet Meadow Alliance
Saltgrass Alkaline Wet Meadow

IVC Scientific Name: *Distichlis spicata* Alkaline Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alkaline or saline wetland herbaceous alliance covers grasslands of playas and ephemeral streams. Cover may be a sparse or dense herbaceous layer dominated by *Distichlis spicata*, sometimes occurring in nearly pure stands, or with any of the following as a codominant: *Carex filifolia, Hordeum jubatum, Juncus arcticus ssp. littoralis, Pascopyrum smithii, Puccinellia nuttalliana*, and/or *Sporobolus airoides*. Forb cover is generally low and may include Asteraceae spp., *Helianthus* spp., *Salicornia rubra, Suaeda calceoliformis*, and *Triglochin maritima*. Occasionally *Suaeda* may be the dominant species and *Distichlis* may be completely absent. This alliance occurs throughout much of the semi-arid and arid western U.S. on saline or alkaline soils in lowland sites such as playas, swales and terraces along washes that are seasonally, temporarily or intermittently flooded. Soils are deep, saline, alkaline and fine-textured. They generally have an impermeable layer and therefore are poorly drained. When the soil is dry, the surface usually has salt accumulations.

IVC Dynamics: Stands have higher diversity and cover during wet years and near boundaries with other vegetation types. Higher soil salinity favors *Distichlis spicata* over less salt-tolerant species. However, very high salinity will dwarf the *Distichlis spicata* and reduce cover. Generally, vegetation height and cover and species diversity tend to vary inversely with salinity (Ungar 1967, Steinauer 1989). Associated species may be restricted by the level of salinity in the soil. This osmotic stress of growing in alkaline and saline soils is compensated by the accumulation of proline by some halophytic species including *Distichlis spicata*. This aids the plants' water uptake by increasing the osmotic potential of the plant (Shupe et al. 1986). Vegetation forms zones at some saline sites, where species abundance is stratified by salt tolerance (Ungar et al. 1969, Shupe et al. 1986). In playas, the soil salinity at field capacity generally increases from the edge to the center allowing for several different vegetation stands to co-occur (Ungar 1967, 1970, Ungar et al. 1969). Microtopography can also affect vegetation structure. Where soil accumulates to form hummocks, less salt- and alkali-tolerant plants can occur (Ungar 1972, Johnson 1987).

Distichlis spicata is rhizomatous and tolerant of moderate grazing and its roots resist trampling. Although relatively unpalatable, it can provide valuable winter forage for livestock if needed. If grazed heavily, *Distichlis spicata* will decline and may be replaced by less desirable warm-season grasses such as *Schedonnardus paniculatus* (Costello 1944b). Weeds are generally not a problem because few grow well in saline soils.

IVC Environment: Grasslands in this western alliance occur in lowland habitats such as playas, swales and terraces along washes that are intermittently flooded. The flooding is usually the result of highly localized thunderstorms which can flood one basin and leave the next dry. It also occurs along California coastal areas, and the Channel Islands, where it is sometimes found in a tidal wetland or riparian situation. Climate is semi-arid to arid. Soil texture ranges from clay loam to sandy clay (Redmann 1972, Johnston 1987). These soils are deep, saline and alkaline. They generally have an impermeable layer and therefore are poorly drained. When the soil is dry, the surface usually has salt accumulations.

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout much of the semi-arid and arid western U.S. It also occurs along California coastal areas, and the Channel Islands.
IVC Nations: CA,MX?,US
IVC States/Provinces: AZ, CA, CO, ID, MT, NM, NV, OR, SK, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001770 *Distichlis spicata* Alkaline Wet Meadow** [Saltgrass Alkaline Wet Meadow] []
  Vegetation cover is sparse to dense and dominated by *Distichlis spicata*, occurring in nearly pure stands, with minor cover of associated graminoids. These grasslands occur in semi-arid and arid western North America from southern Saskatchewan, Canada, to Mexico. G5 (1996-02-01) AZ, CA, CO, ID, MT, NM, NV, OR, SK, UT, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz and J. Evens, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel, K.A. Schulz, J. Evens
IVC Description Date: 2016-11-10
IVC Acknowledgments:

A3930 Common Spikerush - Beaked Spikerush Alkaline-Saline Marsh Alliance

[ ]
Eleocharis palustris - Eleocharis rostellata Alkaline-Saline Marsh Alliance
Common Spikerush Alkaline-Saline Marsh

IVC Scientific Name: *Eleocharis palustris - Eleocharis rostellata* Alkaline-Saline Marsh Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This herbaceous wetland alliance occurs in shallow, mostly still water. The vegetation is characterized by a sparse to dense herbaceous layer that is dominated or codominated by *Eleocharis palustris*, a facultative wetland species, or *Eleocharis rostellata*. Other salt-tolerant species may also be present to codominant, such as *Carex aquatilis, Distichlis spicata, Glaux maritima, Juncus arcticus ssp. littoralis*, and *Muhlenbergia asperifolia*. Stands occur adjacent to salt waterbodies or on the margins of high-evaporation playas. Surface water, if present, is highly saline and may or may not be present during the entire growing season. Known locations are near the Great Salt Lake, playas, and springs of the central Intermountain West.
IVC Dynamics:
IVC Environment: These conspicuous, common emergent communities occur in shallow, mostly still water. Stands occur on a variety of landforms, including lake margins, stream terraces, floodplains, gravel bars, and wet basins (cienegas) or meadows. Soil reaction is alkaline (Hansen et al. 1988). All sites are saturated throughout much of the growing season.

DISTRIBUTION

IVC Geographic Range: This alliances is found in the central Intermountain West basins of Utah, Wyoming and possibly Nevada.
IVC Nations: CA?,US
IVC States/Provinces: BC?, CA, CO, ID, MT, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003428 *Eleocharis rostellata* Marsh** [Beaked Spikerush Marsh] []
  G3 (2002-10-18) BC?, CA, CO, ID, MT, NV, OR, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3932 Foxtail Barley Alkaline Wet Meadow Alliance

[ ]
Hordeum jubatum Alkaline Wet Meadow Alliance
Foxtail Barley Alkaline Wet Meadow

IVC Scientific Name: *Hordeum jubatum* Alkaline Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alkaline grassland alliance contains stands dominated by *Hordeum jubatum*. Vegetation is dominated by short and medium-tall graminoids with a total cover of nearly 100%. Shrubs are often absent, and forbs are present but not usually abundant. Other common species include *Distichlis spicata, Elymus trachycaulus, Pascopyrum smithii, Poa arida, Poa compressa, Rumex crispus*, and *Sonchus arvensis*. *Hordeum jubatum* is a native increaser species that responds to disturbance, and with time since disturbance, sites will grade into other alkaline alliances. This alliance is found throughout the interior western U.S., including California's Central Valley, and Alberta, Canada. Stands are located in lowlands with moderately to strongly saline or alkaline soils. The topography is flat and the soils are often briefly flooded or saturated in the spring.
IVC Dynamics: *Hordeum jubatum* is a common, short-lived pioneer species of mesic habitats where permanent grass cover has been destroyed (Dodd and Coupland 1966). It may represent a seral stage that will be taken over by more permanent grasses (Hansen et al. 1995). It is moderately salt-tolerant and can densely colonize areas disturbed by flooding along drainages, around playas and more permanent ponds. *Hordeum jubatum* is moderately tolerant of salinity. Often on playas, these grasslands occupy a zone of intermediate salinity between halophytic vegetation dominated by *Distichlis spicata, Puccinellia nuttalliana*, or *Salicornia rubra*, and non-saline, mesic prairie vegetation dominated by *Pascopyrum smithii, Poa* spp. or *Elymus* spp. Total vegetation cover (density and height), species composition and soil salinity depend on the amount and timing of precipitation and flooding. Growth-inhibiting salt concentrations are diluted when the soil is saturated, allowing the growth of less salt-tolerant species and more robust growth (Ungar 1967).
IVC Environment: The topography is flat, and the soils are often briefly flooded or saturated in the spring (Redmann 1972). It is also found in the drawdown zone of ponds with moderately saline water (Hansen et al. 1995). Soils are clay loam to clay and poor to very poorly drained. Soil salinity is somewhat variable. In the field with competition, this grass grows best in moderately saline conditions (up to 0.7% salinity) (Wilson 1967). The soil surface may be covered with white salt crusts with moderately to strongly saline soils (Wilson 1967, Ungar et al. 1969, Barnes and Tieszen 1978, Hansen et al. 1995).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the interior west of California, Oregon, and Washington east to Colorado, Idaho, Montana, south into New Mexico, and north into Alberta.
IVC Nations: CA,US
IVC States/Provinces: AB, CA, CO, ID, MT, NM, NV, OR, UT, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005285 *Hordeum jubatum* Great Basin Wet Meadow** [Foxtail Barley Great Basin Wet Meadow] []
  G4 (2010-05-19) AB, CO, ID, MT, NM, UT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz, L. Allen, and G. Kittel
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A1334 Alkali Sacaton - Scratchgrass - Alkali Cordgrass Alkaline Wet Meadow Alliance

[ ]
Sporobolus airoides - Muhlenbergia asperifolia - Spartina gracilis Alkaline Wet Meadow Alliance
Alkali Sacaton - Scratchgrass - Alkali Cordgrass Alkaline Wet Meadow

IVC Scientific Name: *Sporobolus airoides - Muhlenbergia asperifolia - Spartina gracilis* Alkaline Wet Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Vegetation included in this alliance is characterized by grasslands and meadows dominated by *Muhlenbergia asperifolia, Poa secunda, Puccinellia lemmonii, Puccinellia nuttalliana, Spartina gracilis*, and/or *Sporobolus airoides*, any of which may form monotypic stands. Other species that co-occur include *Carex microptera, Distichlis spicata, Elymus elymoides, Hordeum brachyantherum, Juncus arcticus ssp. littoralis, Juncus ensifolius, Muhlenbergia richardsonis, Pascopyrum smithii*, and/or *Pseudoroegneria*. Forb cover is generally low with *Achillea millefolium, Arnica longifolia, Iris missouriensis, Stellaria longipes*, the annuals *Montia linearis* and *Trifolium cyathiferum*, and may include species of *Atriplex, Polygonum*, and *Rumex*. Shrubs are rare, but because of the patchy distribution of these stands, scattered *Atriplex canescens* and *Sarcobatus vermiculatus* may be present. Sites are found in lowland habitats such as playas, swales, terraces along intermittently flooded washes, and alkali flats. Any flooding that occurs tends to be the result of localized thunderstorms in the summer. Soils are variable, ranging from deep, fine-textured soil to shallow sand deposits. They are alkaline and may be moderately saline and poorly drained due to an impermeable layer. Stands are documented from eastern Oregon, Washington, California, Nevada, Colorado, Utah, and New Mexico.
IVC Dynamics: Total vegetation abundance (density and height), species composition and soil salinity depend on the amount and timing of precipitation and flooding. Growth inhibiting salt concentrations are diluted when the soil is saturated allowing the growth of less salt-tolerant species. As the saturated soils dry, the salt concentrates until it precipitates out on the soil surface (Dodd and Coupland 1966, Ungar 1968). Higher salinity favors some species over others, and may influence changes in species composition from year to year. For example, higher soil salinity favors *Distichlis spicata, Hordeum jubatum*, and *Sporobolus airoides* over the less salt-tolerant *Muhlenbergia asperifolia*. Ungar (1965) lists *Muhlenbergia asperifolia* as significantly less salt-tolerant than *Sporobolus airoides* and much less tolerant than *Distichlis spicata*. The special configuration (often concentric rings) of salt-tolerant species may also change with microtopography and degree of ponded water (Ungar 1967, 1970, 1972, Ungar et al. 1969).
IVC Environment: Sites occur in lowland habitats such as playas, swales, terraces along intermittently flooded washes, and alkali flats. Soils are variable, ranging from deep, fine-textured soil to shallow sand deposits. They are alkaline and may be moderately saline and poorly drained due to an impermeable layer. When dry the soil may have salt accumulations on the soil surface. Stands are typically flooded in the spring and have a shallow water table that may drop below 1 m by the early summer. Elevation ranges from low interior valleys of eastern Oregon to high-elevation mountain parks of Colorado (Reid 1974).

DISTRIBUTION

IVC Geographic Range: This alliance is found in the interior west of California, Oregon, and Washington east to Colorado, south into New Mexico, and north into Alberta.
IVC Nations: CA,MX,US
IVC States/Provinces: AB, AZ, CA, CO, COA, ID, KS, MT, NM, NV, OR, SK?, TX, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001799 *Puccinellia nuttalliana* Salt Marsh** [Nuttall's Alkali Grass Salt Marsh] []
  G3? (1997-11-14) AB, CO, MT, NV?, SK?, UT?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel and K.A. Schulz
IVC Description Date: 2014-09-26
IVC Acknowledgments:

M403 Arctic Tidal Salt Marsh

Marais salés de la côte arctique de l'Amérique du Nord

IVC Colloquial Name: Arctic Tidal Salt Marsh

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup consists of herbaceous tidal salt marshes with >10% vascular species cover that are subject to regular inundation. This includes low marshes, brackish meadows, and high marshes. Common herbaceous species in the mid to lower salt marsh include *Carex glareosa, Carex ramenskii, Carex subspathacea, Carex ursina, Cochlearia officinalis, Dupontia fisheri, Puccinellia phryganodes*, and *Stellaria humifusa*. In brackish meadows inland of the mid to lower salt marsh additional species such as *Calamagrostis deschampsioides, Chrysanthemum arcticum*, and *Salix ovalifolia* commonly occur. Tidal salt marshes are associated with estuaries or coastal lagoons or other locations protected from wave action, such as the inland side of barrier islands. In the Arctic, salt marshes may occur wherever there is relatively flat land at sea level that is subjected to permafrost subsidence or storm surge inundation. They occur along Alaska's Arctic coastline from the Bering Sea to the Arctic Ocean. The Bristol Bay lowlands in southwestern Alaska mark a major transition zone between Arctic and more temperate Pacific tidal marshes. Species common to the Pacific Coast salt marshes dominate east of the Alaska Peninsula, while species common to the Arctic salt marshes become more dominant to the west of the Alaska Peninsula and Bristol Bay.

IVC Geographic Range: This macrogroup occurs along Alaska's Arctic coastline from the Bering Sea to the Arctic Ocean. The Bristol Bay lowlands and Alaska Peninsula in southwestern Alaska mark the transition zone between Arctic and Pacific tidal marshes. Pacific coastal marshes occur on the east side of the Alaska Peninsula and throughout the rugged Aleutian Chain, while Arctic salt marshes generally become predominant to the west of the Alaska Peninsula along the Bering Sea coastline. Their distribution extends across Alaska's Coastal Plain and also throughout the Arctic coastline of Canada; however, the Canadian distribution has not yet been described.

IVC Nations: CA,GL,IS,NO,RU,US

IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G535 Arctic & Subarctic Coastal Salt Marsh []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: T.V. Boucher, K. Boggs, M.E. Hall, G. Kittel

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G535 Arctic & Subarctic Coastal Salt Marsh

[ ]

IVC Colloquial Name: Arctic & Subarctic Coastal Salt Marsh

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is defined as sparse to closed assemblages of forbs and graminoids that are highly adapted to saturation and saline conditions that occupy the intertidal zone of the Bering Sea and Arctic Ocean coastlines. Characteristic species include the halophytic graminoids *Puccinellia phryganodes, Carex subspathacea*, and *Dupontia fisheri* and the succulent forbs *Stellaria humifusa* and *Cochlearia groenlandica*. Arctic salt marshes develop in protected coastal areas where relatively flat land receives periodic input of tidal waters. Depending on local topography and exposure, marshes may be small patch to matrix-forming. Dynamics are chiefly driven by the inundation of tidal waters, which erode and redeposit salt marsh sediment.

The severity and magnitude of these effects are compounded by storm events, ice rafting and thermal degradation of ice-rich coastal permafrost (where present).

IVC Dynamics: Wind and water (in its many forms) are the driving forces along northern coastlines. Meteorological tides coupled with storm events create tidal surges that reach well above and beyond normal elevations and inland extents of seasonal high tides. Such high-energy events cause the rapid erosion and redeposition of coastal sediment. To a lesser, more localized extent, rafted ice may scour coastlines and push gravel to form beach ridges. Unique to permafrost regions is the thermal degradation of permanently and perennially frozen sediment. Here, the thawing of ice-rich permafrost and/or the melting of massive ice results in the consolidation and deformation of the soil surface, which in turn promotes the further inundation and erosion of coastal tundra. Across longer timescales the coupled effects of isostatic rebound, tectonic uplift or subsidence and eustatic sea level change are important drivers. On the Beaufort seacoast and in the Yukon-Kuskokwim Delta the boundaries of the *Puccinellia phryganodes, Carex subspathacea*, and *Carex ramenskii* communities are maintained in part by grazing geese such as Black Brant (*Branta bernicla nigricans*).

IVC Environment: As an interface between the ocean and land, tidal marshes combine aquatic and terrestrial habitats, anoxic and oxic conditions, as well as saline and fresh waters. Tidal marshes develop in protected coastal areas where relatively flat land receives periodic input of tidal waters. Along the Arctic seacoast tidal marshes form a narrow fringe along tidal river channels, inlets and deltas and within tidal lagoons, estuaries and across inundated tundra. By comparison, along the Bering seacoast tidal marshes range from small patches forming in protected topographic pockets of the harsh Aleutian coast, to large lagoonal systems forming behind barrier beaches, to extensive inland complexes lining the tidally-influenced waters of the Yukon-Kuskokwim Delta. Silts and fine-grained sands are imported from large river deltas or from adjacent coastlines via longshore drift. Permafrost is present in most arctic tidal marshes where it promotes inundation of surface waters by restricting drainage. Permafrost becomes discontinuous in western Alaska and is absent in the Aleutian Islands.

DISTRIBUTION

IVC Geographic Range: This group occurs along Alaska's Aleutian and Arctic coastlines, from the Alaska Peninsula and Bristol Bay lowlands in southwestern Alaska to the North Slope on the Arctic Ocean.

IVC Nations: CA,GL?,IS,NO,RU,US

IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A2121 Arctic Brackish Tidal Mudflats Alliance** [Arctic Brackish Tidal Mudflats Alliance] []
- **A2122 *Distichlis spicata* - *Puccinellia nuttalliana* - *Senecio congestus* Wet Meadow Alliance** [Saltgrass - Nuttall'S Alkali Grass - Marsh Ragwort Wet Meadow Alliance] []
- **A2123 *Puccinellia phryganodes* - *Salicornia borealis* -Hippuris tetraphylla Salt Marsh** [Creeping Alkali Grass - Boreal Saltwort -Hippuris tetraphylla Salt Marsh] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program

IVC Description Author: L. Flagstad

IVC Description Date: 2016-01-19

IVC Acknowledgments: M.E. Hall and G. Kittel

A2121 Arctic Brackish Tidal Mudflats Alliance

[ ]

Arctic Brackish Tidal Mudflats Alliance

Brackish Tidal Mudflats

IVC Scientific Name: Arctic Brackish Tidal Mudflats Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is tentatively proposed to represent arctic tidal mudflats.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: AK, MB, NT, NU, ON, QC, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002582 Brackish - Tidal Coastal Marine Mudflats Sparse Vegetation** [Brackish - Tidal Coastal Marine Mudflats Sparse Vegetation] []
  GNR. MB, ON?
- **CEGL002583 Brackish - Tidal Estuarine Mudflats Sparse Vegetation** [Brackish - Tidal Estuarine Mudflats Sparse Vegetation] []
  GNR. MB, ON?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source:

IVC Description Author:

IVC Description Date:

IVC Acknowledgments:

A2122 Saltgrass - Nuttall'S Alkali Grass - Marsh Ragwort Wet Meadow Alliance

[ ]

Distichlis spicata - Puccinellia nuttalliana - Senecio congestus Wet Meadow Alliance

Arctic Saline Wet Meadow

IVC Scientific Name: *Distichlis spicata - Puccinellia nuttalliana - Senecio congestus* Wet Meadow Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is tentatively proposed to represent arctic saline wet meadows. Consultation with published circumarctic types is needed.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,US
IVC States/Provinces: AK, MB, NT, NU, ON, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002551** ***Distichlis spicata - Hordeum jubatum - Puccinellia nuttalliana - Plantago maritima*** **Saline Wet Meadow** [Saltgrass - Foxtail Barley - Nuttall's Alkali Grass - Seaside Plantain Saline Wet Meadow] []
  GNR. MB
- **CEGL002560** ***Senecio congestus - Tripleurospermum maritimum*** **Saline Wet Meadow** [Marsh Ragwort - False Mayweed Saline Wet Meadow] []
  GNR. MB

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A2123 Creeping Alkali Grass - Boreal Saltwort -Hippuris tetraphylla Salt Marsh

[ ]
Puccinellia phryganodes - Salicornia borealis -Hippuris tetraphylla Salt Marsh
Arctic Salt Marsh

IVC Scientific Name: *Puccinellia phryganodes - Salicornia borealis* -Hippuris tetraphylla Salt Marsh
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is tentatively proposed to represent arctic salt marshes. Consultation with published circumarctic types is needed.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, MB, NT, NU, ON, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002555** ***Puccinellia phryganodes - Salicornia borealis - Triglochin maritima*** **Salt Marsh** [Creeping Alkali Grass - Boreal Saltwort - Seaside Arrow-grass Salt Marsh] []
  GNR. MB, ON?
- **CEGL002554** ***Puccinellia phryganodes*** **- Forbs Salt Marsh** [Creeping Alkali Grass - Forbs Salt Marsh] []
  GNR. MB, ON?
- **CEGL002553** ***Puccinellia phryganodes - Carex subspathacea*** **Salt Marsh** [Creeping Alkali Grass - Hoppner's Sedge Salt Marsh] []
  GNR. MB, ON?
- **CEGL002557** ***Eleocharis uniglumis - Carex aquatilis*** **Salt Marsh** [One-scale Spikerush - Water Sedge Salt Marsh] []
  GNR. MB, ON?
- **CEGL002531** ***Salix brachycarpa - Salix candida / Plantago maritima*** **Saline Shrubland** [Short-fruit Willow - Sageleaf Willow / Seaside Plantain Saline Shrubland] []
  GNR. MB, ON?
- **CEGL002561** ***Hippuris tetraphylla*** **Salt Marsh** [Fourleaf Mare's-tail Salt Marsh] []
  GNR. MB

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

3. DESERT & SEMI-DESERT

Cool and warm deserts and semi-deserts dominated by xeromorphic growth forms, including *succulent* (e.g., cacti, euphorbias) and *small-leaved shrubs* and *trees*, desert grasses and other xeromorphic growth forms, with an irregular horizontal canopy spacing that is often open to very sparse (1%) cover.

3.B. Cool Semi-Desert Scrub & Grassland

Cool Semi-Desert Scrub & Grassland occurs in dry, cool-temperate climates, at mid-latitudes (35° to 50°N), typically in the interior of continents, and varies from low shrublands to very open grassland and shrub-steppe, including open rocky or sandy semi-desert vegetation.

3.B.1. Cool Semi-Desert Scrub & Grassland

Cool Semi-Desert Scrub & Grassland occurs in dry, cool-temperate climates, at mid-latitudes (35° to 50°N), typically in the interior of continents.

Macrogroups in Canada:

- **M169 Great Basin-Intermountain Tall Sagebrush Steppe & Shrubland [Steppes à armoises tridentées et arbustaies intramontagnardes et du Grand Bassin]**
  This macrogroup includes the big sagebrush shrubland and shrub-steppe that is a matrix and large-patch type throughout much of the intermountain western U.S. and that is dominated by *Artemisia tridentata, Purshia tridentata*, and several local dominants such as *Artemisia cana* and *Artemisia tripartita ssp. tripartita*.
- **M499 Western North American Cool Semi-Desert Ruderal Scrub & Grassland []**
  This upland cool semi-desert scrub and grassland macrogroup contains disturbed dry grasslands and shrublands dominated by non-native species or ruderal native species and is found from low-elevation basins to foothills throughout the western U.S. and Canada.

M169 Great Basin-Intermountain Tall Sagebrush Steppe & Shrubland

Steppes à armoises tridentées et arbustaies intramontagnardes et du Grand Bassin

IVC Colloquial Name: Great Basin-Intermountain Tall Sagebrush Steppe & Shrubland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This sagebrush shrubland and shrub-steppe macrogroup is widely distributed in the western U.S. It has an open to dense (10-80% cover) short-shrub canopy (<2 m tall) dominated by *Artemisia tridentata*. *Purshia tridentata* is less widespread but often dominates or codominates with *Artemisia tridentata*, especially in relatively mesic and montane stands. The subspecies of *Artemisia tridentata* vary by habitat and geographic range. The most widespread taxa are *Artemisia tridentata ssp. wyomingensis* and *Artemisia tridentata ssp. tridentata*. Some stands are codominated by associated shrub species *Atriplex canescens, Atriplex confertifolia, Ephedra nevadensis, Ephedra viridis, Ericameria nauseosa, Grayia spinosa, Sarcobatus vermiculatus*, or *Tetradymia canescens*. *Artemisia tridentata ssp. tridentata, Artemisia tridentata ssp. xericensis*, and *Artemisia tripartita ssp. tripartita* are characteristic of relatively mesic environments. Mesic associates include *Peraphyllum ramosissimum, Prunus virginiana*, and *Symphoricarpos* spp. At montane elevations, *Artemisia tridentata ssp. vaseyana, Artemisia cana*, and related taxa such as *Artemisia tridentata ssp. spiciformis* dominate, sometimes with *Purshia tridentata* codominating or dominating stands. *Amelanchier utahensis* and *Symphoricarpos oreophilus* are common montane associates. The understory of this macrogroup is variable and characterized by a sparse to dense (5-50% cover) herbaceous layer that is dominated by a variety of perennial graminoid associates. On xeric sites *Achnatherum hymenoides, Hesperostipa comata, Poa secunda*, and other semi-desert associates are common. On relatively mesic or montane sites, associates include *Achnatherum occidentale, Bromus carinatus, Calamagrostis rubescens, Carex pensylvanica, Danthonia intermedia, Deschampsia cespitosa, Elymus trachycaulus, Festuca arizonica, Festuca idahoensis, Leucopoa kingii, Leymus cinereus, Poa fendleriana*, and *Pseudoroegneria spicata*. Shrub-steppes characterized by an open shrub canopy and abundant native graminoid understory are more common in the less xeric northern extent, at montane elevations and mesic microsites such as along drainages. Shrublands are more common in the drier southern extent with the core distribution in the Great Basin and Colorado Plateau. Stands are found as low as 500 m elevation in the northwestern Great Plains and up to 2500 m in the Rocky Mountains and Colorado Plateau. Xeric stands occur on flat to steeply sloping upland slopes on alluvial fans and terraces, toeslopes, lower and middle slopes, draws, badlands, foothills, and rocky slopes. Mesic stands occur on stream terraces, point bars, valley floors, alluvial fans, floodplains, washes, gullies, stabilized dunes, mesic uplands, and swales. Montane stands occur on stony flats, broad ridgetops, and mountain slopes. All aspects are represented, but occurrences at higher elevations may be restricted to south- or west-facing slopes. Soils vary from deep and well-developed to shallow rocky and poorly developed substrates.

IVC Geographic Range: This shrubland and shrub-steppe macrogroup is widely distributed from the Great Basin, Columbia River Basin, Colorado Plateau, Rocky Mountains, northeastern Great Plains and as far east as the Dakotas and into British Columbia in some southern valleys.

IVC Nations: CA,US

IVC States/Provinces: AB?, AZ, BC, CA, CO, ID, MT, NM, NV, OR, SD, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments:

Groups in Canada:

- **G303 Intermountain Dry Tall Sagebrush Steppe & Shrubland []**
- **G302 Intermountain Mesic Tall Sagebrush Steppe & Shrubland []**
- **G304 Intermountain Mountain Big Sagebrush Steppe & Shrubland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: K.A. Schulz and M. Jennings

IVC Description Date: 2016-01-26

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by M.E. Hall.

G303 Intermountain Dry Tall Sagebrush Steppe & Shrubland

[ ]

IVC Colloquial Name: Intermountain Dry Tall Sagebrush Steppe & Shrubland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This widely distributed, matrix-forming shrubland group is concentrated in the drier, more southerly portions of the interior western U.S., especially in the Great Basin and Colorado Plateau, but extends into more xeric portions of the Columbia Plateau, Wyoming steppe, Rocky Mountains, and northeast into the northwestern Great Plains. Stands are dominated by *Artemisia tridentata ssp. wyomingensis* and *Artemisia tridentata ssp. tridentata* and, in some cases, codominated by xeric shrubs such as *Atriplex canescens, Atriplex confertifolia, Ephedra nevadensis, Ephedra viridis, Ericameria nauseosa, Grayia spinosa*, or *Sarcobatus vermiculatus*. Other common shrubs include *Amelanchier utahensis, Artemisia frigida, Atriplex gardneri, Chrysothamnus* spp., *Ericameria* spp., *Peraphyllum ramosissimum, Purshia tridentata*, and *Tetradymia* spp. If present, the herbaceous layer ranges from sparse and patchy to moderately dense and is typically dominated by dry-site graminoids with low cover of forbs. Characteristic graminoids include *Achnatherum hymenoides, Achnatherum lettermanii, Achnatherum pinetorum, Achnatherum thurberianum, Bouteloua gracilis, Bromus tectorum, Carex filifolia, Distichlis spicata, Elymus albicans, Elymus elymoides, Hesperostipa comata, Leymus ambiguus, Leymus salinus, Pleuraphis jamesii, Poa fendleriana, Poa secunda, Pseudoroegneria spicata, Sporobolus airoides*, and *Sporobolus cryptandrus*. A sparse layer of cold-deciduous needle-leaved or scale-leaved evergreen trees may occasionally be emergent over the shrubs. This group occurs on flat to steeply sloping upland slopes on alluvial fans and terraces, toeslopes, lower and middle slopes, draws, badlands, and foothills. Stands are found at elevations as low as 500 m in the northwestern Great Plains to 2500 m in the Rocky Mountains and Colorado Plateau. Sites with little slope tend to have deep soils, while those with steeper slopes have shallow to moderately deep soils. Climate is mostly semi-arid but ranges from semi-arid in the western Great Basin to subhumid in the northern Great Plains and Rocky Mountains with much of the precipitation falling primarily as snow. The amount and reliability of growing-season moisture increase eastward and with increasing elevation.

IVC Dynamics: The natural fire regime of this group likely maintains patchy distribution of shrubs, so the general aspect of the vegetation is that of a grassland. Shrubs may increase following heavy grazing and/or with fire suppression, particularly in moist portions of the northern Columbia Plateau where it forms a landscape mosaic pattern with shallow-soil scabland shrublands. Response to grazing can be variable depending on the type of grazer and the season in which grazing occurs. *Hesperostipa comata* can increase in abundance in response to either grazing or fire. Microphytic crust is very important in this group.

IVC Environment: This shrubland group is widely distributed in the western U.S., at elevations as low as 500 m in the northwestern Great Plains to 2500 m in the Rocky Mountains and Colorado Plateau. This group occurs on flat to steeply sloping upland slopes on alluvial fans and terraces, toeslopes, lower and middle slopes, draws, badlands, and foothills. *Climate:* Climate ranges from arid in the western Great Basin to subhumid in the northern plains and Rocky Mountains with much of the precipitation falling primarily as snow. The amount and reliability of growing-season moisture increase eastward and with increasing elevation. *Soil/substrate/hydrology:* Sites with little slope tend to have deep soils while those with steeper slopes have shallow to moderately deep soils. Soil texture is loamy sand, loam, sandy loam, or clay loam (Hansen and Hoffman 1988), and there is often a significant amount of coarse fragments in the soil profile.

DISTRIBUTION

IVC Geographic Range: This widely distributed, matrix-forming shrubland group is concentrated in the drier, more southerly portions of the interior western U.S., especially in the Great Basin and Colorado Plateau, but extends into more xeric portions of the Columbia Plateau, Wyoming steppe, Rocky Mountains, and northeast into the northwestern Great Plains.

IVC Nations: CA,US

IVC States/Provinces: AZ, BC, CA, CO, ID, MT, NM, NV, OR, SD?, UT, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 9.4.1.25:P, 9.4.3.26:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.1.14:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G3* rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate to high. Current rank may be low relative to level of threat from invasive species and altered fire regimes.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: N.E. West (1983a)
IVC Description Author: M.E. Hall and K.A. Schulz
IVC Description Date: 2015-11-06
IVC Acknowledgments:

G302 Intermountain Mesic Tall Sagebrush Steppe & Shrubland

[ ]

IVC Colloquial Name: Intermountain Mesic Tall Sagebrush Steppe & Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This widespread matrix-forming sagebrush steppe group occurs throughout much of the western U.S. in the Great Basin, Columbia Plateau, northwestern Great Plains, eastern Sierra Nevada, Wyoming Basins, Rocky Mountains, and Colorado Plateau between elevations of 1200 and 2400 m. Stands are characterized by open to sparse shrublands dominated by *Artemisia tridentata* (*ssp. tridentata, ssp. xericensis*) or *Artemisia tripartita ssp. tripartita* which tend to occupy more mesic sites with well-developed soil, and *Purshia tridentata* which tends to occupy drier, rockier soils and positions, as well as sandy dune areas. Some *Artemisia tridentata ssp. wyomingensis* associations are included here, where they occur in biophysical settings conducive to an abundant herbaceous layer, and more mesic-indicator species. Herbaceous layers are often dense and dominated by perennial bunchgrasses, especially as *Festuca idahoensis* and *Pseudoroegneria spicata*. Other common graminoids include *Achnatherum hymenoides, Achnatherum occidentale, Carex pensylvanica, Festuca campestris, Hesperostipa comata, Leymus cinereus, Pascopyrum smithii*, and *Poa secunda*. In some cases scattered trees may form an emergent layer of individual trees; species include *Cercocarpus ledifolius, Juniperus occidentalis, Juniperus osteosperma, Juniperus scopulorum*, or *Pinus ponderosa*. Many perennial forb species are important in these shrublands, and microphytic crust is very important in this group. This group may occur on stream terraces, point bars, valley floors, alluvial fans, floodplains, washes, gullies, stabilized dunes, swales, and rocky slopes. Soils vary from deep and well-developed to shallow, rocky and poorly developed sandy loams, loamy sands, sand, silt loams, and clay loams derived from alluvium, loess, shale, and sandstone.

IVC Dynamics: The natural fire regime of this group likely maintains a patchy distribution of shrubs so that the general aspect of the vegetation is a grassland. Shrubs may increase following heavy grazing and/or with fire suppression, particularly in moist portions in the northern Columbia Plateau where it forms a landscape mosaic pattern with shallow-soil scabland shrublands. Response to grazing can be variable depending on the type of grazer and the season in which grazing occurs. *Hesperostipa comata* can increase in abundance in response to either grazing or fire. In central and eastern Montana (and possibly elsewhere), complexes of prairie dog towns are common in this group. Microphytic crust is very important in this group.

IVC Environment: This widespread matrix-forming group occurs throughout much of the western U.S. between elevations of 600 m in the northern extents to 2500 m in southern range limits. This group may occur on stream terraces, point bars, valley floors, alluvial fans, floodplains, washes, gullies, stabilized dunes, mesic uplands, swales, and rocky slopes. Slopes are variable from gentle to very steep. *Climate:* The climate where this group occurs is semi-arid with annual precipitation ranging from 18-40 cm and high inter-annual variation. Much of the precipitation falls as snow, and growing-season drought is characteristic. Temperatures are continental with large annual and diurnal variations. *Soil/substrate/hydrology:* Soils vary from deep and well-developed to rocky and poorly developed sandy loams, loamy sands, sand, silt loams, and clay loams derived from alluvium, loess, shale, and sandstone. In drier regions, these shrublands are usually associated with perennial or ephemeral stream drainages with water tables less than 3 m from the soil surface.

DISTRIBUTION

IVC Geographic Range: This widespread matrix-forming sagebrush steppe group occurs throughout much of the western U.S. in the Columbia Plateau, Great Basin, eastern Sierra Nevada, Colorado Plateau, Wyoming Basins, Rocky Mountains, and northwestern Great Plains.

IVC Nations: CA,US

IVC States/Provinces: AB?, AZ?, BC, CA, CO, ID, MT, NM, NV, OR, SD, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 9.4.1.25:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G3* rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, long-term decline moderate to high, and threats high.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3183 *Artemisia tridentata ssp. tridentata - Artemisia tridentata ssp. xericensis* Mesic Steppe & Shrubland Alliance** [Basin Big Sagebrush - Foothill Big Sagebrush Mesic Steppe & Shrubland Alliance] []
  This mesic shrubland and steppe alliance occurs throughout the Intermountain West on sloping fans, footslopes, rolling hills, and especially deep, well-drained alluvial bottomlands with vegetation characterized by an open to moderately dense (10-70% cover) shrub layer of *Artemisia tridentata ssp. tridentata* or *Artemisia tridentata ssp. xericensis* and a sparse to dense herbaceous layer dominated by perennial bunchgrasses, especially *Elymus lanceolatus, Festuca idahoensis, Hesperostipa comata, Leymus cinereus, Pascopyrum smithii*, and *Pseudoroegneria spicata*.
- **A3182 *Artemisia tridentata ssp. wyomingensis* Mesic Steppe & Shrubland Alliance** [Wyoming Big Sagebrush Mesic Steppe & Shrubland Alliance] []
  This mesic shrubland and steppe alliance is found in the western United States and southwestern Canada and is characterized by an open to dense (10-70% cover) shrub layer that is dominated (or codominated with at least 40% relative cover in mixed stands) by *Artemisia tridentata ssp. wyomingensis*. Common associates include *Atriplex confertifolia, Artemisia frigida, Krascheninnikovia lanata, Purshia tridentata*, and *Symphoricarpos longiflorus*.
- **A1528 *Artemisia tripartita ssp. tripartita - Artemisia tridentata* Mesic Steppe & Shrubland Alliance** [Threetip Sagebrush - Big Sagebrush Mesic Steppe & Shrubland Alliance] []
  This mesic alliance is distributed from the Columbia Basin east to the northern Rocky Mountains and is characterized by an open to moderately dense shrub layer dominated or codominated by *Artemisia tripartita* with10-25% cover and with herbaceous species having equal or greater coverage than shrubs.
- **A3179 *Purshia tridentata - Artemisia tridentata* Mesic Steppe & Shrubland Alliance** [Antelope Bitterbrush - Big Sagebrush Mesic Steppe & Shrubland Alliance] []
  This mesic alliance occurs throughout the Intermountain West and is characterized by an open to moderately dense short-shrub layer dominated or codominated by *Purshia tridentata* with *Artemisia tridentata* and sometimes *Prunus virginiana* present to codominant. The understory is sparse to dense and typically dominated by perennial bunchgrasses such as *Achnatherum hymenoides, Achnatherum nelsonii, Achnatherum occidentale, Festuca campestris, Festuca idahoensis, Hesperostipa comata, Leymus cinereus, Poa secunda*, and *Pseudoroegneria spicata*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: N.E. West (1983c)
IVC Description Author: M.E. Hall and K.A. Schulz
IVC Description Date: 2015-11-06
IVC Acknowledgments:

A3183 Basin Big Sagebrush - Foothill Big Sagebrush Mesic Steppe & Shrubland Alliance

[ ]

Artemisia tridentata ssp. tridentata - Artemisia tridentata ssp. xericensis Mesic Steppe & Shrubland Alliance

Basin Big Sagebrush - Foothill Big Sagebrush Mesic Steppe & Shrubland

IVC Scientific Name: *Artemisia tridentata ssp. tridentata - Artemisia tridentata ssp. xericensis* Mesic Steppe & Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This mesic shrubland and steppe alliance occur throughout the Intermountain West from the western Great Basin to the northern Rocky Mountains, the Columbian Basin and Colorado Plateau. The vegetation included in this alliance is characterized by a somewhat sparse to moderately dense (10-70% cover) shrub layer of *Artemisia tridentata ssp. tridentata* or *Artemisia tridentata ssp. xericensis*. Shrub associates include *Ericameria nauseosa* or *Chrysothamnus viscidiflorus* which increase with disturbance. Other shrubs occasionally present include *Atriplex* spp., *Gutierrezia sarothrae*, and *Symphoricarpos longiflorus*. Occasionally individual trees are present in some stands. The sparse to dense herbaceous layer is dominated by bunchgrasses that occupy patches in the shrub matrix. The most widespread species is *Pseudoroegneria spicata*, which occurs from the Columbia Basin to the Northern Rockies. Other locally dominant or important species include *Elymus elymoides, Elymus lanceolatus, Festuca idahoensis, Hesperostipa comata, Koeleria macrantha, Leymus cinereus, Muhlenbergia richardsonis, Pascopyrum smithii, Pleuraphis jamesii*, and *Poa secunda*. Forbs are generally of low importance and are highly variable across the range. Mosses and lichens are important ground cover in some stands. This mesic shrubland and steppe alliance occurs on sloping fans, footslopes, rolling hills, and especially deep, well-drained alluvial bottomlands.

IVC Dynamics: Complex ecological interactions between fire regimes, grazing history, and climate patterns result in equally complex patterns of species structure and composition in *Artemisia tridentata*. These present corresponding difficulties in the classification of these shrublands, which have been compounded by the influence of human settlement and agricultural patterns. What follows is a summary of some of the influences of altered fire regimes and grazing history on *Artemisia tridentata* shrublands and shrub-herbaceous vegetation that can result in the conversion of stands of this alliance into stands of exotic annual grassland. Exotic plants have invaded many stands, especially where disturbed (Daubenmire 1970). Common exotics may include annual grasses such as *Bromus tectorum, Bromus arvensis*, and *Bromus briziformis* which may be abundant during wet years; and annual forbs such as *Epilobium brachycarpum, Erodium cicutarium, Lactuca serriola, Tragopogon dubius*, and the perennial forb *Hypericum perforatum*. The winter precipitation recharges soil moisture, and the typically dry summers favor shrubs and deep-rooted grasses (West 1983c, 1988). The exotic annual grass *Bromus tectorum* competes favorably with these cool-season, perennial bunchgrasses in these stands by geminating in the fall, establishing a root system during the winter, then utilizing and depleting soil moisture early in the spring while the bunchgrasses are still mostly dormant (West 1983c).

Artemisia tridentata (ssp. tridentata, ssp. xericensis) shrub-herbaceous communities may represent either moister or less disturbed examples of the *Artemisia tridentata (ssp. tridentata, ssp. xericensis)* shrubland complex. Shrub densities typically increase with overgrazing of the bunchgrass component or with increasing summer drought (West 1983c). *Artemisia tridentata* is inhibited by fire, and excessive grazing may decrease fire frequency due to consumption of herbaceous forage, resulting in increased shrub density. Conversely, invasion by non-native annual grasses (e.g., *Bromus tectorum*) may increase fire frequency sufficiently to eliminate the shrubs from the stands (Daubenmire 1970). With a change in fire frequency, species composition will be altered as well (West 1983c). With a high fire frequency (every 2-5 years), perennial grasses and shrubs are eliminated and non-native annual grasses dominate. At fire-return intervals of 10-30 years, short-lived resprouting shrubs, such as *Chrysothamnus* or *Tetradymia* spp. dominate. At fire intervals of 30-70 years, a mixture of perennial bunchgrasses and shrubs is maintained. Finally, in the complete absence of fire, deep-rooted shrubs such as *Artemisia tridentata* become the dominant shrubs.

IVC Environment: This mesic shrubland and steppe alliance occurs throughout the Intermountain West from the western Great Basin to the Colorado Plateau, northern Rocky Mountains and northwestern Great Plains. Elevation is mostly 1200-2500 m, but extends down to 240 m in the Columbia Basin. Mean annual precipitation ranges from 20-50 cm. Precipitation primarily occurs in the winter as snow or rain in the western portion of its range; however, spring and summer precipitation becomes important in the eastern portion of its range. This moisture is stored in the soil profile and utilized during the typically dry summers. Sites supporting this alliance include sloping fans, footslopes, rolling hills, and deep, well-drained alluvial bottomlands and swales. Soils are deep, fine- to medium-textured alluvial soils with some source of subirrigation during the summer season, but moderately deep upland soils with ample moisture storage also support these shrublands. Some stands occur on deep, sandy soils, or soils that are highly calcareous.

DISTRIBUTION

IVC Geographic Range: This shrubland and steppe alliance occurs throughout the Intermountain West from the western Great Basin to the Colorado Plateau, northern Rocky Mountains and northwestern Great Plains.

IVC Nations: CA,US

IVC States/Provinces: BC?, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002966 *Artemisia tridentata ssp. tridentata / Hesperostipa comata* Shrubland** [Basin Big Sagebrush / Needle-and-Thread Shrubland] []
  G4? (2001-12-04) BC?, CA?, CO, ID, MT, NV, OR?, UT, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3182 Wyoming Big Sagebrush Mesic Steppe & Shrubland Alliance

[ ]
Artemisia tridentata ssp. wyomingensis Mesic Steppe & Shrubland Alliance
Wyoming Big Sagebrush Mesic Steppe & Shrubland

IVC Scientific Name: *Artemisia tridentata ssp. wyomingensis* Mesic Steppe & Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This mesic shrubland and steppe alliance is found in the western United States and southwestern Canada and is characterized by an open to dense (10-70% cover) shrub layer that is dominated (or codominated with at least 40% relative cover in mixed stands) by *Artemisia tridentata ssp. wyomingensis*. Common associates include *Atriplex confertifolia, Artemisia frigida, Krascheninnikovia lanata, Purshia tridentata*, and *Symphoricarpos longiflorus*. The herbaceous stratum can be diverse and have open to dense cover, but perennial graminoids typically total >20% cover. Characteristic dominant species are *Balsamorhiza sagittata, Hesperostipa comata, Pascopyrum smithii, Poa secunda*, and *Pseudoroegneria spicata*. Stands occur on flat to steeply sloping upland sites. Sites with little slope tend to have deep soils, while those with steeper slopes have shallow to moderately deep soils. Soil texture is loam, sandy loam, or clay loam with coarse fragments common in the soil profile.

IVC Dynamics: Stands in this alliance represent the moister communities of the *Artemisia tridentata ssp. wyomingensis*-dominated communities in Great Basin-Intermountain Tall Sagebrush Steppe & Shrubland Macrogroup (M169). Shrub densities typically increase with overgrazing of the bunchgrass component or with increasing summer drought (West 1983c). *Artemisia tridentata* is inhibited by fire, and excessive grazing may decrease fire frequency due to consumption of herbaceous forage, resulting in increased shrub density. Conversely, invasion by non-native annual grasses (e.g., *Bromus tectorum, Bromus arvensis*) may increase fire frequency sufficiently to eliminate the shrubs from the stands (Daubenmire 1970). With a change in fire frequency, species composition will be altered as well (West 1983c). With a high fire frequency (every 2-5 years), perennial grasses and shrubs are eliminated and non-native annual grasses dominate. At fire-return intervals of 10-30 years, short-lived resprouting shrubs such as *Chrysothamnus* or *Tetradymia* spp. dominate. At fire intervals of 30-70 years, a mixture of perennial bunchgrasses and shrubs is maintained. Finally, in the complete absence of fire, deep-rooted shrubs such as *Artemisia tridentata* become the theoretical dominants.

IVC Environment: This mesic steppe and shrubland alliance is found in the western United States and southwestern Canada from the Columbia River Basin south and east across the Great Basin. Climates range from semi-arid in the western Great Basin to subhumid in the Rocky Mountains and northern plains. The amount and reliability of growing-season moisture increase eastward and with increasing elevation. The associations in this alliance occur in somewhat wetter areas of the range of *Artemisia tridentata ssp. wyomingensis*, generally with over 25 cm annual precipitation or with a significant proportion falling in the growing season. These communities occur at elevations of less than 1000 m in the Columbia Basin and northern Great Plains to over 2500 m in the Rocky Mountains and Great Basin ranges. The alliance occurs on flat to steeply sloping upland sites. Sites with little slope tend to have deep soils, while those with steeper slopes have shallow to moderately deep soils (USFS 1992). Soil

texture is loam, sandy loam, or clay loam (Hansen and Hoffman 1988), which allows ample shallow rainfall storage and percolation of snowmelt. Coarse fragments are common in the soil profile. Hironaka et al. (1983) reported that most of their *Artemisia tridentata ssp. wyomingensis* habitat types occurred on calcareous soils, often with some form of a cemented duripan or silica-hardpan at about 1 m in depth.

In eastern Idaho and western Wyoming, *Artemisia tridentata ssp. wyomingensis* occupies somewhat dry, low-elevation sites, while *Artemisia tridentata ssp. tridentata* or *Artemisia cana* occupy deep alluvial soils of drainage bottoms at low elevation, and *Artemisia tridentata ssp. vaseyana* occupies cooler, moister upland sites at higher elevation. In addition to *Artemisia tridentata* and *Artemisia cana*, other associated vegetation types include *Atriplex confertifolia, Ericameria* spp., or *Chrysothamnus* spp. shrublands, *Abies grandis, Pinus contorta, Pinus ponderosa, Populus tremuloides*, or *Pseudotsuga menziesii* forests, *Pinus - Juniperus* woodlands, or mesic herbaceous communities.

DISTRIBUTION

IVC Geographic Range: This mesic alliance occurs from northeastern California and eastern Oregon across the Great Basin, Utah and habitats of the Rocky Mountains.. Associations are also reported from the intermountain parks of Colorado, and from British Columbia, Canada. The alliance has not been reported from either Arizona or New Mexico but may occur there.

IVC Nations: CA,US

IVC States/Provinces: AB?, AZ?, BC?, CA, CO, ID, MT, NM?, NV, OR, SD, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005478 *Artemisia tridentata ssp. wyomingensis / Festuca idahoensis* Shrubland** [Wyoming Big Sagebrush / Idaho Fescue Shrubland] []
  GNR. AB?, BC?, CA?, CO, ID, MT, NV, OR, WY
- **CEGL001009 *Artemisia tridentata ssp. wyomingensis / Pseudoroegneria spicata* Shrubland** [Wyoming Big Sagebrush / Bluebunch Wheatgrass Shrubland] []
  G5? (1996-02-01) BC?, CO, ID, MT, NV, UT, WA, WY
- **CEGL001535 *Artemisia tridentata ssp. wyomingensis / Pseudoroegneria spicata* Shrub Grassland** [Wyoming Big Sagebrush / Bluebunch Wheatgrass Shrub Grassland] []
  G4 (1996-02-01) AZ?, BC?, CA, CO, ID, MT, NM?, NV, OR, SD, UT?, WA, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-12-18

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by D. Sarr.

A1528 Threetip Sagebrush - Big Sagebrush Mesic Steppe & Shrubland Alliance

[ ]

Artemisia tripartita ssp. tripartita - Artemisia tridentata Mesic Steppe & Shrubland Alliance

Threetip Sagebrush - Big Sagebrush Mesic Steppe & Shrubland

IVC Scientific Name: *Artemisia tripartita ssp. tripartita - Artemisia tridentata* Mesic Steppe & Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This mesic shrubland and steppe alliance is distributed from the Columbia Basin east to the northern Rocky Mountains and is characterized by an open to moderately dense shrub layer dominated or codominated by *Artemisia tripartita* with10-25% cover and with herbaceous species having equal or greater coverage than shrubs. Common shrub associates include *Artemisia*

frigida, Artemisia tridentata ssp. tridentata, Artemisia tridentata ssp. vaseyana, Chrysothamnus viscidiflorus, Krascheninnikovia lanata, Purshia tridentata, or *Tetradymia canescens*. The herbaceous stratum is typically dominated by graminoids and of moderate to moderately high cover (20-70%). *Pseudoroegneria spicata* and *Festuca idahoensis* are the most common associates. Other locally abundant graminoid species include *Bouteloua curtipendula, Bouteloua gracilis, Carex filifolia, Festuca campestris, Hesperostipa comata*, and *Koeleria macrantha*. Forbs form a minor and highly variable portion of this vegetation. Recurrent species include *Achillea millefolium, Balsamorhiza sagittata, Camelina microcarpa, Erigeron* spp., *Opuntia* spp., *Phlox* spp., and *Sphaeralcea coccinea*. Climate ranges from semi-arid in intermountain basins to subhumid in higher elevations of the Rocky Mountains. Stands occur on flat to steeply sloping upland sites. Soil texture is loam, sandy loam, or clay loam, but is highly variable.

IVC Dynamics: *Artemisia tripartita* is able to resprout following fire, and dominance by the shrub is favored in overgrazed ranges (Hironaka et al. 1983). Populations may have variation in this ability (Hironaka et al. 1983). *Artemisia tripartita ssp. tripartita* occurs from the Continental Divide of Wyoming to the Columbia Basin of Washington. This subspecies has an erect growth form and may reach 2 m in height. *Artemisia tripartita ssp. rupicola* occurs east of the Continental Divide in Wyoming and forms low, layered shrubs less than 0.3 m in height (Fisser 1962). Growth trials of the two subspecies under similar conditions have shown that these morphological characteristics are genetic rather than environmentally controlled (Fisser 1962).

IVC Environment: This mesic shrubland and steppe alliance is distributed from the Columbia Basin east to the northern Rocky Mountains. Climate ranges from semi-arid in intermountain basins to subhumid in higher elevations of the Rocky Mountains. The amount and reliability of growing-season moisture increase eastward and with increasing altitude, generally averaging 25-35 cm annually. These communities occur from elevations of less than 1000 m in the Columbia Basin to over 2500 m in the Rocky Mountains. The alliance occurs on flat to steeply sloping upland sites. Sites with little slope tend to have deeper soils, while those with steeper slopes have shallow to moderately deep soils. Soil texture is loam, sandy loam, or clay loam, but is highly variable (Hironaka et al. 1983). *Artemisia cana*- or *Artemisia tridentata ssp. wyomingensis*-dominated communities often occupy lower elevations, and *Artemisia tridentata ssp. vaseyana*-dominated communities occupy cooler, moister upland sites at higher elevation. Other adjacent vegetation types across the range of this alliance include *Atriplex confertifolia, Chrysothamnus* spp., or *Artemisia nova* shrublands, *Populus tremuloides, Pinus ponderosa, Pinus contorta, Abies grandis*, or *Pseudotsuga menziesii* forests, *Pinus - Juniperus* woodlands, shortgrass and mixed-grass prairie, or mesic montane meadow communities.

DISTRIBUTION

IVC Geographic Range: This alliance occurs from eastern Washington and British Columbia, across the upper Columbia Basin to various habitats in the Rocky Mountains of Montana, Wyoming, and Colorado.

IVC Nations: CA,US

IVC States/Provinces: BC, CO, ID, MT, OR, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001537 *Artemisia tripartita ssp. tripartita / Festuca campestris* Shrub Grassland** [Threetip Sagebrush / Rough Fescue Shrub Grassland] []
  G2? (1998-11-30) MT, WA
- **CEGL001538 *Artemisia tripartita ssp. tripartita / Pseudoroegneria spicata* Shrub Grassland** [Threetip Sagebrush / Bluebunch Wheatgrass Shrub Grassland] []
  G2G3 (1998-11-30) BC, ID, MT, OR, WA
- **CEGL001539 *Artemisia tripartita ssp. tripartita / Hesperostipa comata* Shrub Grassland** [Threetip Sagebrush / Needle-and-Thread Shrub Grassland] []
  G1 (2000-12-11) BC?, ID, OR, WA, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Sarr and M.S. Reid, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-12-18

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by D. Sarr and M.S. Reid.

A3179 Antelope Bitterbrush - Big Sagebrush Mesic Steppe & Shrubland Alliance

[ ]

Purshia tridentata - Artemisia tridentata Mesic Steppe & Shrubland Alliance

Antelope Bitterbrush - Big Sagebrush Mesic Steppe & Shrubland

IVC Scientific Name: *Purshia tridentata - Artemisia tridentata* Mesic Steppe & Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This mesic shrubland and steppe alliance occurs throughout the Intermountain West and occurs over a broad range of landforms and microhabitats. Stands are characterized by an open to moderately dense short-shrub layer dominated or codominated by *Purshia tridentata* with *Artemisia tridentata* and sometimes *Prunus virginiana* present to codominant. Other important shrubs include *Ericameria nauseosa, Eriogonum heracleoides, Ribes cereum*, and *Symphoricarpos oreophilus*. The understory is sparse to dense and typically dominated by perennial bunchgrasses such as *Achnatherum hymenoides, Achnatherum nelsonii, Achnatherum occidentale, Festuca campestris, Festuca idahoensis, Hesperostipa comata, Leymus cinereus, Poa secunda*, and *Pseudoroegneria spicata*. Some stands may have a well-developed forb component composed of *Arabis holboellii, Achillea millefolium, Balsamorhiza sagittata, Brodiaea* spp., *Eriogonum ovalifolium, Eriogonum umbellatum, Lithospermum ruderale*, and *Pteryxia terebinthina*. Mosses and lichens are important in some stands. Scattered trees may form an emergent layer of individual trees. Stands occur on flats to moderate slopes in foothills, on slopes of lakebeds with ash or pumice soils, and on drier sites within lower forest zones as shrub-steppe inclusions in forest. In Idaho, the alliance is reported from stabilized dunes. In general, it is an upland type associated with coarse, well-drained soils without high salinity or pH. Adjacent vegetation is typically *Artemisia* steppe, *Pseudoroegneria - Poa - Festuca* grasslands, or *Pinus flexilis* woodlands.

IVC Dynamics: *Purshia tridentata* displays considerable plasticity in growth across its range. The variation in height and form of different populations appears to be related to ecotypic variation (Mozingo 1987). Although mycorrhizae are considered important in establishment and growth of individual plants, *Purshia tridentata* is one of the first species to colonize barren volcanic substrates following eruption. The species is valuable as winter browse for native ungulates and livestock and is used extensively. Moderate livestock utilization (<60% of the year's current growth) has been reported to stimulate twig growth the following spring (Mueggler and Stewart 1980). Sawyer and Keeler-Wolf (1995) report that stands of *Purshia tridentata* can reach 125 years of age on deep, well-drained sites, but more commonly become decadent at 30 years, and die at 40-50 years of age. Stands appear to result from either a disturbance event (such as fire), or from rare years when many seedlings survive. This results in even-aged stands (Sawyer and Keeler-Wolf 1995).

IVC Environment: This mesic shrubland and steppe alliance occurs throughout the Intermountain West over a broad range of landforms and microhabitats at elevations from 500-3000 m. Stands are often found on the margins of *Pinus ponderosa* woodlands or forests, forming the transition into sagebrush vegetation. Most of the region is arid to semi-arid with annual precipitation ranging from 15-75 cm. The entire range is under a continental temperature regime of cold winters, cool to warm summers and large diurnal variation. In the western portions of the alliance's range, summers are dry. Growing-season precipitation increases eastward and is the greatest in the Rocky Mountains. They also occur on flats to moderate slopes in foothills, on slopes of lakebeds with ash or pumice soils, and on drier sites within lower forest zones as shrub-steppe inclusions in forest. In Idaho, the alliance is reported from stabilized dunes (Chadwick and Dalke 1965). In Colorado, the alliance is found on exposed, steep (45-60% slope) mountain slopes with southerly aspects on the eastern slopes of the Front Range (Hess 1981). These sites are typically too xeric to support extensions of the surrounding coniferous forests. Parent materials are colluvial and residual metamorphic rocks which have developed into soils classified as Entisols. These soils are poorly developed and rocky, with loamy and sandy textures, and shallow A horizons over rocky C horizons. The soil surface is also moderately rocky. In general, it is an upland type associated with coarse, well-drained soils without high salinity or pH. Adjacent vegetation is typically *Artemisia* steppe, *Pseudoroegneria - Poa - Festuca* grasslands, or *Pinus flexilis* woodlands.

DISTRIBUTION

IVC Geographic Range: This alliance is found in many western U.S. states and Canada, from California north and east into Oregon, Washington, Idaho, Colorado and British Columbia. The core of its range is the Columbia Basin and Columbia Plateau, Owyhee Uplands, Snake River Plain, and the Colorado Rockies. *Purshia tridentata* is one of the most widespread shrubs in the western United States.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, ID, MT, NV, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001495 *Purshia tridentata / Pseudoroegneria spicata* Shrub Grassland** [Antelope Bitterbrush / Bluebunch Wheatgrass Shrub Grassland] []
  G3 (1999-04-28) BC, CA?, ID, MT, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-12-18
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by D. Sarr.

G304 Intermountain Mountain Big Sagebrush Steppe & Shrubland

[ ]

IVC Colloquial Name: Intermountain Mountain Big Sagebrush Steppe & Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group includes sagebrush communities occurring at foothills (in Wyoming) to montane and subalpine elevations across the western U.S. from 1000 m in eastern Oregon and Washington to over 3000 m in the Southern Rockies. In Montana, it occurs on mountain "islands" in the north-central portion of the state and possibly along the Boulder River south of Absarokee and at higher elevations. In British Columbia, it occurs between 450 and 1650 m in the southern Fraser Plateau and the Thompson and Okanagan basins. Across its range of distribution, this is a compositionally diverse group. It is composed primarily of *Artemisia tridentata ssp. vaseyana*, and related taxon *Artemisia tridentata ssp. spiciformis* often with *Symphoricarpos* spp. present to codominant. Also included, but less common, are stands dominated by *Artemisia cana ssp. bolanderi, Artemisia cana ssp. viscidula*, and *Artemisia rothrockii* (a California endemic). Additionally, there are mixed shrub stands codominated by *Amelanchier* spp., *Chamaebatiaria millefolium, Chrysothamnus viscidiflorus, Ericameria nauseosa, Peraphyllum ramosissimum, Purshia tridentata*, and *Ribes cereum*. *Artemisia tridentata ssp. wyomingensis* may be present to codominant if the stand is clearly montane as indicated by montane indicator species such as *Artemisia tridentata ssp. vaseyana, Danthonia intermedia, Festuca thurberi*, or *Leucopoa kingii*.

Most stands have an abundant perennial herbaceous layer (over 25% cover, and in many cases over 50% cover), but this group also includes *Artemisia tridentata ssp. vaseyana* shrublands that lack a significant herbaceous layer. Other common graminoids include *Achnatherum lettermanii, Achnatherum occidentale, Achnatherum pinetorum, Bromus carinatus, Calamagrostis rubescens*, Carex geyeri, *Elymus trachycaulus, Festuca arizonica, Festuca campestris, Festuca idahoensis, Hesperostipa comata, Leucopoa kingii, Muhlenbergia montana, Pascopyrum smithii, Poa fendleriana, Poa secunda*, and *Pseudoroegneria spicata*. In many areas, wildfires can maintain an open herbaceous-rich steppe condition, although at most sites, shrub cover can be unusually high for a steppe system (>40%), with the moisture providing equally high grass and forb cover.

IVC Dynamics: Healthy sagebrush shrublands are very productive, are often grazed by domestic livestock, and are strongly preferred during the growing season (Padgett et al. 1989). Prolonged livestock use can cause a decrease in the abundance of native bunch grasses and increase in the cover of shrubs and non-native grass species such as *Poa pratensis*. *Artemisia cana* resprouts vigorously following spring fire, and prescribed burning may increase shrub cover. Conversely, fire in the fall may decrease shrub abundance (Hansen et al. 1995). *Artemisia tridentata* is generally killed by fires and may take over ten years to form occurrences of some 20% cover or more. The condition of most sagebrush steppe has been degraded due to fire suppression and heavy livestock grazing. It is unclear how long restoration will take to restore degraded occurrences.

IVC Environment: This group occurs in many of the western United States, usually at middle elevations (1000-2500 m). The climate regime is cool, semi-arid to subhumid, with yearly precipitation ranging from 25 to 90 cm/year. Much of this precipitation falls

as snow. Temperatures are continental with large annual and diurnal variation. In general, this group shows an affinity for mild topography, fine soils, and some source of subsurface moisture. Soils generally are moderately deep to deep, well-drained, and of loam, sandy loam, clay loam, or gravelly loam textural classes; soils often have a substantial volume of coarse fragments, and are derived from a variety of parent materials. This group primarily occurs on deep-soiled to stony flats, ridges, nearly flat ridgetops, and mountain slopes. All aspects are represented, but the higher elevation occurrences may be restricted to south- or west-facing slopes.

DISTRIBUTION

IVC Geographic Range: This group is found at montane and subalpine elevations across the western U.S. from 1000 m in eastern Oregon and Washington to over 3000 m in the Southern Rockies. In British Columbia, it occurs in the southern Fraser Plateau and the Thompson and Okanagan basins. This group also occurs in central Montana in the Rocky Mountain island ranges

IVC Nations: CA,US

IVC States/Provinces: AB?, AZ, BC, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.11.78:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 9.4.1.25:P, 9.4.3.26:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.1.14:P, 11.1.1a.6:P, 11.1.1b.85:P, 11.1.3.8:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3207 *Artemisia tridentata ssp. spiciformis - Artemisia tridentata ssp. vaseyana* Steppe & Shrubland Alliance** [Spiked Big Sagebrush - Mountain Big Sagebrush Steppe & Shrubland Alliance] []
  This alliance is widespread in mountainous areas across the western U.S. and is characterized by a moderate to dense shrub layer in which *Artemisia tridentata ssp. vaseyana* or *Artemisia tridentata ssp. spiciformis* dominates. If other shrubs are present, they have low cover and do not codominate. Stands form large, continuous stands on mid-elevation mountain slopes and foothills, and can extend above the lower treeline as patches within montane or subalpine coniferous forests.
- **A3208 *Artemisia tridentata ssp. vaseyana* - Mixed Steppe & Shrubland Alliance** [Mountain Big Sagebrush - Mixed Steppe & Shrubland Alliance] []
  This alliance is widespread in mountainous areas across the western U.S. The vegetation is characterized by a moderate to dense shrub layer in which *Artemisia tridentata ssp. vaseyana* is codominant with non-sagebrush shrub species *Amelanchier utahensis, Holodiscus dumosus, Purshia tridentata*, or *Symphoricarpos oreophilus*. Perennial graminoids typically dominate the open to moderately dense herbaceous layer. This alliance forms large, continuous stands on mid-elevation mountain slopes and foothills, and can extend above the lower treeline as patches within montane or subalpine coniferous forests.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: N.E. West (1983c)
IVC Description Author: M.E. Hall and K.A. Schulz
IVC Description Date: 2015-11-06
IVC Acknowledgments:

A3207 Spiked Big Sagebrush - Mountain Big Sagebrush Steppe & Shrubland Alliance

[ ]

Artemisia tridentata ssp. spiciformis - Artemisia tridentata ssp. vaseyana Steppe & Shrubland Alliance

Spiked Big Sagebrush - Mountain Big Sagebrush Steppe & Shrubland

IVC Scientific Name: *Artemisia tridentata ssp. spiciformis - Artemisia tridentata ssp. vaseyana* Steppe & Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is widespread in mountainous areas across the western U.S. and is characterized by a moderate to dense shrub layer in which *Artemisia tridentata ssp. vaseyana* or *Artemisia tridentata ssp. spiciformis* dominates. If other shrubs are present, they have low cover and do not codominate. Perennial graminoids typically dominate the open to dense herbaceous layer. The most widespread species are *Pseudoroegneria spicata* and *Festuca idahoensis*, which occur from the Columbia Basin to the Northern Rockies, although they may not be the most abundant species in individual stands. Other locally important species may include *Achnatherum occidentale, Bouteloua gracilis, Bromus carinatus, Elymus trachycaulus, Festuca thurberi, Festuca viridula, Koeleria macrantha, Leucopoa kingii, Leymus cinereus, Pascopyrum smithii, Poa fendleriana*, and *Poa secunda*. The forb layer is variable and can be very diverse. Species of *Castilleja, Potentilla, Erigeron, Phlox, Astragalus, Geum, Lupinus*, and *Eriogonum* are characteristic. Non-native grasses *Poa pratensis* and *Poa compressa* may be abundant. The alliance forms large, continuous stands on mid-elevation mountain slopes and foothills, and can extend above the lower treeline as patches within montane or subalpine coniferous forests. Sites are variable and range from flats to steep slopes to ridgetops with deep to shallow rocky soil.

IVC Dynamics: Complex ecological interactions between fire regimes, grazing history, and climate patterns result in equally complex patterns of species structure and composition in *Artemisia tridentata* shrublands. These present corresponding difficulties in the classification of these shrublands, which have been compounded by the influence of human settlement and agricultural patterns. What follows is a summary of some of the influences of altered fire regimes and grazing history on *Artemisia tridentata* shrublands and shrub herbaceous vegetation.

Artemisia tridentata ssp. vaseyana shrub-herbaceous plant associations may represent either more moist or less disturbed communities within the complex of *Artemisia tridentata ssp. vaseyana* shrublands and shrub-steppe. Shrub densities typically increase with overgrazing of the bunchgrass component or with increasing summer drought (West 1983c). There is considerable debate over whether present shrub-dominated stands are actually degraded "steppe" (e.g., shrub-herbaceous physiognomy), and if the stands will return to steppe with changes in grazing and fire management. *Artemisia tridentata* is inhibited by fire, and excessive grazing may decrease fire frequency due to consumption of herbaceous forage, resulting in increased shrub density. Conversely, invasion by non-native annual grasses (e.g., *Bromus tectorum* at lower elevations) may increase fire frequency sufficiently to eliminate the shrubs from the stands (Hironaka et al. 1983). With a change in fire frequency, species composition will be altered as well (West 1983c). With a high fire frequency (every 2-5 years), perennial grasses and shrubs are eliminated and non-native annual grasses dominate. At fire-return intervals of 10-30 years, short-lived resprouting shrubs such as *Chrysothamnus* or *Tetradymia* spp. dominate. At fire intervals of 30-70 years, a mixture of perennial bunchgrasses and shrubs is maintained. Finally, in the complete absence of fire, deep-rooted shrubs such as *Artemisia tridentata* may become dominant.

Artemisia tridentata ssp. spiciformis communities have a natural fire frequency averaging between 20 and 40 years. Presettlement fires burned unevenly, resulting in an ever-changing mosaic of different densities and ages of sagebrush plants (Winward 1991). However, *Artemisia tridentata ssp. spiciformis* resprouts vigorously after fire (Goodrich et al. 1985) and can return to pre-burn canopy cover very quickly (Winward 1991).

IVC Environment: This alliance is widespread in mountainous areas across the western U.S. and forms large, continuous stands on mid-elevation mountain slopes and foothills, and can extend above the lower treeline as patches within montane or subalpine coniferous forests. The climate regime is cool, semi-arid to subhumid, with yearly precipitation ranging from 18-90 cm. Much of the yearly precipitation falls as snow, which may cover the ground for long periods in winter. Temperatures are continental with large annual and diurnal variation. The elevation range for this alliance is large, from about 1060 m in eastern Oregon and Washington, to well over 3200 m in the mountains of northern Nevada, Idaho, and Colorado. Landscape positions are variable as well, but primarily are deep-soiled to stony flats, ridges, nearly flat ridgetops, and mountain slopes. All aspects are represented, and slopes range from nearly flat to very steep. Soils generally are moderately deep to deep, somewhat well-drained, and of loam, sandy loam, clay loam, or gravelly loam textural classes, often having a substantial volume of coarse fragments. The soils are derived from a variety of parent materials (although sandstones, limestones, basalts, and crystalline rocks are common). In some cases, soils supporting stands of this alliance are unstable and prone to mass movement (Bramble-Brodahl 1978, Hironaka et al. 1983). In subalpine environments, these shrub-herbaceous communities are found on deeper soils than *Artemisia arbuscula* subalpine shrublands.

DISTRIBUTION

IVC Geographic Range: This shrubland alliance occurs in mountainous regions from eastern California, Oregon and Washington, across the Great Basin in Nevada, the northern Rocky Mountain foothills of Idaho, and in Colorado, Wyoming and Montana. It has not been reported from Utah, Arizona or New Mexico, but it is very likely to occur in these states at high elevations. In addition, the alliance probably extends north into Alberta, Canada.

IVC Nations: CA,US

IVC States/Provinces: AB?, BC, CA, CO, ID, MT, NV, OR, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001533 *Artemisia tridentata ssp. vaseyana / Festuca idahoensis* Shrub Grassland** [Mountain Big Sagebrush / Idaho Fescue Shrub Grassland] []
  G5 (1996-02-01) AB?, CA?, CO, ID, MT, NV, OR, UT?, WA, WY
- **CEGL001531 *Artemisia tridentata ssp. vaseyana / Festuca campestris* Shrub Grassland** [Mountain Big Sagebrush / Rough Fescue Shrub Grassland] []
  G3Q (1999-12-13) AB?, BC, MT, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-12-18
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by D. Tart and D. Sarr.

A3208 Mountain Big Sagebrush - Mixed Steppe & Shrubland Alliance

[ ]
Artemisia tridentata ssp. vaseyana - Mixed Steppe & Shrubland Alliance
Mountain Big Sagebrush - Mixed Steppe & Shrubland

IVC Scientific Name: *Artemisia tridentata ssp. vaseyana* - Mixed Steppe & Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is widespread in mountainous areas across the western U.S. The vegetation included in this alliance is characterized by an open to dense (10-70% cover) shrub layer in which *Artemisia tridentata ssp. vaseyana* is codominant, usually with 40-60% relative cover with non-sagebrush shrub species such as *Amelanchier utahensis, Holodiscus dumosus, Purshia tridentata*, or *Symphoricarpos oreophilus*. Perennial graminoids typically dominate the open to moderately dense herbaceous layer. The most widespread species are *Pseudoroegneria spicata* and *Festuca idahoensis*, which occur from the Columbia Basin to the northern Rockies, although they may not be the most abundant species in individual stands. Other locally important species may include *Achnatherum occidentale, Bouteloua gracilis, Bromus carinatus, Elymus trachycaulus, Festuca thurberi, Festuca viridula, Koeleria macrantha, Leucopoa kingii, Leymus cinereus, Pascopyrum smithii, Poa fendleriana*, and *Poa secunda*. The forb layer is variable and can be very diverse. Species of *Castilleja, Potentilla, Erigeron, Phlox, Astragalus, Geum, Lupinus*, and *Eriogonum* are characteristic. The alliance forms large, continuous stands on mid-elevation mountain slopes and foothills, and can extend above the lower treeline as patches within montane or subalpine coniferous forests. Sites are variable and range from flats to steep slopes to ridgetops with deep to shallow rocky soil.

IVC Dynamics: Complex ecological interactions between fire regimes, grazing history, and climate patterns result in equally complex patterns of species structure and composition in *Artemisia tridentata*. These present corresponding difficulties in the classification of these shrublands, which have been compounded by the influence of human settlement and agricultural patterns. What follows is a summary of some of the influences of altered fire regimes, and grazing history on *Artemisia tridentata* shrublands and shrub herbaceous vegetation.

Artemisia tridentata ssp. vaseyana shrublands may represent either drier or more disturbed examples of the *Artemisia tridentata ssp. vaseyana* shrubland complex. Shrub densities typically increase with overgrazing of the bunchgrass component or with increasing summer drought (West 1983c). There is considerable debate over whether present shrub-dominated stands are actually degraded "steppe" (e.g., shrub-herbaceous physiognomy), and if the stands will return to steppe with changes in grazing and fire management. *Artemisia tridentata* is inhibited by fire, and excessive grazing may decrease fire frequency due to consumption of herbaceous forage, resulting in increased shrub density. Conversely, invasion by non-native annual grasses (e.g., *Bromus tectorum* at lower elevations) may increase fire frequency sufficiently to eliminate the shrubs from the stands (Hironaka

et al. 1983). With a change in fire frequency, species composition will be altered as well (West 1983c). With a high fire frequency (every 2-5 years), perennial grasses and shrubs are eliminated and non-native annual grasses dominate. At fire-return intervals of 10-30 years, short-lived resprouting shrubs such as *Chrysothamnus* or *Tetradymia* spp. dominate. At fire intervals of 30-70 years, a mixture of perennial bunchgrasses and shrubs is maintained. Finally, in the complete absence of fire, deep-rooted shrubs such as *Artemisia tridentata* become the theoretical dominants.

IVC Environment: This alliance is widespread in mountainous areas across the western U.S. and forms large, continuous stands on mid-elevation mountain slopes and foothills, and can extend above the lower treeline as patches within montane or subalpine coniferous forests. The climate regime is cool, semi-arid to subhumid, with yearly precipitation ranging from 18-60 cm. Much of the yearly precipitation falls as snow, which may cover the ground for long periods in winter. Temperatures are continental with large annual and diurnal variation. The elevation range for this alliance is large, from about 1060 m in eastern Oregon and Washington, to well over 3500 m in the mountains of northern Nevada, Idaho, and Colorado. Landscape positions are variable as well, but primarily are deep-soiled to stony flats, ridges, nearly flat ridgetops, and mountain slopes. All aspects are represented, but the higher elevation occurrences may be mainly on south- or west-facing slopes. Soils generally are moderately deep to deep, well-drained, and of loam, sandy loam, clay loam, or gravelly loam textural classes; they often have a substantial volume of coarse fragments. The soils are derived from a variety of parent materials (although sandstones, limestones, and crystalline rocks are common). In some cases, soils supporting stands of this alliance are unstable and prone to mass movement (Bramble-Brodahl 1978, Hironaka et al. 1983). In subalpine environments, these shrublands are found on deeper soils than *Artemisia arbuscula* subalpine shrublands. Although the vegetation may grow in alkaline soils at the edge of internally drained basins, *Artemisia tridentata* is a non-halophyte and requires low salinity for optimum growth.

DISTRIBUTION

IVC Geographic Range: This shrubland alliance occurs in mountainous regions from eastern California, Oregon, and Washington, across the Great Basin in Nevada, the northern Rocky Mountain foothills of Idaho, and in Colorado, Wyoming, and Montana. It has not been reported from Utah, Arizona, or New Mexico, but it is very likely to occur in these states at high elevations. In addition, the alliance probably extends north into Alberta, Canada.

IVC Nations: CA?,US

IVC States/Provinces: AB?, AZ, CA, CO, ID, MT, NV, OR, UT, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-12-18

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by D. Sarr.

M499 Western North American Cool Semi-Desert Ruderal Scrub & Grassland

[ ]

IVC Colloquial Name: Western North American Cool Semi-Desert Ruderal Scrub & Grassland

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup contains disturbed grasslands and scrub found in semi-desert basins, piedmonts, and foothills throughout the western U.S. and Canada, possibly extending into lower montane zones on warm aspects. Vegetation of the macrogroup can be a monoculture of a single non-native graminoid species, or a mix of several non-native forbs and graminoids. Dominant graminoids include *Agropyron cristatum* (which has been purposefully seeded for forage or to prevent soil erosion, but has become naturalized), *Bromus tectorum* (an annual prolific seed-producer and highly invasive grass species), and *Bromus arvensis*. Invasive and wind- and animal-distributed non-native forb species include *Descurainia sophia, Erodium cicutarium, Halogeton glomeratus, Sisymbrium altissimum*, and *Zygophyllum fabago*. Numerous other non-native herbaceous species may be present to dominant. Invasive non-native shrublands are less common. This macrogroup can also include vegetation dominated by native ruderal species when vegetation is the result of anthropomorphic disturbance. These are dry grasslands, forb-dominated meadows or shrublands that occur in cool semi-arid climates. Stands occur on flat to moderately steep ground that can be large areas or narrow strips adjacent to roadsides or under powerlines and other disturbed areas. Soils are mostly mineral and well-drained. Soils may be compacted and eroded with biological crusts absent because of disturbance.

IVC Geographic Range: This macrogroup contains disturbed grasslands and scrub found in semi-desert basins, piedmont, and foothills throughout the western U.S. and Canada, and possibly extending into lower montane zones on warm aspects.

IVC Nations: CA,US

IVC States/Provinces: AZ, CA, CO, ID, MT, ND, NM, NV, OR, SD, SK, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G600 Great Basin-Intermountain Ruderal Dry Shrubland & Grassland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2014)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G600 Great Basin-Intermountain Ruderal Dry Shrubland & Grassland

[ ]

IVC Colloquial Name: Great Basin-Intermountain Ruderal Dry Shrubland & Grassland

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This semi-desert interior western U.S. ruderal shrubland and grassland group includes shrubland, shrub-steppe and grassland stands that are strongly dominated (>90% relative canopy cover) by invasive, exotic species. Diagnostic invasive shrubs include *Alhagi maurorum, Cytisus striatus, Zygophyllum fabago*, or other exotic shrubs. Herbaceous stands include open to dense grasslands and forblands composed of either exotic annual or biennial grasses or forbs with low cover of perennial species (<10% absolute cover) or stands with a significant perennial herbaceous layer (>10% absolute cover) strongly dominated by exotics (>90% relative cover) with or without annuals and biennials present to dominant. There are relatively few cool, semi-arid invasive perennial graminoids such as *Agropyron cristatum*. Relatively mesic, invasive perennial hay grasses such as *Bromus inermis, Dactylis glomerata*, and *Phleum pratense* are typically absent or have low cover and are restricted to mesic microsites as they are more common in higher elevation or higher latitude, temperate climates or relatively mesic sites. Numerous exotic perennial herbaceous species may compose these stands, such as *Acroptilon repens, Cardaria draba,*

Centaurea calcitrapa, Centaurea diffusa, Centaurea iberica, Centaurea stoebe ssp. micranthos, Centaurea virgata, Euphorbia esula, Hypericum perforatum, Lepidium latifolium, Peganum harmala, or a mixture of other exotic forbs and graminoids. Stands dominated by annuals may be composed of annual grasses such as *Bromus arvensis, Bromus hordeaceus, Bromus madritensis, Bromus tectorum, Taeniatherum caput-medusae*, or annual forbs, including *Bassia scoparia, Brassica nigra, Centaurea melitensis, Centaurea solstitialis, Crupina vulgaris, Cynoglossum officinale, Descurainia sophia, Erodium cicutarium, Hyoscyamus niger, Isatis tinctoria, Salsola tragus, Sisymbrium altissimum, Taraxacum officinale*, or a mixture of other exotic annual forbs and grasses. Additionally, this group contains semi-desert shrublands and shrub-steppe that are dominated or codominated by native shrub species such as *Artemisia tridentata* with a significant herbaceous understory (>10% absolute cover) that is strongly dominated (>90% relative canopy cover) by exotic herbaceous species such as *Agropyron cristatum* or *Bromus tectorum*. Stands occur in disturbed dry to mesic basins, alluvial fans, and foothills elevations up to 2200 m and are restricted to areas with the cool, semi-arid climate found in the intermountain western U.S. region. Stands can be large areas or narrow strips adjacent to roadsides or under powerlines and other disturbed areas. Soils are mostly mineral and well-drained. Due to disturbance, soils may be compacted. It is an early-successional type that may occur in areas disturbed by fire, grazing or mining. This group may grade into wetter areas and may have transition zones where mesic forbs intermix with wetter forbs and graminoids found in Western North American Ruderal Marsh, Wet Meadow & Shrubland Group (G524). This group does not include the mesic introduced hay grasses such as *Bromus inermis, Dactylis glomerata*, and *Phleum pratense* that have escaped from improved pasture and irrigated meadow to invade montane grasslands. These grasslands are classified in the more temperate Western North American Interior Ruderal Grassland & Shrubland Group (G624).

IVC Dynamics: Most of the invasive diagnostic species are cool-season (C3) plants such as *Agropyron cristatum* and *Bromus tectorum*. Cheatgrass expansion has radically changed fire regimes and vegetation over large areas in the Intermountain West. Cheatgrass invades native vegetation such as big sagebrush shrubland, then produces large amounts of fine fuels that readily carry fire, increasing the number, size and frequency of burns (fire-return interval = 3-5 year) which reduces cover of perennial vegetation and favors dominance by annual grasses (Young and Evans 1978, Zouhar 2003). Crested wheatgrass burns quickly and is therefore less susceptible to damage by fire than some native bunchgrass species that have a thick cespitose growth form. The fire may stay longer in the culms, resulting in heat transfer to the ground and the death of the plant (DePuit 1986). In crested wheatgrass, there is usually little heat transfer into the soil, so the tillers and root system are usually undamaged (DePuit 1986). Thus the more frequent fire regime caused by the introduction of *Bromus tectorum* also favors the maintenance of *Agropyron cristatum* over the establishment or survival of native bunchgrasses (S. Rust pers. comm. 2014).

IVC Environment: This interior western U.S. ruderal shrubland and grassland group is found on disturbed dry to mesic, basins, alluvial fans, and foothills elevations (up to 2200 m). Stands can be large areas or narrow strips adjacent to roadsides or under powerlines, in waste places such as abandoned agricultural fields that are no longer irrigated, oil and gas development areas, and other disturbed areas. *Climate:* This group occurs in the cool, semi-arid, continental, climate found intermountain western U.S. region. *Soil/substrate/hydrology:* Soils are mostly mineral and well-drained. Due to disturbance, soils may be compacted. It is an early-successional type that may occur in areas disturbed by fire, grazing or mining. However, it also occurs over vast acres of heavily overgrazed lands in the arid west, where livestock such as cows and horses have broken soil biotic crust, compacted soil and reduced native plant vigor.

DISTRIBUTION

IVC Geographic Range: This ruderal group contains disturbed semi-arid grasslands, meadows, shrublands and shrub-steppe found in the interior western U.S. on disturbed dry to mesic, basins, alluvial fans, and foothills elevations (up to 2200 m). Stands do not extend up into the cool, temperate zone in included mountain ranges. This group does not extend south to the warm deserts or east into the Great Plains or west into cismontane California or the west side of the Cascades.

IVC Nations: CA,US

IVC States/Provinces: AZ, CA, CO, ID, MT, ND, NM, NV, OR, SD, SK, UT, WA, WY

IVC Omernik Ecoregions: 6.2.9.11:P, 6.2.10.17:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.3.43:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.1.14:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2011-04-08)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1814 *Bromus tectorum - Taeniatherum caput-medusae* Ruderal Annual Grassland Alliance** [Cheatgrass - Medusa-head Ruderal Annual Grassland Alliance] []
  This cool, semi-arid interior western U.S. ruderal annual grassland alliance is strongly dominated (>90% relative canopy cover) by invasive, exotic annual grass species such as *Bromus tectorum*, and less commonly *Bromus arvensis, Bromus hordeaceus, Bromus*

madritensis, or *Taeniatherum caput-medusae*. It occurs in disturbed dry to mesic basins, alluvial fans, and foothills at elevations up to 2200 m.

- **A3255 *Cardaria draba* - *Centaurea* spp. - *Lepidium latifolium* Ruderal Perennial Forb Alliance** [Whitetop - Knapweed species - Broadleaf Pepperweed Ruderal Perennial Forb Alliance] []
  This cool, semi-arid interior western U.S. ruderal herbaceous alliance is strongly dominated (>90% relative canopy cover) by invasive, exotic perennial forbs such as *Acroptilon repens, Cardaria draba, Centaurea calcitrapa, Centaurea diffusa, Centaurea iberica, Centaurea stoebe ssp. micranthos, Centaurea virgata, Euphorbia esula, Hypericum perforatum, Lepidium latifolium, Linaria dalmatica, Linaria vulgaris*, or *Peganum harmala* and occurs in disturbed dry to mesic basins, alluvial fans, and foothills at elevations up to 2200 m.
- **A3257 *Centaurea solstitialis - Isatis tinctoria - Salsola tragus* Ruderal Annual Forb Alliance** [Yellow Star-thistle - Dyer's Woad - Prickly Russian-thistle Ruderal Annual Forb Alliance] []
  This cool, semi-arid interior western U.S. ruderal annual herbaceous alliance is strongly dominated (>90% relative canopy cover) by invasive, exotic annual forb species such as *Brassica nigra, Centaurea melitensis, Centaurea solstitialis, Crupina vulgaris, Cynoglossum officinale, Hyoscyamus niger, Isatis tinctoria*, or *Salsola tragus* and occurs in disturbed dry to mesic basins, alluvial fans, and foothills at elevations up to 2200 m.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2015)
IVC Description Author: G. Kittel and K.A. Schulz
IVC Description Date: 2015-04-16
IVC Acknowledgments:

A1814 Cheatgrass - Medusa-head Ruderal Annual Grassland Alliance

[ ]
Bromus tectorum - Taeniatherum caput-medusae Ruderal Annual Grassland Alliance
Ruderal Cheatgrass - Medusa-head Annual Grassland

IVC Scientific Name: *Bromus tectorum - Taeniatherum caput-medusae* Ruderal Annual Grassland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This interior western U.S. ruderal annual grassland alliance is strongly dominated (>90% relative canopy cover) by invasive, exotic annual grass species such as *Bromus tectorum*, and less commonly *Bromus arvensis, Bromus hordeaceus, Bromus madritensis, Onopordum acanthium, Taeniatherum caput-medusae*, or a mixture of other exotic annual grasses. Cover of perennials is low (<5% absolute cover). Stands occur in disturbed dry to mesic basins, alluvial fans, and foothills at elevations up to 2200 m throughout the cool, semi-arid interior western U.S. region. It is an early-successional type that may occur in areas disturbed by fire, grazing or mining.

IVC Dynamics: *Bromus tectorum* is an annual grass and is able to complete its lifecycle in the spring before drying out mid-summer. Its fine structure makes it extremely flammable when dry, and it will increase the fire frequency of a site (FEIS 2001). Frequent fires favor *Bromus tectorum* because they eliminate competing perennial vegetation and increase soil nitrogen, but do not kill all the *Bromus tectorum* seeds, which survive in the unburned organic material (FEIS 2001). This altered ecological process has promoted the spread of *Bromus tectorum* and other exotic annual bromes at the expense of sagebrush shrublands in large parts of the western U.S. (Young and Evans 1973, 1978, Daubenmire 1975).

T. Naumann (pers. comm. 2005) reported successful restoration of cheatgrass-invaded systems by the use of prescribed fire, timed and controlled so as to destroy the seeds of *Bromus tectorum* while stimulating growth in remnant native warm-season grasses. She also reported that prescribed fire was least successful in areas of shallow soils, presumably because native grasses cannot develop sufficient root mass to compete with cheatgrass. Work by Redente and others (e.g., Redente et al. 1992) indicates that, under some circumstances, native grass and shrub species can regain competitive advantage over annuals such as *Bromus tectorum* if a source of carbon, such as sugar or sawdust, is added to the system. Amending the soil with carbon increases the activity of soil microbes and results in the reduction of plant-available nitrogen.

This type is most common where disturbances have eliminated or largely set back the native vegetation. Where the brome grasses are invading native vegetation, the types may still be tracked as native types, since the native species may still persist. A recent study (Karl et al. 1999) found that, despite strong seed and seedling production by the exotic brome grasses (*Bromus arvensis, Bromus tectorum*), the large amount of herbaceous biomass produced by the two vegetatively propagating native

grasses *Bouteloua gracilis* and *Pascopyrum smithii* suggests that these native grasses may well maintain their ecological importance in the stands.

Evans et al. (2001) studied the invasion by cheatgrass of an undisturbed native grassland in Canyonlands National Park (Virginia Park). Their study showed that *Bromus* may cause a short-term decrease in nitrogen loss by decreasing substrate availability and denitrification enzyme activity, but in the long term, nitrogen loss is likely to be greater in invaded sites because of increased fire frequency and greater nitrogen volatilization during fire. A study by Englund (2004) at the same site showed decreasing levels of soil organic carbon as *Bromus tectorum*, with its shallow root systems, replaced perennial grasses with their more massive root systems.

In Nevada, Beatley (1976) found dense stands of the introduced winter annual grass *Bromus tectorum* growing in disturbed *Artemisia* shrublands. *Bromus rubens* is more common in lower elevation sites and *Bromus tectorum* is most common in higher elevation sagebrush and pinyon-juniper communities.

IVC Environment: Stands occur in disturbed dry to mesic basins, alluvial fans, and foothills at elevations up to 2200 m. Climate is cool, semi-arid. Substrates are variable.

DISTRIBUTION

IVC Geographic Range: This exotic annual grassland is restricted to the cool, semi-arid interior western U.S.
IVC Nations: CA?,US
IVC States/Provinces: AZ, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2013-09-27)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3255 Whitetop - Knapweed species - Broadleaf Pepperweed Ruderal Perennial Forb Alliance

[ ]
Cardaria draba - Centaurea spp. - *Lepidium latifolium* Ruderal Perennial Forb Alliance
Ruderal Perennial Forb Meadow & Grassland

IVC Scientific Name: *Cardaria draba - Centaurea* spp. - *Lepidium latifolium* Ruderal Perennial Forb Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This interior western U.S. ruderal perennial herbaceous alliance is strongly dominated (>90% relative canopy cover) by invasive, exotic perennial forbs such as *Acroptilon repens, Cardaria draba, Centaurea calcitrapa, Centaurea diffusa, Centaurea iberica, Centaurea stoebe ssp. micranthos, Centaurea virgata, Euphorbia esula, Hypericum perforatum, Lepidium latifolium, Linaria dalmatica, Linaria vulgaris, Peganum harmala*, or a mixture of other exotic perennial forbs. Stands occur in disturbed dry to mesic basins, alluvial fans, and foothills at elevations up to 2200 m throughout the cool, semi-arid intermountain western U.S. region. It is an early-successional type that may occur in areas disturbed by fire, grazing or mining.
IVC Dynamics:
IVC Environment: This ruderal perennial herbaceous alliance occurs in the interior western U.S. Stands occur in disturbed dry to mesic basins, alluvial fans, and foothills at elevations up to 2200 m throughout the cool, semi-arid intermountain western U.S. region. It is an early-successional type that may occur in areas disturbed by fire, grazing or mining.

DISTRIBUTION

IVC Geographic Range: This ruderal herbaceous alliance occurs in lowland and foothill sites throughout the cool, interior western U.S.
IVC Nations: CA,US
IVC States/Provinces: AZ, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2013-09-27)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3257 Yellow Star-thistle - Dyer's Woad - Prickly Russian-thistle Ruderal Annual Forb Alliance

[ ]
Centaurea solstitialis - Isatis tinctoria - Salsola tragus Ruderal Annual Forb Alliance
Ruderal Annual Forb Meadow & Grassland

IVC Scientific Name: *Centaurea solstitialis - Isatis tinctoria - Salsola tragus* Ruderal Annual Forb Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This ruderal herbaceous alliance occurs in the interior western U.S. Vegetation is strongly dominated (>90% relative canopy cover) by invasive, exotic annual forb species such as *Brassica nigra, Centaurea melitensis, Centaurea solstitialis, Crupina vulgaris, Cynoglossum officinale, Hyoscyamus niger, Isatis tinctoria, Salsola tragus* or a mixture of other exotic annual forbs. Other exotic annual forbs are often present to dominant in disturbed stands, including *Bassia scoparia, Descurainia sophia, Erodium cicutarium, Lepidium perfoliatum, Onopordum acanthium, Sisymbrium altissimum*, and *Taraxacum officinale*. Cover of perennials is low (<5% absolute cover). Stands occur in disturbed dry to mesic basins, alluvial fans, and foothills at elevations up to 2200 m throughout the cool, semi-arid intermountain western U.S. region. It is an early-successional type that may occur in areas disturbed by fire, grazing or mining.
IVC Dynamics:
IVC Environment: This ruderal herbaceous alliance occurs in the interior western U.S. Stands occur in disturbed dry to mesic basins, alluvial fans, and foothills at elevations up to 2200 m. Climate is cool, semi-arid. Substrates are variable. It is an early-successional type that may occur in areas disturbed by fire, grazing or mining.

DISTRIBUTION

IVC Geographic Range: This ruderal herbaceous alliance occurs in lowland and foothill sites throughout the cool, interior western U.S. and Canada.
IVC Nations: CA,US
IVC States/Provinces: AZ, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2013-09-27)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-12-18
IVC Acknowledgments:

4. POLAR & HIGH MONTANE SCRUB, GRASSLAND & BARRENS

Tundra, alpine and tropical high montane habitats dominated by cryomorphic growth forms (including *dwarf-shrubs*, krummholz, associated *herbs, lichens* and *mosses*), with low height and open to closed canopy.

4.B. Temperate to Polar Alpine & Tundra Vegetation

Alpine dwarf-shrublands, krummholz, forb meadows, grasslands, and cryptogam barrens occurring above treeline in temperate and boreal regions around the globe, predominantly in North America and Eurasia, with more isolated occurrences in the Southern Hemisphere. Polar tundra is dominated by dwarf-shrubs, cushion shrubs, sedges and grasses, mosses and lichens, and is found in the high latitudes north of 60°N in the Arctic region and south of 50°S in the Antarctic region, in permafrost soils that range from dry to seasonally saturated.

4.B.1. Temperate & Boreal Alpine Tundra

Alpine dwarf-shrublands, forb meadows and grasslands occurring above the continuous forest line in temperate and boreal regions around the globe, predominantly in North America and Eurasia, with more isolated occurrences in the Southern Hemisphere.

Macrogroups in Canada:

- **M131 Eastern North American Alpine Tundra [Toundra alpine de l'est de l'Amérique du Nord]**
  This dwarf-shrub-, herb-, or lichen-dominated vegetation occurs above treeline on northeastern mountains of North America, where wind, snow, low mean annual temperatures (or limited growing degree days), and cloud cover limit plant growth. Sites encompass the ancient and weathered summits and plateaus of the Canadian Shield, Canadian maritime provinces, and the northern Appalachian Mountains. Most of the vegetation is dwarf-shrubland or lichen-dominated; islands of taller shrubs or small graminoid meadows may occur in protected spots. The dominant plants are ericads: *Vaccinium uliginosum* is diagnostic and often dominant, and *Vaccinium vitis-idaea* is often common.
- **M099 Rocky Mountain-Sierran Alpine Tundra [Toundra alpine des Rocheuses et de la Sierra]**
  This alpine macrogroup includes sparse cushion plants to dense turf or dwarf-shrublands. It occurs at and above upper timberline in relatively dry conditions throughout the central and southern Rocky Mountains cordillera from New Mexico north into Canada and includes alpine areas in the Utah high plateaus and high ranges in the Great Basin west into the Sierra Nevada and southern and eastern Cascades and southern interior mountain ranges of British Columbia.
- **M101 Vancouverian Alpine Tundra [Toundra alpine de la région de Vancouver]**
  This macrogroup consists of well-vegetated to sparsely vegetated tundra areas, from bare, rocky summits and wind-blown dry sites to mesic and wet sites, above the altitudinal and longitudinal limit of trees in the Pacific Northwest coastal region north to maritime Alaska, including the Aleutian Islands, and is dominated by dwarf-shrubs genera such as *Cassiope, Empetrum, Phyllodoce, Salix*, and *Vaccinium* and herbaceous species such as *Anemone narcissiflora, Carex breweri, Festuca brachyphylla, Nephrophyllidium crista-galli, Polygonum bistortoides, Sanguisorba canadensis*, and *Valeriana sitchensis*.
- **M404 Western Boreal Alpine Tundra [Toundra alpine boréale de l'Ouest]**
  This macrogroup consists of low to dwarf-shrublands, tundra, meadows, and sparse vegetation on rocky areas of high elevations in continental boreal climates from north-central British Columbia, through Yukon, to south-central Alaska. Alpine tundra characterized by *Artemisia arctica, Carex microchaeta, Dryas integrifolia, Empetrum nigrum, Festuca altaica*, and *Salix reticulata* dominates; *Cassiope tetragona* is the main heath species.

M131 Eastern North American Alpine Tundra

Toundra alpine de l'est de l'Amérique du Nord

IVC Colloquial Name: Eastern North American Alpine Tundra

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This dwarf-shrub-, herb-, or lichen-dominated vegetation occurs above treeline on northeastern mountains of North America, where wind, snow, and cloud-cover fog limit plant growth. Sites encompass the ancient and weathered summits and plateaus of the Canadian Shield, Canadian maritime provinces, and the northern Appalachian Mountains. Most of the cover is dwarf-shrubland or lichen-dominated; islands of taller shrubs or small graminoid meadows may occur in protected spots. The dominant plants are ericads: *Vaccinium uliginosum* is diagnostic and often dominant; *Vaccinium vitis-idaea* and, less often, *Vaccinium boreale*, is often common. Other alpine-restricted heaths such as *Arctostaphylos alpina, Loiseleuria procumbens, Phyllodoce caerulea*, and *Rhododendron lapponicum* are present, with composition generally varying by microsite characteristics. Other low shrubs include dwarf birches, alders and willows, such as *Alnus viridis, Betula glandulosa, Betula minor, Salix argyrocarpa, Salix herbacea*, and *Salix uva-ursi*. *Diapensia lapponica* is a characteristic cushion-plant, especially in highly exposed flats. *Carex bigelowii* is a characteristic and locally dominant sedge, *Agrostis mertensii* and *Anthoxanthum monticola ssp. alpinum* are characteristic grasses, and *Juncus trifidus* is a dominant rush. Forbs are comparatively scarce (except in snowbank settings), with characteristic species including *Minuartia groenlandica, Prenanthes boottii, Solidago cutleri*, and in a few locations, *Geum peckii* and *Potentilla robbinsiana*. In Atlantic Canada, some alpine forbland/grassland is characterized by alpine plants such as *Festuca altaica, Juncus trifidus, Luzula spicata, Polygonum viviparum*, and other (boreal) plants.

IVC Geographic Range: This macrogroup occupies the higher summits of the northern Appalachian Mountains, from northern New England and the Adirondacks into Canada in the Gaspé region of Quebec, Newfoundland and Labrador, and higher peaks of New Brunswick and Cape Breton, Nova Scotia.

IVC Nations: CA,US

IVC States/Provinces: LB, ME, NB, NF, NH, NS, NY, ON?, QC, VT

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments:

Groups in Canada:

- **G909 Northern Appalachian Alpine Tundra []**
- **G910 Eastern Boreal Alpine Tundra []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: L.C. Bliss (1963)

IVC Description Author: S.C. Gawler and D. Faber-Langendoen

IVC Description Date: 2015-05-21

IVC Acknowledgments:

G909 Northern Appalachian Alpine Tundra

[ ]

IVC Colloquial Name: Northern Appalachian Alpine Tundra

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alpine tundra group encompasses dwarf-shrub, krummholz, low herbaceous and open rock vegetation growing above the natural treeline at high elevations in the northern Appalachian region of the U.S. Wind, snow, cold, and cloud-cover fog limit plant growth. Sites encompass the ancient and weathered summits of the northern Appalachian Mountains. Most of the cover is dwarf-shrubland or lichen-dominated; islands of taller shrubs or small graminoid meadows may occur in protected spots. The dominant plants are ericads: *Vaccinium uliginosum* is diagnostic and often dominant, and *Vaccinium vitis-idaea* is often common. Other low shrubs include *Betula glandulosa, Alnus viridis, Ledum groenlandicum, Rhododendron lapponicum* and

Salix herbacea. Krummholz consists of *Picea mariana* and *Abies balsamea. Diapensia lapponica* is a characteristic cushion-plant, especially in highly exposed flats. *Carex bigelowii* and *Trichophorum cespitosum* are characteristic and locally dominant graminoids. Forbs are comparatively scarce (except in snowbank settings), with characteristic species including *Saxifraga foliolosa*. The open rock areas contain lichen-dominated expanses known as felsenmeer ("sea of rocks") as well as alpine cliffs where the near-vertical exposure prevents much vegetation growth. On flat or gently-sloped tablelands and ridgelines, felsenmeer develops where freeze-thaw cycles have broken rocks into variously-sized fragments. Crustose, umbilicate, and foliose lichens dominate. Alpine cliffs may contain *Polygonum viviparum, Festuca rubra, Saxifraga cernua, Saxifraga paniculata, Cardamine bellidifolia, Carex scirpoidea, Pinguicula vulgaris*, and *Phleum alpinum*.

IVC Dynamics: An average growing season temperature of 44°F, very high winds, ice, and dense cloud cover act in concert to suppress the establishment of trees in this zone. The formation of rime ice, and the wind-transported snow and ice crystals act as a sandblaster on exposed vegetation. The high degree of precipitation and low accumulation of organic material results in the development of shallow bogs over bedrock, contributing to the patchwork assemblage of upland and wetland vegetation.

In open rock areas, the steep slopes and exposed bedrock undergo processes that result in changes in the vegetation over time. Willey et al. (2012) describe two main processes: mechanical weathering and mass movement. Mechanical weathering results in frost-shattering (fluctuating temperatures cause expansion and contraction of rocks that ultimately break apart); cryoturbation (freeze-thaw cycles that result in unusual formations such as rock polygons and soil stripes); and exfoliation (deterioration of granite cliff faces allow expansion of underlying rock, resulting in a peeling away of surface rock). Mass movements include snow (avalanches) and soil (landslides caused by unstable substrate sliding along a sheer sloped surface, and debris flows caused by torrential rain).

IVC Environment: *Climate:* The climate combines north-temperate day lengths with tundra-like exposure. High winds, late-melting snow, and cloud-cover fog are important factors in combination with slope, aspect, and elevation. This vegetation is restricted to highly exposed areas above 1220 m (4000 feet) elevation.

Soil/substrate/hydrology: Soils are extremely limited, and most vegetation is growing on bare rock or gravel with very rapid drainage. Much of this vegetation occurs on acidic metamorphic rocks. This group also includes snowbank vegetation that grows in sheltered areas that accumulate great depths of snow that persist well into the growing season. These depressions have some of the highest soil accumulation. Massifs of various lithologies can also be found, either on consolidated bedrock, such as cirque walls, or on fractured pieces of bedrock on tablelands or ridgelines. Occasionally, this vegetation can be found growing on thicker soil deposits but in extremely cold climates (S. Basquill pers. comm. 2015).

DISTRIBUTION

IVC Geographic Range: This alpine tundra group encompasses dwarf-shrub, krummholz, low herbaceous and open rock vegetation growing above the natural treeline at high elevations in the northern Appalachian region of the U.S., from the Adirondacks of New York to the Green and White Mountains of New England and the Gaspé region of Québec.

IVC Nations: CA,US

IVC States/Provinces: ME, NB, NH, NS?, NY, ON?, QC, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G5* rank that was calculated from closely related ecological system global ranks. A rank of G3 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, long-term decline moderate, and threats high from climate change and hiking pressures.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3285 *Betula papyrifera var. cordifolia - Betula glandulosa - Alnus viridis* Alpine Shrubland Alliance** [Mountain Paper Birch - Resin Birch - Green Alder Alpine Shrubland Alliance] []
  The birch-alder alpine shrubland alliance is found on mid-elevation slopes and ravines of many of the northern ranges. Thickets are dominated by *Betula papyrifera var. cordifolia, Betula glandulosa*, and *Alnus viridis*.. Other shrub associates include *Amelanchier bartramiana* and *Viburnum edule*.
- **A1295 *Carex bigelowii* Alpine Meadow Alliance** [Bigelow's Sedge Alpine Meadow Alliance] []
  This alliance includes alpine meadows above timberline in the northern Appalachians and adjacent Canada, dominated by *Carex bigelowii* and/or *Juncus trifidus*.

- **A1120 *Diapensia lapponica* - Mixed Alpine Dwarf-shrubland Alliance** [Pincushion Plant - Mixed Alpine Dwarf-shrubland Alliance] []
  Alpine tundra community of exposed wind-blown areas, often summits, where snow accumulation is slight or absent; sites are dominated by *Diapensia lapponica*, along with *Juncus trifidus, Rhododendron lapponicum, Loiseleuria procumbens*, and *Vaccinium uliginosum*.
- **A3286 *Ledum groenlandicum / Trichophorum cespitosum / Sphagnum* spp. Alpine Bog & Fen Alliance** [Bog Labrador-tea / Tufted Bulrush / Peatmoss species Alpine Bog & Fen Alliance] []
  This alliance encompasses alpine bogs and fens occurring on plateaus in northern Newfoundland and Quebec, and on slopes and concavities at high elevations in New England and the Adirondack Mountains.
- **A4004 Northern Appalachian Alpine Cliff Alliance** [Northern Appalachian Alpine Cliff Alliance] []
  This alliance comprises associations that encompass sparse vegetation of Northern Appalachian cliffs, ranging from acidic to calcareous and from dry to seepage-influenced.
- **A3360 *Picea mariana* Krummholz Alliance** [Black Spruce Krummholz Alliance] []
  This alliance, known locally as "alpine krummholz" or "subalpine heath," is composed of severely wind-pruned, stunted *Picea mariana, Abies balsamea*, and boreal shrub thickets just above treeline in mountains, or on northern acidic rock outcrops, and at lower elevations where a cold microclimate is sustained by cold-air drainage. The vegetation ranges from dense thickets to patches interspersed with deciduous dwarf-shrubs, forbs, mosses, and lichens.
- **A4003 *Rhizocarpon geographicum - Umbilicaria hyperborea* Eastern Alpine Fell-field Alliance** [World Map Lichen - Blistered Rocktripe Lichen Eastern Alpine Fell-field Alliance] []
  This alliance comprising extensive fell-fields (also called felsenmeer) occurs at high elevations in the Northern Appalachian region and in temperate eastern Canada.
- **A3287 *Salix herbacea / Trichophorum cespitosum - Carex bigelowii* Alpine Snowbed Alliance** [Snowbed Willow / Tufted Bulrush - Bigelow's Sedge Alpine Snowbed Alliance] []
  This herb-dominated alpine vegetation is found in moist and somewhat protected spots above 1430 m (4700 feet) elevation in the Northern Appalachians, and at somewhat lower elevations northward in eastern Canada. Constant moisture is provided by nearby streams or late-melting snowbeds or snowbanks.
- **A1116 *Vaccinium uliginosum* - Mixed Alpine Heath Alliance** [Bog Blueberry - Mixed Alpine Heath Alliance] []
  This alliance includes alpine dwarf-shrublands of the Northern Appalachian region and adjacent Canada, generally characterized by *Vaccinium uliginosum*, often mixed with other dwarf-shrubs.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: S.C. Gawler, D. Faber-Langendoen and L.A. Sneddon
IVC Description Date:
IVC Acknowledgments: Sean Basquill

A3285 Mountain Paper Birch - Resin Birch - Green Alder Alpine Shrubland Alliance

[ ]
Betula papyrifera var. cordifolia - Betula glandulosa - Alnus viridis Alpine Shrubland Alliance
Northern Birch - Alder Alpine Shrubland

IVC Scientific Name: *Betula papyrifera var. cordifolia - Betula glandulosa - Alnus viridis* Alpine Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Thickets are dominated by *Betula papyrifera var. cordifolia, Betula glandulosa*, and *Alnus viridis*. Other shrub associates include *Amelanchier bartramiana* and *Viburnum edule*. The birch-alder alpine shrubland is found on mid-elevation slopes and ravines of many of the northern ranges. These communities are abundant on north-facing slopes of Tuckerman Ravine in the Presidential Range of New Hampshire.
IVC Dynamics: The dynamics of this alliance have not been well-studied; high snowpack in ravines contributes to the mesic to wet-mesic moisture regime.
IVC Environment: The vegetation occurs at high elevations (above 1220 m [4000 feet] in northern New England) on steep slopes and ravines to nearly level rock, talus, and cobble. High winter snowpack is common, and the moisture regime ranges from mesic to wet-mesic.

DISTRIBUTION

IVC Geographic Range: This alliance is found in Quebec, Maine, and New Hampshire.
IVC Nations: CA,US
IVC States/Provinces: ME, NH, QC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006064 *Alnus viridis ssp. crispa - Spiraea alba / Solidago macrophylla* Shrubland** [Mountain Alder - White Meadowsweet / Largeleaf Goldenrod Shrubland] []
  GNR. ME, NH, QC?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.D. Kimball and D.M. Weihrauch (2000); M. Jones, L. Willey and M. Anions (2012)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A1295 Bigelow's Sedge Alpine Meadow Alliance

[ ]
Carex bigelowii Alpine Meadow Alliance
Eastern Alpine Meadow

IVC Scientific Name: *Carex bigelowii* Alpine Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance includes alpine meadows above timberline the Northern Appalachians and adjacent Canada, dominated by *Carex bigelowii* and/or *Juncus trifidus*. Associated species include *Minuartia groenlandica, Sibbaldiopsis tridentata*, and *Vaccinium vitis-idaea*. Soils are typically thin, acidic and have a low moisture-holding capacity. Low temperatures, heavy fog and high winds result in a unusually severe climate. Alpine areas in this region have greater floristic affinities with arctic areas in Canada, Alaska and Greenland than with alpine areas of the western United States.
IVC Dynamics: This vegetation is maintained by moisture provided by high precipitation and fog drip, with low snow accumulation.
IVC Environment: This alliance includes alpine meadows above timberline, usually on north and west slopes affected by high precipitation and fog drip but with minimal snow accumulation. In New England, this alliance occurs at elevations of 1310-1890 m (4300-6200 feet). Soils are typically thin, acidic and well-drained, with a shallow organic layer over gravelly or stony sandy loams.

DISTRIBUTION

IVC Geographic Range: Communities in this alliance are found in alpine areas of New York, New Hampshire, Vermont and Maine, and into Quebec
IVC Nations: CA,US
IVC States/Provinces: ME, NH, NY, QC, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006081 *Carex bigelowii* Alpine Meadow** [Bigelow's Sedge Alpine Meadow] []
  G2 (2003-03-19) ME, NH, NY, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L.C. Bliss (1963)
IVC Description Author: D. Faber-Langendoen and L.A. Sneddon
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A1120 Pincushion Plant - Mixed Alpine Dwarf-shrubland Alliance

[ ]
Diapensia lapponica - Mixed Alpine Dwarf-shrubland Alliance
Eastern Pincushion Plant Alpine Dwarf-shrubland

IVC Scientific Name: *Diapensia lapponica* - Mixed Alpine Dwarf-shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Alpine tundra community of exposed wind-blown areas where snow cover is slight or absent. Sites are dominated by *Diapensia lapponica*, along with *Juncus trifidus, Rhododendron lapponicum, Loiseleuria procumbens*, and *Vaccinium uliginosum*. Herbs include *Agrostis mertensii, Carex bigelowii, Juncus trifidus, Minuartia groenlandica*, and *Solidago multiradiata*.
IVC Dynamics: Sites are characterized by their exposure to high winds on summits and ridgetops. Extreme cold freezes the soils to bedrock in winter, and frost-heave action is evident. In New England, this vegetation does not generally occur below 1220 m (4000 feet).
IVC Environment: Alpine tundra community of exposed wind-blown areas where snow cover is slight or absent. Soils are well-drained gravel that experience deep freezing in winter, and frost-heaves are evident in the substrate.

DISTRIBUTION

IVC Geographic Range: Vegetation of this alliance is found in alpine areas of New York, New Hampshire, Vermont and Maine, and into Quebec. It may be relatively uncommon in the Canadian portion of the range.
IVC Nations: CA,US
IVC States/Provinces: ME, NH, NY, QC, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006322 *Diapensia lapponica* Dwarf-shrubland** [Pincushion Plant Dwarf-shrubland] []
  G2G3 (1997-11-18) ME, NH, NY, QC?, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L.C. Bliss (1963)
IVC Description Author: D. Faber-Langendoen and L.A. Sneddon

IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3286 Bog Labrador-tea / Tufted Bulrush / Peatmoss species Alpine Bog & Fen Alliance

[ ]
Ledum groenlandicum / Trichophorum cespitosum / Sphagnum spp. Alpine Bog & Fen Alliance
Eastern Alpine Bog & Fen

IVC Scientific Name: *Ledum groenlandicum / Trichophorum cespitosum / Sphagnum* spp. Alpine Bog & Fen Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance encompasses alpine bogs and fens occurring on northern Newfoundland and Quebec, and on slopes and concavities at high elevations in New England and the Adirondack Mountains. It is dominated by *Sphagnum* spp., other mosses and lichens, and vascular plants such as *Andromeda polifolia, Betula glandulosa, Chamaedaphne calyculata, Ledum groenlandicum, Rubus chamaemorus*, and *Vaccinium* spp. Herbs include *Eriophorum* spp. and *Trichophorum cespitosum*.
IVC Dynamics: Saturated conditions are maintained by rainfall, fog drip, snowpack melt, and poor drainage. High rainfall can cause supersaturated conditions in bogs and fens forming on steep slopes, causing peat to slough off the slope.
IVC Environment: This alliance forms extensive mats on high plateaus in Newfoundland and Quebec, and in small bedrock depressions and concavities on gentle slopes of high New England peaks. Peat is moderately deep, ranging from 45-75 cm. Slopes generally range from 0-8° but occasionally reach as steep as 35°.

DISTRIBUTION

IVC Geographic Range: This type is most common on plateaus in northern Newfoundland and Quebec, extending southward into the Northern Appalachians of the U.S.
IVC Nations: CA,US
IVC States/Provinces: ME, NH, NY, QC, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL006140 *Empetrum nigrum - Vaccinium uliginosum - Vaccinium oxycoccos / Rubus chamaemorus* Dwarf-shrubland** [Black Crowberry - Bog Blueberry - Small Cranberry / Cloudberry Dwarf-shrubland] []
  GNR. ME, NH, NY, VT
- **CEGL006425 *Kalmia angustifolia - Chamaedaphne calyculata / Rubus chamaemorus / Cladonia* spp. Dwarf-shrubland** [Sheep Laurel - Leatherleaf / Cloudberry / Cup Lichen species Dwarf-shrubland] []
  GNR. ME, NH, QC?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L.C. Bliss (1963); Edinger et al. (2014a)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A4004 Northern Appalachian Alpine Cliff Alliance

[ ]
Northern Appalachian Alpine Cliff Alliance

Northern Appalachian Alpine Cliff

IVC Scientific Name: Northern Appalachian Alpine Cliff Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance comprises associations that encompass sparse vegetation of Northern Appalachian cliffs, ranging from acidic to calcareous and from dry to seepage-influenced. Characteristic species include *Carex scirpoidea, Saxifraga aizoides, Saxifraga oppositifolia, Saxifraga paniculata*, and *Trichophorum cespitosum*. A number of forbs, ferns, and graminoids characteristic of cold climates may be found here, including *Pinguicula vulgaris, Primula laurentiana, Primula mistassinica, Saxifraga paniculata*, and others. Scattered dwarf-shrubs and stunted trees such as *Acer spicatum, Betula papyrifera, Dasiphora fruticosa ssp. floribunda, Picea rubens, Thuja occidentalis*, and *Vaccinium uliginosum* may also occur.

IVC Dynamics: Moisture enters crevices, where it is exposed to alternate freezing and thawing. This cycle results in fracturing of the rock face, and eventually leads to landslides. Newly exposed rock faces provide habitat for recolonization.

IVC Environment: Steep to nearly vertical rock faces with sparse vegetation are common to all occurrences. Bedrock pH varies from acidic (quartzite and granite) to alkaline (limestone, marble, calcareous schist), and moisture regime usually includes dry substrates to those influenced by constant seepage, often on the same cliff face. Soils are confined to crevices and vulnerable to erosion.

DISTRIBUTION

IVC Geographic Range: This alliance occurs at high elevations in northern New England, ranging to Newfoundland and Labrador, and Quebec.

IVC Nations: CA,US

IVC States/Provinces: ME, NH, NY?, QC, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006428 *Trichophorum cespitosum - Saxifraga (foliolosa, paniculata, rivularis)* Alpine Cliff** [Tufted Bulrush - (Leafy-stem Saxifrage, White Mountain Saxifrage, Weak Saxifrage) Alpine Cliff] []
  GNR. ME, NH, QC?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: E.H. Thompson and E.R. Sorenson (2000)

IVC Description Author: L. Sneddon

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A3360 Black Spruce Krummholz Alliance

[ ]

Picea mariana Krummholz Alliance

Black Spruce Krummholz

IVC Scientific Name: *Picea mariana* Krummholz Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is composed of severely wind-pruned, stunted *Picea mariana, Abies balsamea*, and boreal heathland thickets bordering the treeline and true alpine vegetation. The vegetation ranges from dense thickets to patches interspersed

with deciduous dwarf-shrubs, forbs, mosses, and lichens. The canopy is characterized by stunted *Picea mariana* and *Abies balsamea*, sometimes in association with *Picea rubens, Betula papyrifera var. cordifolia*, and *Sorbus americana*. Shrubs may form a distinct layer where stunted trees are scattered, or as distinct patches in association. Characteristic shrubs are ericaceous species such as *Ledum groenlandicum, Kalmia angustifolia, Vaccinium vitis-idaea, Vaccinium uliginosum, Rhododendron canadense*, as well as *Empetrum nigrum* and *Sibbaldiopsis tridentata*, and are of variable closure, but may be patchy and interspersed with expanses of bare or lichen-covered bedrock. Herbaceous species, such as *Paronychia argyrocoma* and *Juncus trifidus*, are usually confined to crevices. *Pleurozium schreberi* and *Dicranum scoparium* are characteristic mosses. This alliance occurs at high elevations, usually just above tree line, where cool temperatures and high winds prevail. Snow tends to accumulate in and around the stunted trees creating a protected environment. This alliance occurs in Maine, New Hampshire, Vermont, and New York. It is also likely to occur in Canada.

IVC Dynamics: Temperature and wind are the main limiting factors that structure the vegetation. Cold temperatures support this vegetation at lower elevations where it occurs at the base of talus slopes that receive cold-air drainage. In alpine settings, wind shear and cold temperatures limit the growth form of boreal conifers.

IVC Environment: This vegetation occurs on acidic bedrock on northern bedrock outcrops, upper ridges, and summits, ranging in elevation from 550 m (1800 feet) (in the north) to 1430 m (4700 feet). It also occurs at the base of talus slopes at lower elevations (215 m [700 feet]) where cold-air drainage sustains a microclimate that is significantly cooler than the surrounding setting. Soil development is restricted to crevices or sheltered areas, where shallow organic accumulation occurs over a thin mineral layer, with shallow peat accumulating in depressions. The organic horizon may be saturated by fog in spring and fall but dry in summer. Soils are shallow, stony, coarse gravels and sands over gravel, scree or bedrock.

DISTRIBUTION

IVC Geographic Range: This alliance occurs at high elevations in the northern Appalachian Mountains, ranging to lower elevations in northern Maine and maritime Canada.

IVC Nations: CA,US

IVC States/Provinces: ME, NB, NH, NS?, NY, QC, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006038** ***Picea mariana - Abies balsamea / Sibbaldiopsis tridentata*** **Shrubland** [Black Spruce - Balsam Fir / Shrubby Fivefingers Shrubland] []
  GNR. ME, NB, NH, NY, VT
- **CEGL006031** ***(Picea mariana, Abies balsamea) / Kalmia angustifolia - Ledum groenlandicum*** **Dwarf-shrubland** [(Black Spruce, Balsam Fir) / Sheep Laurel - Bog Labrador-tea Dwarf-shrubland] []
  GNR. ME, NB?, NH, NS?, NY, QC?, VT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: L.C. Bliss (1963)

IVC Description Author: L. Sneddon

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A4003 World Map Lichen - Blistered Rocktripe Lichen Eastern Alpine Fell-field Alliance

[ ]

Rhizocarpon geographicum - Umbilicaria hyperborea Eastern Alpine Fell-field Alliance

Eastern Alpine Fell-field

IVC Scientific Name: *Rhizocarpon geographicum - Umbilicaria hyperborea* Eastern Alpine Fell-field Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance occurs at high elevations in the Northern Appalachian region and in adjacent eastern Canada. Serpentine mountains often develop fell-fields. Sites are near or above treeline and are generally windswept and exposed to high solar radiation. Lichens are the dominant vegetation; vascular plants may occur in very sparse abundance, confined to sheltered crevices. Typically, the rock surfaces are covered with various lichen species, including *Rhizocarpon geographicum, Arctoparmelia centrifuga*, and *Umbilicaria hyperborea*. Various dwarf-shrubs and herbs may occur in sheltered areas, and where soil areas are more extensive, dwarf-shrub heath types may be found. Patterned ground caused by frost action is common, with rocks sorting by size classes in polygons, in flat areas, or in stripes, on slopes.

IVC Dynamics: Patterned ground caused by frost action is common, with rocks sorting by size classes in polygons, in flat areas, or in stripes, on slopes.

IVC Environment: Fell-fields are made up of large boulders of various rock types, ranging from acidic to alkaline, and also include serpentine in Labrador and Quebec.

DISTRIBUTION

IVC Geographic Range: This alliance is currently documented from a few locations in the Presidential Range of New Hampshire and Katahdin in Maine, and from locations in Quebec and New York.

IVC Nations: CA,US

IVC States/Provinces: ME, NH, NY, ON?, QC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006420 *Arctoparmelia centrifuga - Rhizocarpon geographicum* Nonvascular Vegetation** [Concentric-ring Lichen - World Map Lichen Nonvascular Vegetation] []
  G3G4 (2009-07-17) ME, NH, NY, ON?, QC

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D.D. Sperduto and W.F. Nichols (2004); M. Jones, L. Wiley and M. Anions (2012)

IVC Description Author: L. Sneddon

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A3287 Snowbed Willow / Tufted Bulrush - Bigelow's Sedge Alpine Snowbed Alliance

[ ]

Salix herbacea / Trichophorum cespitosum - Carex bigelowii Alpine Snowbed Alliance

Snowbed Willow / Tufted Bulrush - Bigelow's Sedge Alpine Snowbed

IVC Scientific Name: *Salix herbacea / Trichophorum cespitosum - Carex bigelowii* Alpine Snowbed Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Dwarf-shrubs such as *Vaccinium uliginosum* are often a component, but the differential species are the graminoids and forbs. *Trichophorum cespitosum, Carex scirpoidea*, and *Carex bigelowii* are the characteristic graminoids and are usually locally dominant. *Deschampsia flexuosa* and *Carex brunnescens* are also typical although less abundant. Forbs include species also found at lower elevations, such as *Campanula rotundifolia, Clintonia borealis, Platanthera dilatata, Solidago macrophylla*, and *Veratrum viride*, as well as those restricted to higher elevations (at this latitude) such as *Polygonum viviparum* and *Prenanthes*

boottii. In Canada, species include *Lycopodium alpinum, Sibbaldia procumbens*, and the dwarf-shrubs *Salix herbacea, Harrimanella hypnoides*, and *Phyllodoce caerulea*. This herb-dominated alpine vegetation is found in moist and somewhat protected spots above 1430 m (4700 feet) elevation in the Northern Appalachians, and lower elevations northward in eastern Canada. Constant moisture is provided by nearby streams or late-melting snowbeds or snowbanks.

IVC Dynamics: This alliance forms as a result of late-melting snow that acts to both decrease the local growing season and to protect the vegetation from desiccating winds and extreme alpine weather.

IVC Environment: This alliance forms at the base of or in lee positions of ridges, summits and outcrops, on seepy cliff faces, and in ravines and drainages where moisture from late-melting snowbanks collects. Soils of this alliance are hydric, with an organic layer ranging from 7-30 cm or more. The substrate ranges from saturated, well-decomposed peat to organic-rich mineral soils. pH ranges from 4.9-6.3 (Sperduto and Nichols 2004).

DISTRIBUTION

IVC Geographic Range: This alliance is currently documented from a few locations in the Presidential Range of New Hampshire and Katahdin in Maine, and from Quebec and New York.

IVC Nations: CA?,US

IVC States/Provinces: ME, NH, NY, QC?, VT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006424 *Trichophorum cespitosum - Carex scirpoidea - Carex bigelowii* Alpine Snowbed** [Tufted Bulrush - Northern Single-spike Sedge - Bigelow's Sedge Alpine Snowbed] []
  GNR. ME, NH, NY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: L.C. Bliss (1963); D.D. Sperduto and C.V. Cogbill (1999)

IVC Description Author: L. Sneddon

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A1116 Bog Blueberry - Mixed Alpine Heath Alliance

[ ]

Vaccinium uliginosum - Mixed Alpine Heath Alliance

Bog Blueberry - Mixed Alpine Heath

IVC Scientific Name: *Vaccinium uliginosum* - Mixed Alpine Heath Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is restricted to alpine areas in the Northern Appalachian region and adjacent areas on the Canadian Shield. Thesealpine dwarf-shrublands are generally characterized by *Vaccinium uliginosum*, often mixed with other dwarf-shrubs and lesser amounts of graminoids and forbs. Other species associated with this alliance include *Betula glandulosa, Empetrum nigrum, Ledum groenlandicum, Rhododendron lapponicum, Salix uva-ursi, Vaccinium vitis-idaea*, and the herbs *Carex bigelowii, Cornus canadensis, Juncus trifidus, Minuartia groenlandica, Sibbaldiopsis tridentata*, and *Solidago multiradiata*.. Typically they occur above timberline on exposed, windswept mountain summits, ridges, and bedrock-dominated tablelands.

IVC Dynamics: This alliance is exposed to high winds and low temperatures; frost-heaving of the substrate often occurs.

IVC Environment: This alliance includes alpine dwarf-shrublands that typically occur above timberline on exposed, windswept mountain summits, ridges, and bedrock-dominated tablelands. Soils are acidic, well-drained gravel and sand with a shallow organic layer.

DISTRIBUTION

IVC Geographic Range: These communities are restricted to alpine areas in the Northern Appalachian region and adjacent areas in Canada.
IVC Nations: CA?,US
IVC States/Provinces: ME, NH, NY, QC?, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006298** ***Vaccinium uliginosum - Rhododendron lapponicum / Juncus trifidus*** **Dwarf-shrubland** [Bog Blueberry - Lapland Rosebay / Highland Rush Dwarf-shrubland] []
  G2G3 (1997-11-13) ME, NH, NY, QC?, VT
- **CEGL006155** ***Vaccinium uliginosum - Harrimanella hypnoides - Loiseleuria procumbens*** **Dwarf-shrubland** [Bog Blueberry - Mossplant - Alpine-azalea Dwarf-shrubland] []
  G2G3 (1998-12-09) ME, NH, NY, QC?
- **CEGL006533** ***Vaccinium uliginosum / Sibbaldiopsis tridentata*** **Sparse Vegetation** [Bog Blueberry / Shrubby Fivefingers Sparse Vegetation] []
  GNR. ME, NH, NY, QC?, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L.C. Bliss (1963)
IVC Description Author: D. Faber-Langendoen and L.A. Sneddon
IVC Description Date: 2014-09-26
IVC Acknowledgments:

G910 Eastern Boreal Alpine Tundra

[ ]

IVC Colloquial Name: Eastern Boreal Alpine Tundra
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alpine tundra group encompasses dwarf-shrub, low herbaceous and open rock vegetation growing above the natural treeline from moderately high to lower elevations in the eastern boreal region of Canada in Québec, Newfoundland, and Labrador. The dwarf-shrub-, herb-, or lichen-dominated vegetation occur where wind, snow, cold and cloud-cover fog limit plant growth. Sites encompass the ancient and weathered summits and plateaus of the Canadian Shield. Most of the cover is dwarf-shrubland or lichen-dominated; islands of taller shrubs or small graminoid meadows may occur in protected spots. The dominant plants are ericads: *Vaccinium uliginosum* is diagnostic and often dominant, and *Vaccinium vitis-idaea* is often common. Other alpine-restricted heaths such as *Phyllodoce caerulea, Rhododendron lapponicum, Arctostaphylos alpina*, and *Loiseleuria procumbens* are present, with composition generally varying by microsite characteristics. Other low shrubs include dwarf birches, alders, and willows, such as *Betula minor, Betula glandulosa, Alnus viridis, Salix uva-ursi*, and *Salix argyrocarpa. Diapensia lapponica* is a characteristic cushion-plant, especially in highly exposed flats. *Carex bigelowii* is a characteristic and locally dominant sedge, *Agrostis mertensii* and *Anthoxanthum monticola* ssp*. alpinum* are characteristic grasses, and *Juncus trifidus* is a dominant rush. Further characterization of this type is needed.
IVC Dynamics: An average growing season temperature of 44°F, very high winds, ice, and dense cloud cover act in concert to suppress the establishment of trees in this zone. The formation of rime ice, and the wind-transported snow and ice crystals act as a sandblaster on exposed vegetation. The high degree of precipitation and low accumulation of organic material results in the development of shallow bogs over bedrock, contributing to the patchwork assemblage of upland and wetland vegetation. Willey

et al. (2012) describe processes falling under two broad categories: mechanical weathering and mass movement. Mechanical weathering results in frost-shattering (fluctuating temperatures cause expansion and contraction of rocks that ultimately break apart); cryoturbation (freeze-thaw cycles that result in unusual formations such as rock polygons and soil stripes); and exfoliation (deterioration of granite cliff faces allow expansion of underlying rock, resulting in a peeling away of surface rock). Mass movements include snow (avalanches) and soil (landslides caused by unstable substrate sliding along a sheer sloped surface, and debris flows caused by torrential rain).

IVC Environment: *Climate:* The climate combines north-temperate day lengths with tundra-like exposure. High winds, late-melting snow, and cloud-cover fog are important factors in combination with slope, aspect, and elevation. This vegetation occurs from moderately high elevations to areas that may be contiguous with low-elevation tundra ecosystems (Jones and Willey 2012).

Soil/substrate/hydrology: Soils are extremely limited, and most vegetation is growing on bare rock or gravel with very rapid drainage. Much of this vegetation occurs on acidic metamorphic rocks, but examples also occur on limestone and serpentine. This group also includes snowbank vegetation that grows in sheltered areas that accumulate great depths of snow that persist well into the growing season. These depressions have some of the highest soil accumulation. Occasionally, this vegetation can be found growing on thicker soil deposits but in extremely cold climates (S. Basquill pers. comm. 2015). Also found are massifs of various lithologies, either on consolidated bedrock, such as cirque walls, or on fractured pieces of bedrock on tablelands or ridgelines.

DISTRIBUTION

IVC Geographic Range: This alpine tundra group is found growing above the natural treeline from moderately high to lower elevations in the eastern boreal region of Canada, in Québec, Newfoundland and Labrador.

IVC Nations: CA

IVC States/Provinces: LB, NF, QC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2021a)

IVC Description Author: D. Faber-Langendoen

IVC Description Date:

IVC Acknowledgments:

M099 Rocky Mountain-Sierran Alpine Tundra

Toundra alpine des Rocheuses et de la Sierra

IVC Colloquial Name: Rocky Mountain-Sierran Alpine Tundra

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup occurs at and above upper timberline throughout the Rocky Mountains cordillera from New Mexico and the Sierra Nevada north into southwestern Alberta and southeastern and south-central British Columbia. Vegetation physiognomy ranges from sparse cushion plants to dense turf or dwarf-shrublands. Most fell-field plants are cushioned or matted, frequently succulent, flat to the ground in rosettes, and often densely haired and thickly cutinized. Plant cover is 15-50%, while exposed rocks with crustose lichens make up the rest. Fell-fields are usually found within or adjacent to alpine dry turf. Common species include *Arenaria capillaris, Geum rossii, Kobresia myosuroides, Minuartia obtusiloba, Myosotis asiatica, Paronychia pulvinata, Phlox pulvinata, Silene acaulis, Trifolium dasyphyllum*, and *Trifolium parryi*. The moderately dense to dense cover of low-growing, perennial graminoids and forbs include *Artemisia arctica, Carex elynoides, Carex siccata, Carex scirpoidea, Carex nardina, Carex rupestris, Festuca brachyphylla, Festuca idahoensis, Geum rossii, Juncus drummondii, Kobresia myosuroides, Phlox pulvinata*, and *Trifolium dasyphyllum*. Dwarf-shrublands are characterized by a semi-continuous layer of ericaceous dwarf-shrubs or dwarf willows less than 0.5 m in height. Dense tufts of graminoids and scattered forbs occur. *Dryas octopetala*- and *Dryas integrifolia*-dominated communities occur on more windswept and drier sites than the heath communities. Within the heath-willow communities *Cassiope mertensiana, Salix arctica, Salix reticulata, Salix vestita*, or *Phyllodoce empetriformis* can be dominant shrubs. *Ledum glandulosum, Kalmia microphylla, Phyllodoce glanduliflora*, and *Vaccinium* spp. may also be shrub associates. Snowbed communities are characterized by *Sibbaldia procumbens* and *Carex subnigricans*. Species composition overlaps across the range of this macrogroup, although there is some significant regional and local variation. The drier alpine vegetation of the Great Basin ranges and Sierra Nevada may include lower elevation semi-desert species such as *Carex filifolia, Poa fendleriana, Poa secunda*, and *Artemisia frigida*. Environments are varied due to climatic and site variation. Wind and its effect on snow movement has a strong local effect, producing wind-scoured fell-fields, dry turf, snow accumulation heath communities, and short growing season snowbed sites. Fell-fields are typically free of snow during the winter as they are found on ridgetops, upper slopes and exposed saddles, whereas dry turf is found on gentle to moderate slopes, flat ridges, valleys, and basins where the soil has become relatively stabilized and the water supply is more-or-less constant. Dwarf-shrubland sites tend to be in level or concave areas with late-lying snow and subirrigation from surrounding slopes.

IVC Geographic Range: This macrogroup occurs above upper timberline throughout the Rocky Mountains cordillera from New Mexico north into southwestern Alberta and south-central and southeastern British Columbia, Canada, and includes alpine areas west in the Utah high plateaus and high ranges in the Great Basin and Sierra Nevada. Stands of this macrogroup also extend north into the Klamath Mountains and drier southern and eastern Cascade Range, and south as far south as the Peninsular Ranges and White Mountains.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments:

Groups in Canada:

- **G316 Rocky Mountain-Sierran Alpine Dwarf-shrubland & Krummholz []**
- **G314 Rocky Mountain-Sierran Alpine Turf & Fell-field []**
- **G571 Rocky Mountain & Sierran Alpine Bedrock & Scree []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2014)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G316 Rocky Mountain-Sierran Alpine Dwarf-shrubland & Krummholz

[ ]

IVC Colloquial Name: Rocky Mountain-Sierran Alpine Dwarf-shrubland & Krummholz
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This widespread group occurs above upper timberline throughout the Rocky Mountains cordillera and includes alpine areas of ranges in Utah and Nevada, Sierra Nevada in California, eastern Cascade Range, eastern Oregon and Washington, and north into Canada, but is more prominent in the northern extent. The vegetation is characterized by a semi-continuous layer of ericaceous dwarf-shrubs or dwarf willows which form a heath type ground cover less than 0.5 m in height. Dense tuffs of graminoids and scattered forbs are usually present. *Dryas integrifolia*- and *Dryas octopetala*-dominated communities occur on more windswept and drier sites than the heath communities. Within the heath communities *Cassiope mertensiana, Phyllodoce empetriformis, Salix arctica, Salix reticulata*, or *Salix vestita* can be dominant shrubs. Other common shrub associates include *Arctostaphylos uva-ursi, Dasiphora fruticosa ssp. floribunda, Ericameria discoidea, Kalmia microphylla, Ledum glandulosum, Phyllodoce glanduliflora, Ribes montigenum*, and *Vaccinium* spp. The herbaceous layer is a mixture of forbs and graminoids, especially sedges, including *Antennaria lanata, Caltha leptosepala, Carex spectabilis, Carex nigricans, Castilleja* spp., *Deschampsia cespitosa, Erigeron* spp., *Erythronium* spp., *Juncus parryi, Luetkea pectinata, Luzula piperi, Oreostemma alpigenum, Pedicularis* spp., *Polemonium viscosum*, and *Polygonum bistortoides*. This group occurs in areas of level or concave glacial topography, with late-lying snow and subirrigation from surrounding slopes. Elevations are above 3360 m in the Colorado Rockies but drop to less than 2100 m in northwestern Montana and in the mountains of Alberta. Soils have become relatively stabilized in these sites, are moist but well-drained, strongly acidic, and often with substantial peat layers. Vegetation in these areas is controlled by snow retention, wind desiccation, permafrost, and a short growing season.

IVC Dynamics:

IVC Environment: This widespread group occurs above upper timberline throughout the Rocky Mountain cordillera, including alpine areas of ranges in Utah and Nevada, and north into Canada, but is more prominent in the northern extent. Elevations are above 3360 m in the Colorado Rockies but drop to less than 2100 m in northwestern Montana and in the mountains of Alberta. This group occurs in areas of level or concave glacial topography, with late-lying snow and subirrigation from surrounding slopes. Soils have become relatively stabilized in these sites, are moist but well-drained, strongly acidic, and often have substantial peat layers.

DISTRIBUTION

IVC Geographic Range: This group occurs above upper timberline throughout the Rocky Mountain cordillera, including alpine areas of ranges in Utah and Nevada, eastern Cascade Range, eastern Oregon and Washington, and north into Canada.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 10.1.5.13:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, long-term decline moderate, and threats high from climate change.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3640 *Abies lasiocarpa - Picea engelmannii - Pinus flexilis* Dry-Mesic Rocky Mountain Krummholz Alliance** [Subalpine Fir - Engelmann Spruce - Limber Pine Dry-Mesic Rocky Mountain Krummholz Alliance] []
  Shrublands at or above treeline in the subalpine zones of the Rocky Mountains and intermountain ranges of the Great Basin dominated by *Abies lasiocarpa, Picea engelmannii*, and *Pinus flexilis* singly or in combination.
- **A3178 *Dryas integrifolia - Dryas octopetala - Arctostaphylos uva-ursi* Rocky Mountain Fell-field Dwarf-shrubland Alliance** [Entireleaf Mountain-avens - Eight-petal Mountain-avens - Kinnikinnick Rocky Mountain Fell-field Dwarf-shrubland Alliance] []
  This Rocky Mountain alpine alliance is characterized by an open to dense dwarf-shrub layer dominated by *Dryas octopetala* mats

or, less commonly, *Dryas integrifolia* or *Arctostaphylos uva-ursi* that may extend down subalpine slopes. It has been reported from alpine habitats throughout the Rocky Mountain cordillera and alpine areas of high plateaus and ranges in the Colorado Plateau and Great Basin.

- **A3177 *Phyllodoce empetriformis - Phyllodoce glanduliflora / Sibbaldia procumbens* Alpine Snowbed Dwarf-shrubland Alliance** [Pink Mountain-heath - Yellow Mountain-heath / Creeping Sibbaldia Alpine Snowbed Dwarf-shrubland Alliance] []
  This alpine alliance is characterized by an open to moderately dense, often discontinuous dwarf-shrub layer dominated by the heath species *Phyllodoce glanduliflora* and/or *Phyllodoce empetriformis* with a moderately dense herbaceous layer that includes snowbed indicator species *Sibbaldia procumbens*. It occurs in late-melting snowbeds from mountain ranges of in the central Rocky Mountains.
- **A3175 *Ribes cereum - Ribes montigenum - Dasiphora fruticosa* Alpine Shrubland Alliance** [Wax Currant - Gooseberry Currant - Shrubby-cinquefoil Alpine Shrubland Alliance] []
  This alliance is characterized by an open to moderately dense shrub layer dominated by *Ribes cereum, Ribes montigenum, Ericameria discoidea* (in the Great Basin), or *Dasiphora fruticosa ssp. floribunda* and occurs in the alpine and upper subalpine zones of the Rocky Mountains and the high plateaus and mountain ranges in the Colorado Plateau and Great Basin.
- **A3176 *Salix arctica - Salix nivalis - Salix reticulata* Alpine Dwarf-shrubland Alliance** [Arctic Willow - Snow Willow - Netleaf Willow Alpine Dwarf-shrubland Alliance] []
  This alliance is characterized by an open to moderately dense dwarf-shrub layer dominated by *Salix arctica, Salix nivalis, Salix petrophila*, or *Salix reticulata* with a typically sparse herbaceous layer composed of a variety of subalpine and alpine indicator species such as *Carex nigricans, Geum rossii*, and *Polygonum bistortoides*. It occurs in the alpine zone of the Rocky Mountains and the high plateaus and mountain ranges in the Colorado Plateau and Great Basin.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2011)
IVC Description Author: K.A. Schulz
IVC Description Date: 2015-11-09
IVC Acknowledgments:

A3640 Subalpine Fir - Engelmann Spruce - Limber Pine Dry-Mesic Rocky Mountain Krummholz Alliance

[ ]

Abies lasiocarpa - Picea engelmannii - Pinus flexilis Dry-Mesic Rocky Mountain Krummholz Alliance

Rocky Mountain Dry-Mesic Subalpine Fir - Engelmann Spruce - Limber Pine Krummholz

IVC Scientific Name: *Abies lasiocarpa - Picea engelmannii - Pinus flexilis* Dry-Mesic Rocky Mountain Krummholz Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Stands of this alliance are a mosaic of dense patches of dwarfed evergreen conifer trees usually less than 2 m tall. The woody canopy is dominated by stunted *Abies lasiocarpa, Picea engelmannii*, and *Pinus flexilis* singly or in combination. Other woody species include shrubs and dwarf-shrubs, such as *Kalmia polifolia, Phyllodoce glanduliflora, Ribes montigenum, Salix brachycarpa, Salix glauca, Salix planifolia, Vaccinium membranaceum*, and *Vaccinium scoparium*, that may be present to codominant. The herbaceous layer is sparse under dense shrub canopy, or may be dense where the shrub canopy is open or absent. It is often dominated by mesic or xeric alpine forb and graminoid species, but may include subalpine species, especially in protected areas. Characteristic species may include forbs *Antennaria* spp., *Artemisia scopulorum, Geum rossii, Polemonium pulcherrimum ssp. delicatum, Potentilla diversifolia, Sedum lanceolatum, Sibbaldia procumbens, Thalictrum occidentale, Trifolium dasyphyllum*, and graminoids *Calamagrostis purpurascens, Carex* spp., *Festuca brachyphylla, Kobresia myosuroides, Poa* spp., and *Trisetum spicatum*. These dwarf-tree shrublands are a matrix type in the upper treeline areas of the Rocky Mountains and intermountain ranges of the Great Basin. Elevations range from 3600 m in the southern Rocky Mountains down to 2000 m in northern Montana and Alberta. Climate is cold temperate often with heavy winter snow, short cool summers, and windswept most of the year. Sites are nearly level to steeply sloping, often on more mesic northern aspects. Soils are shallow, lithic gravelly or sandy loams typically derived from granite or schist. Rock outcrop is common.

IVC Dynamics: In the harsh windswept environment where these shrublands occur, trees are stunted and flagged from wind damage. The stands or patches often originate when *Picea engelmannii* colonizes a sheltered site such as the lee side of a rock. *Abies lasiocarpa* then can colonize in the shelter of the *Picea engelmannii*, and may form a dense canopy by branch layering

(Habeck 1969, Zwinger and Willard 1996). Sexual reproduction and the role of disturbances from frost heaving and small mammal burrows that expose mineral soil need further investigation (Habeck and Choate 1963).

IVC Environment: Elevations range from 3600 m in the southern Rocky Mountains down to 2000 m in the northern Rocky Mountains. Climate is cold temperate often with heavy winter snow, short cool summers, and windswept most of the year. Sites are nearly level to steeply sloping, often on more mesic northern aspects. Soils are shallow, lithic gravelly or sandy loams typically derived from granite or schist. Rock outcrops are common.

DISTRIBUTION

IVC Geographic Range: These shrublands occur near treeline in the Rocky Mountains and intermountain ranges of the Great Basin. Stands have only been described from Colorado, Nevada, Utah, Wyoming, Montana, and Alberta, Canada, but likely occur in similar habitat in adjacent states.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, MT, NV, UT, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL000985 *Abies lasiocarpa - Picea engelmannii* Krummholz** [Subalpine Fir - Engelmann Spruce Krummholz] []
  G4 (1996-02-01) AB, CO, MT, UT?, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-03-14

IVC Acknowledgments:

A3178 Entireleaf Mountain-avens - Eight-petal Mountain-avens - Kinnikinnick Rocky Mountain Fell-field Dwarf-shrubland Alliance

[ ]

Dryas integrifolia - Dryas octopetala - Arctostaphylos uva-ursi Rocky Mountain Fell-field Dwarf-shrubland Alliance

Rocky Mountain Mountain-avens - Kinnikinnick Fell-field Dwarf-shrubland

IVC Scientific Name: *Dryas integrifolia - Dryas octopetala - Arctostaphylos uva-ursi* Rocky Mountain Fell-field Dwarf-shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This Rocky Mountain alpine alliance is characterized by an open to dense, often patchy dwarf-shrub layer dominated by *Dryas octopetala* mats or, less commonly, *Dryas integrifolia* or *Arctostaphylos uva-ursi* that may extend down subalpine slopes. Dwarf *Salix* spp. can be present to codominant. Scattered *Dasiphora fruticosa ssp. floribunda* and *Juniperus communis* may also be present. The herbaceous layer is variable, ranging from sparse to moderate cover, sometimes forming a patchy turf. Species diversity ranges from depauperate to diverse, dominated by graminoids or forbs. *Carex* species are often dominant, especially *Carex elynoides* and *Carex rupestris*, but also *Carex albonigra, Carex nardina*, and *Carex scirpoidea*. Other graminoids include *Danthonia intermedia, Festuca brachyphylla, Kobresia myosuroides, Luzula spicata, Poa alpina*, and *Trisetum spicatum*. Cushion plants such as *Minuartia obtusiloba, Oxytropis borealis var. viscida, Oxytropis campestris, Oxytropis sericea*, or *Polygonum viviparum* are common on drier sites. Moss and lichen cover is high on some plots (>50%). This alliance has been reported from alpine habitats throughout the Rocky Mountain cordillera and alpine areas of high plateaus and ranges in Colorado Plateau and Great Basin. Stands occur well above upper treeline on mountain ridges, fell-fields and other gentle to

steep exposed slopes where snow blows off or melts relatively early. Elevations vary greatly with latitude, ranging from 2300 to 3900 m and extending down to 1700 m on dry ridges in northwestern Montana. Stands occur on all aspects. Soils are poorly developed, well- to rapidly drained and skeletal with a gravelly surface because of the windswept, exposed nature of these sites.

IVC Dynamics: This alliance is associated with frigid, excessively drained, skeletal soils which are strongly influenced by frost heaving and needle ice formation (Bamberg and Major 1968). Bamberg and Major (1968) describe soil and vegetation movements of several centimeters in a single season due to frost churning. A net movement in the downslope direction, even on mild slopes (4-10%), occurs over time.

IVC Environment: This Rocky Mountain alpine dwarf-shrubland alliance occurs on mountain ridges, fell-fields and other gentle to steep exposed slopes where snow blows off or melts relatively early. The climate is cold and snowy with severe winds, snow abrasion, and a short growing season. Sites are relatively dry, mostly subxeric to submesic. It occurs predominantly in alpine environments (well above treeline); actual elevations vary from 3370 to 3900 m in Colorado (Hess 1981), 2300 to 3145 m in southwestern Montana and western Wyoming (Bamberg and Major 1968), and in northwestern Montana it may extend from 3000 m down to 1700 m on ridges (Reid et al 2004). Stands occur on all aspects, although southerly exposures predominate in the northern extent and northerly exposures are common in the southern sites. Parent materials are variable and typically occur on residual and colluvial landforms of calcareous sedimentary rock (limestone predominates in Montana) (Cooper et al. 1997) and noncalcareous sedimentary lithologies (mostly argillite, siltstone and mudstone), as well as igneous and metamorphic rock (granite, gneiss) (Hess and Wasser 1982). Soils are poorly developed, well- to rapidly drained and skeletal (Regosols, Inceptisols). Soil surface is often gravelly because of the windswept, exposed nature of these sites. Disturbance from solifluction, slumps, and earthflows is common. Frost boiling and needle ice formation are common disturbances.

DISTRIBUTION

IVC Geographic Range: Vegetation within this alliance has been reported from alpine habitats throughout the Rocky Mountain cordillera and alpine areas of high plateaus and ranges in the Colorado Plateau and Great Basin.

IVC Nations: CA,US

IVC States/Provinces: AB, BC?, CO, ID?, MT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001892** ***Dryas octopetala - Carex rupestris*** **Alpine Dwarf-shrub Meadow** [Eight-petal Mountain-avens - Curly Sedge Alpine Dwarf-shrub Meadow] []
  G4 (1996-02-01) AB, CO, ID?, MT
- **CEGL005832** ***Arctostaphylos uva-ursi / Solidago multiradiata*** **Dwarf-shrubland** [Kinnikinnick / Rocky Mountain Goldenrod Dwarf-shrubland] []
  G2G3 (2004-01-22) AB?, MT
- **CEGL001894** ***Dryas octopetala - Polygonum viviparum*** **Alpine Dwarf-shrub Meadow** [Eight-petal Mountain-avens - Alpine Bistort Alpine Dwarf-shrub Meadow] []
  G3? (1997-11-14) AB, BC?, CO, MT, WY?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-03-14

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by D. Sarr, M. Damm, and M.S. Reid.

A3177 Pink Mountain-heath - Yellow Mountain-heath / Creeping Sibbaldia Alpine Snowbed Dwarf-shrubland Alliance

[ ]

Phyllodoce empetriformis - Phyllodoce glanduliflora / Sibbaldia procumbens Alpine Snowbed Dwarf-shrubland Alliance

Mountain-heath / Creeping Sibbaldia Alpine Snowbed Dwarf-shrubland

IVC Scientific Name: *Phyllodoce empetriformis - Phyllodoce glanduliflora / Sibbaldia procumbens* Alpine Snowbed Dwarf-shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The vegetation of this alpine alliance is characterized by an open to moderately dense, often discontinuous dwarf-shrub layer with a moderately dense herbaceous layer. The dwarf-shrub layer is dominated by the heath species *Phyllodoce glanduliflora, Phyllodoce empetriformis*, and/or their hybrid *Phyllodoce x intermedia*. *Kalmia microphylla, Salix arctica*, and *Vaccinium scoparium* are the only other dwarf-shrubs of note. *Sibbaldia procumbens* is diagnostic of the chionophilous nature of this community. High-constancy graminoids include *Carex nigricans, Carex paysonis, Luzula glabrata, Phleum alpinum, Poa secunda*, and a variable combination of *Juncus* species, including *Juncus drummondii, Juncus mertensianus*, and *Juncus parryi*. High-constancy forbs include *Antennaria lanata, Arenaria capillaris, Erigeron peregrinus, Hieracium gracile, Hypericum scouleri, Packera streptanthifolia, Polygonum bistortoides*, and *Veronica wormskjoldii*. This alpine alliance occurs in late-melting snowbeds from mountain ranges of in the central Rocky Mountains. Stands occur as small patches from the upper subalpine to alpine environments and are documented from 1930 to 3200 m elevation. Sites often occur on the lee sides of ridges and in depressions where snow accumulates in winter. This relatively deep snow layer protects the dwarf-shrub vegetation from desiccation from winter winds, melting off relatively late and creating wet to moist soil conditions during the relatively short growing season. This alliance often occurs in a matrix with other snowbed types.

IVC Dynamics: These vegetation types are associated with frigid, wet, nutrient-poor, acidic soils which inhibit decomposition and accumulate organic matter. Such acidic soils favor further dominance of ericaceous shrubs, resulting in stable stands. *Phyllodoce empetriformis* is sensitive to fire, and burning usually results in seral communities dominated by *Vaccinium* spp.

IVC Environment: This alliance occurs in late-melting snowbeds from mountain ranges of in the central Rocky Mountains. Stands occur as small patches and are documented from 1930 m to over 3200 m elevation in the mountains of southwestern and northwestern Montana (Cooper et al. 1997, Reid et al. 2004). In southwestern Montana it is associated with the ranges (Anaconda-Pintlar, Madison, East Pioneer) receiving greater precipitation than other ranges of this region. In northwestern Montana and the Bitterroot Range, this association occurs within the upper subalpine zone, as well as alpine habitats. Sites often occur as small patches on depressions and protected slopes of gentle to moderate inclination on lee sides of ridges were snow accumulates in winter. This moderately deep snow layer protects the dwarf-shrub vegetation from desiccation from winter winds. The water from late-melting snowbed and subirrigation from surrounding slopes creates wet to moist soil conditions during the relatively short growing season, although not so late and short as *Carex nigricans* Wet Meadow (CEGL001816). It is a moderately chionophilous type often noted as a dark green ericaceous border around long-persisting snowbed depressions. Soils are composed of varied parent materials, but are always strongly acidic, usually with substantial peat layers. In Montana, the parent materials are crystalline rocks, such as granite and quartzite. Adjacent vegetation is usually a mosaic of *Abies lasiocarpa* parkland on slight ridges, *Carex* meadow on saturated soils, and alpine fell-fields, rock, or ice on higher elevation alpine slopes.

DISTRIBUTION

IVC Geographic Range: This alpine and upper subalpine alliance occurs in late-melting snowbeds from mountain ranges of in the central Rocky Mountains from northwestern Wyoming, southwestern and northwestern Montana and adjacent Alberta.

IVC Nations: CA,US

IVC States/Provinces: AB, MT, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005877 *Phyllodoce glanduliflora / Sibbaldia procumbens* Dwarf-shrubland** [Yellow Mountain-heath / Creeping Sibbaldia Dwarf-shrubland] []
  G2G3 (2004-01-13) AB, MT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A3175 Wax Currant - Gooseberry Currant - Shrubby-cinquefoil Alpine Shrubland Alliance

[ ]
Ribes cereum - Ribes montigenum - Dasiphora fruticosa Alpine Shrubland Alliance
Currant - Shrubby-cinquefoil Alpine Shrubland

IVC Scientific Name: *Ribes cereum - Ribes montigenum - Dasiphora fruticosa* Alpine Shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: The vegetation is characterized by an open to moderately dense shrub layer dominated by *Ribes cereum, Ribes montigenum, Ericameria discoidea* (in Great Basin), or *Dasiphora fruticosa ssp. floribunda*. The herbaceous layer is typically sparse. Herbaceous species include a variety of subalpine and alpine indicator species such as *Artemisia michauxiana*. This alliance occurs in the alpine and upper subalpine zones of the Rocky Mountains and the high plateaus and mountain ranges in the Colorado Plateau and Great Basin. The vegetation in the alliance occurs as small patches in warm, dry microsites between rocks. Sites include rocky stable talus slopes and ridges, moraines and outcrops between 3350-3575 m elevation in Colorado. The ground is covered with cobble-sized rocks and is nearly blown free of snow in the winter. Soils are young and poorly developed.
IVC Dynamics:
IVC Environment: This alliance occurs in the alpine and upper subalpine zones of the southern and central Rocky Mountains and the high plateaus and mountain ranges in the Colorado Plateau and Great Basin. It also occurs at higher latitudes at Glacier National Park in northwestern Montana and in Waterton Lakes National Park, Alberta (Reid et al. 2004). The climate regime is continental, with long, cold winters and short summers with frequent afternoon thunderstorms. Strong southerly to westerly winds are common in the winter and spring, and sites are nearly blown free of snow in the winter. This patterned to heterogeneous vegetation type is characteristic of fell-fields, large expanses of steeply sloped (to 70%), unstable colluvium. Stands occur in high subalpine at 1940 m to mid-alpine at 2620 m. In the Colorado Front Range, stands are found on gentle to steep, rocky or gravelly slopes and ridges and outcrops in the lower alpine tundra close to the krummholz between 3350-3450 m elevation (Komarkova 1976). Sites are on warm, dry microsites on low-gradient, stable scree slopes and on moraines (Komarkova 1976). The defining rocky surface is composed of coarse-textured debris, cobbles, talus, and small-sized scree; regardless of fragment size, the amount of exposed rock cover is high(>70%). Soils are young and poorly developed due to low soil temperature, low soil moisture during the summer, and a short growing season, and are classified as Entisols (Cryorthents). Occasionally soils have a partially decomposed leaf litter layer and are classified as Histosols (Cryofibrists). The soil profile has only one horizon. Parent materials are variable. In the northern extent the physiognomy of this type is not so much that of an alpine-vegetated slope but of sparsely distributed shrubs on a rocky substrate (Reid et al. 2004).

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the alpine and upper subalpine zones of the Rocky Mountains and the high plateaus and mountain ranges in the Colorado Plateau and Great Basin.
IVC Nations: CA,US
IVC States/Provinces: AB, CO, MT, NV, UT, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005833** ***Dasiphora fruticosa / Artemisia michauxiana*** **Alpine Shrub Meadow** [Shrubby-cinquefoil / Michaux's Wormwood Alpine Shrub Meadow] []
  G3G4 (2004-01-28) AB, MT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-03-14
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by M. Damm.

A3176 Arctic Willow - Snow Willow - Netleaf Willow Alpine Dwarf-shrubland Alliance

[ ]
Salix arctica - Salix nivalis - Salix reticulata Alpine Dwarf-shrubland Alliance
Rocky Mountain Willow Alpine Dwarf-shrubland

IVC Scientific Name: *Salix arctica - Salix nivalis - Salix reticulata* Alpine Dwarf-shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: The vegetation is characterized by an open to moderately dense dwarf-shrub layer dominated by *Salix arctica, Salix nivalis, Salix petrophila*, or *Salix reticulata*. The sparse to moderately dense herbaceous layer is variable. Associated species include taxa from moist uplands such as *Carex albonigra, Carex phaeocephala, Carex nova, Erigeron peregrinus, Hypericum scouleri, Geum rossii, Packera streptanthifolia, Polygonum bistortoides*; wet species such as *Caltha leptosepala, Carex nigricans, Parnassia fimbriata, Triantha glutinosa, Trollius laxus, Veronica wormskjoldii*; and snowbed indicator species *Sibbaldia procumbens*. This alliance occurs in the alpine zone of the Rocky Mountains and the high plateaus and mountain ranges in the Colorado Plateau and Great Basin. Stands occur on gentle to steep rocky or gravelly slopes and range in elevation from 2900-4000 m. Landforms that support these communities are typically of gentle topography, with northerly aspects. They occur where snow lingers into the spring and summer, in places such as lees of cliffs and boulders, secondary slopes, and shallow depressions. Some stands also occur on moist gravel slopes and terraces or along stony margins of streams or lakes, thriving among coarse rock margins with almost no soil.
IVC Dynamics:
IVC Environment: This alliance occurs in the alpine and upper subalpine zones of the Rocky Mountains and the high plateaus and mountain ranges in the Colorado Plateau and Great Basin. Stands occur on gentle to steep rocky or gravelly slopes and range in elevation from 2000-4000 m. Landforms that support these communities are typically of gentle topography, with northerly or easterly aspects. They occur where snow lingers into late June or early July, in places such as lees of cliffs and boulders, and in moisture-receiving positions such as shallow depressions and the toeslopes and lower to midslopes of gentle terrain where soils remain wet-moist throughout the growing season (Kiener 1967). Some stands also occur on moist gravel slopes and terraces or along stony margins of streams or lakes, thriving among coarse rock margins with almost no soil (Cox 1933, Baker 1983a). The soils are extremely rocky and often show indications of frost action (i.e., unsorted nets, frost-boils). They range from well-drained to poorly drained, saturated substrates that include various sedimentary rock types, both calcareous (limestone) and not (siltstones, argillite).

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the alpine and upper subalpine zones of the Rocky Mountains and the high plateaus and mountain ranges in the Colorado Plateau and Great Basin.
IVC Nations: CA,US
IVC States/Provinces: AB, BC, CA, CO, ID, MT, NM, NV, UT, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001431 *Salix arctica - (Salix petrophila, Salix nivalis) / Polygonum bistortoides* Dwarf-shrubland** [Arctic Willow - (Alpine Willow, Snow Willow) / American Bistort Dwarf-shrubland] []
  G2G3Q (2000-01-04) AB, CO, MT, WY
- **CEGL005878 *Salix arctica / Carex nigricans* Dwarf-shrubland** [Arctic Willow / Black Alpine Sedge Dwarf-shrubland] []
  GNR. AB?, MT
- **CEGL001435 *Salix reticulata / Caltha leptosepala* Dwarf-shrubland** [Netleaf Willow / White Marsh-marigold Dwarf-shrubland] []
  G3 (1997-11-14) AB?, BC?, MT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-03-14
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by D. Culver.

G314 Rocky Mountain-Sierran Alpine Turf & Fell-field

[ ]

IVC Colloquial Name: Rocky Mountain-Sierran Alpine Turf & Fell-field
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This wide-ranging, alpine group includes both wind-scoured fell-fields and dry turf in alpine sites throughout the Rocky Mountains cordillera, high mountain ranges and plateaus in Utah and Nevada, the Sierra Nevada in California, high mountains of eastern Oregon and Washington, and isolated alpine sites in the northeastern Cascades. The vegetation is generally composed of low-growing perennial forbs and graminoids. On fell-field sites, total vegetation cover ranges from sparse to moderate cover dominated by cushion plants, whereas on turf sites, it ranges from open to moderately dense or dense cover dominated by graminoids or a mixture of graminoids and forbs (especially cushion plants). The graminoids are typically rhizomatous, sod-forming sedges such as *Carex elynoides, Carex helleri, Carex scirpoidea, Carex siccata, Carex nardina, Carex rupestris, Kobresia myosuroides*, and *Linanthus pungens*. Common fell-field species include *Arenaria capillaris, Erigeron pygmaeus, Eriogonum incanum, Geum rossii, Hulsea algida, Minuartia obtusiloba, Myosotis asiatica, Paronychia pulvinata, Phacelia hastata var. compacta, Phlox covillei, Phlox pulvinata, Saxifraga tolmiei, Silene acaulis, Trifolium dasyphyllum*, and *Trifolium parryi*. Many other graminoids, forbs, and prostrate shrubs can also be found, including *Calamagrostis purpurascens, Deschampsia cespitosa, Dryas octopetala, Ericameria discoidea, Festuca brachyphylla, Festuca idahoensis, Leucopoa kingii, Luzula spicata, Poa arctica, Poa glauca, Poa secunda* (Great Basin), *Podistera nevadensis, Polygonum bistortoides, Saxifraga* spp., *Selaginella densa*, and *Solidago* spp. Fell-fields are usually found within or adjacent to alpine dry turf with many of the same prostrate and mat-forming plants found in both, frequently with broad transition zones. Great Basin alpine areas tend to be drier with smaller turf patches and include some species common in desert scrub such as *Elymus elymoides* and *Poa secunda*. Vegetation in these areas is controlled by snow retention, wind desiccation, permafrost, and a short growing season. Fell-fields are typically free of snow during the winter as they are found on ridgetops, upper slopes and exposed saddles, whereas dry turf is found on gentle to moderate slopes, flat ridges, valleys, and basins where the soil has become relatively stabilized and the water supply is more-or-less constant. Fell-field substrates are generally shallow, stony, low in organic matter, and poorly developed with wind deflation often resulting in a gravelly pavement. Alpine turf sites have deeper, more developed soils, although there may be moderately high cover of cobbles and boulders present. Although alpine dry turf may form the matrix or large patches of the alpine zone, it typically intermingles with alpine bedrock and scree, ice field, fell-field, alpine dwarf-shrubland, and alpine/subalpine wet meadow systems.
IVC Dynamics:

IVC Environment: This widespread group occurs at and above upper treeline throughout the Rocky Mountains cordillera and alpine areas of mountain ranges in Utah and Nevada, Sierra Nevada in California, and in isolated alpine sites in the northeastern Cascades. It includes both wind-scoured fell-fields and dry turf. Fell-fields are typically free of snow during the winter as they are found on ridgetops, upper slopes and exposed saddles, whereas dry turf is found on gentle to moderate slopes, flat ridges, valleys, and basins where the soil has become relatively stabilized and the water supply is more-or-less constant. Vegetation in these areas is controlled by snow retention, wind desiccation, permafrost, and a short growing season. Fell-field substrates are generally shallow, stony, low in organic matter, and poorly developed with wind deflation often resulting in a gravelly pavement. Alpine turf sites have deeper, more developed soils, although there may be moderately high cover of cobbles and boulders present.

DISTRIBUTION

IVC Geographic Range: This group occurs above upper treeline throughout the North American Rocky Mountain cordillera, including alpine areas of ranges in the Great Basin, and isolated alpine sites in the northeastern Cascades, and high mountains of eastern Oregon and Washington.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.11.78:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.3.43:P, 10.1.4.18:P, 10.1.5.13:P, 10.2.1.14:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, long-term decline moderate, and threats high from climate change.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3155 *Carex elynoides - Carex rupestris - Kobresia myosuroides* Rocky Mountain Alpine Turf Alliance** [Blackroot Sedge - Curly Sedge - Bellardi Bog Sedge Rocky Mountain Alpine Turf Alliance] []
  This Rocky Mountain alpine dry turf and meadow alliance is characterized by a moderate to dense herbaceous layer dominated by diagnostic graminoids *Carex elynoides, Carex rupestris var. rupestris, Carex rupestris var. drummondiana, Carex scirpoidea*, and *Kobresia myosuroides* with many other high-constancy diagnostic and sometimes abundant forb species, including *Antennaria microphylla, Artemisia scopulorum, Euphrasia disjuncta, Festuca brachyphylla, Geum rossii, Lupinus argenteus, Oreoxis* spp., *Oxytropis sericea, Polemonium viscosum, Polygonum bistortoides, Potentilla diversifolia, Trifolium dasyphyllum, Trisetum spicatum*, and *Zigadenus elegans*.
- **A3172 *Juncus drummondii - Juncus parryi - Sibbaldia procumbens* Rocky Mountain Alpine Snowbed Alliance** [Drummond's Rush - Parry's Rush - Creeping Sibbaldia Rocky Mountain Alpine Snowbed Alliance] []
  This Rocky Mountain alpine alliance includes late-melting snowbed communities dominated by diagnostic species such as *Carex ebenea, Carex nigricans, Carex paysonis, Carex pyrenaica, Carex subnigricans, Juncus drummondii, Juncus parryi, Poa arctica ssp. grayana, Trifolium parryi*, and snowbed indicator species *Sibbaldia procumbens* with many other high-constancy species indicative of wet-mesic conditions during the growing season.
- **A3154 *Minuartia obtusiloba - Paronychia pulvinata - Silene acaulis* Alpine Fell-field Alliance** [Twin-flower Sandwort - Rocky Mountain Nailwort - Moss Campion Alpine Fell-field Alliance] []
  Vegetation ranges from sparse to moderately low herbaceous cover dominated by cushion plants with lesser cover of graminoid species. This alpine alliance includes wind-scoured fell-fields and stabilized scree and talus fields that are typically free of snow during the winter as they are found on ridgetops, upper slopes or exposed saddles. It occurs in higher elevation alpine zone above upper treeline throughout the Rocky Mountain cordillera and alpine areas of high plateaus and ranges in the Colorado Plateau and Great Basin.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2011)
IVC Description Author: K.A. Schulz
IVC Description Date: 2015-11-09
IVC Acknowledgments:

A3155 Blackroot Sedge - Curly Sedge - Bellardi Bog Sedge Rocky Mountain Alpine Turf Alliance

[ ]
Carex elynoides - Carex rupestris - Kobresia myosuroides Rocky Mountain Alpine Turf Alliance
Rocky Mountain Alpine Sedge Turf

IVC Scientific Name: *Carex elynoides - Carex rupestris - Kobresia myosuroides* Rocky Mountain Alpine Turf Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation of this alpine turf and meadow alliance is characterized by a moderate to dense herbaceous layer dominated by diagnostic graminoids *Carex elynoides, Carex rupestris var. rupestris, Carex rupestris var. drummondiana, Carex scirpoidea*, and *Kobresia myosuroides*. Other high-constancy diagnostic and sometimes abundant species include *Antennaria microphylla, Artemisia scopulorum, Carex albonigra, Carex duriuscula, Carex siccata, Euphrasia disjuncta, Festuca brachyphylla, Geum rossii, Lupinus argenteus, Oreoxis alpina, Oreoxis bakeri, Oxytropis sericea, Polemonium viscosum, Polygonum bistortoides, Potentilla diversifolia, Trifolium dasyphyllum, Trisetum spicatum*, and *Zigadenus elegans*. *Selaginella densa* is commonly found in the fern layer. This alliance occurs above upper treeline throughout the Rocky Mountain cordillera and alpine areas of high plateaus and ranges in the Colorado Plateau and Great Basin. Stands are found on gentle to moderate slopes, flat ridges, valleys, and basins where the soil has become relatively stabilized and the water supply is more-or-less constant. Vegetation in these areas is controlled by snow retention, wind desiccation, permafrost, and a short growing season. Alpine turf sites have deeper, more developed soils than fell-fields, although there may be moderately high cover of cobbles and boulders present.

IVC Dynamics: Snow cover is a driving variable in alpine vegetation dynamics by protecting plant from desiccating effects of high winds during winter and providing soil moisture during the growing season (Isard 1986). Turf and meadow communities occur in exposed areas that limit snow accumulation to 9-35 cm (Isard 1986). The persistent snow cover melts relatively early and limits the growing season to 2-3 months, not providing low to moderate soil moisture for the relatively long growing season.

Kobresia myosuroides is a major climax community in the alpine (Cox 1933, Willard 1963, Hess 1981, Komarkova 1986). Willard (1963) states that the *Kobresia myosuroides* stands on Trail Ridge, Colorado, are very old. Osburn (1958b) estimates that a minimum of 100 years are necessary for the formation of 1 inch of humus soil under present alpine conditions in the Front Range. This estimate would make some stands on Trail Ridge 800 to 1300 years old. Willard and others also mention that *Kobresia myosuroides* is intolerant of snow cover. Kiener (1939) states that *Kobresia myosuroides* is efficient in obtaining water due to the turf-forming root system. Willard (1963) and Komarkova (1976) both remark on the abundance of gopher activity within stands of *Carex elynoides*. They state that due to the gophers' grazing, small patches of the plant communities are left isolated.

IVC Environment: This alpine alliance occurs on open, dry, windswept slopes at high elevations in the Rocky Mountains. Sites occupy gentle to moderately sloping (3-26%) upland terrain of southerly to easterly exposures at elevations ranging from 2400 to 4200 m depending on latitude (Eddleman 1967, Hermann 1970, Hess 1981, Cooper et al. 1997). As wind exposure increases, soils become shallow and rocky and vegetation grades from turf to cushion plant-dominated fell-fields (Cooper et al. 1997). Stands are found on a variety of substrates including gneiss, granitic, limestone, quartzites, and sandstones. They are found on well-drained sites which receive limited snow cover (10-35 cm). Stands on Trail Ridge, Colorado, are free of snow and frost very early; plants were observed blooming in mid May (Willard 1963). Most moisture is received from summer rains. Soils are skeletal and loamy. Coarse fragments are abundant, and pH varies from 5.4 to 6.6 (Hess 1981).

DISTRIBUTION

IVC Geographic Range: This turf and meadow alliance occurs above upper treeline throughout the Rocky Mountain cordillera and alpine areas of high plateaus and ranges in the Colorado Plateau and Great Basin.
IVC Nations: CA,US
IVC States/Provinces: AB, AZ, CA?, CO, ID, MT, NM, NV, OR, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001865 *Carex scirpoidea ssp. pseudoscirpoidea* Alpine Meadow** [Western Single-spike Sedge Alpine Meadow] []
  G3? (1996-02-01) ID, WA
- **CEGL005866 *Carex scirpoidea - Zigadenus elegans* Alpine Meadow** [Northern Single-spike Sedge - Mountain Deathcamas Alpine Meadow] []
  G4G5 (2004-02-04) AB?, MT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D.E. May (1973)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-03-14
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by D. Culver.

A3172 Drummond's Rush - Parry's Rush - Creeping Sibbaldia Rocky Mountain Alpine Snowbed Alliance

[ ]

Juncus drummondii - Juncus parryi - Sibbaldia procumbens Rocky Mountain Alpine Snowbed Alliance

Rocky Mountain Rush - Sibbaldia Alpine Snowbed

IVC Scientific Name: *Juncus drummondii - Juncus parryi - Sibbaldia procumbens* Rocky Mountain Alpine Snowbed Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These snowbed communities are characterized by a low to dense herbaceous layer dominated by diagnostic species *Carex ebenea, Carex nigricans, Carex paysonis, Carex pyrenaica, Carex subnigricans, Juncus drummondii, Juncus parryi, Poa arctica ssp. grayana, Trifolium parryi*, and snowbed indicator species *Sibbaldia procumbens*. In the more xeric stands, a moss layer dominated by *Polytrichastrum alpinum, Polytrichum piliferum*, or *Pohlia obtusifolia* can be present. This small-patch alpine alliance occurs in the Rocky Mountain cordillera and high-elevation areas in the Colorado Plateau and Great Basin and is frequently found on the lee side of ridges and in depressions where late-melting snowbed and hygric swales are fed by snowmelt and seeps occur. Stands are located on lee sides of ridges, saddles, hills and knolls, and rock outcrops and in snow-filled depressions from 2520-3760 m elevation depending on latitude. The snowmelt creates wet-mesic soil conditions that last through most of the growing season and can produce lush vegetation. Snowbed communities often develop in concentric rings with later melting communities in the center. Some sites do not become snow-free until August and have a very short growing season with little time for vegetation to develop. Substrates are variable and range from muck to well-drained, shallow, coarse to fine-textured mineral soil.

IVC Dynamics: Snow cover is a driving variable in alpine vegetation dynamics by protecting plant from desiccating effects of high winds during winter and providing soil moisture during the growing season (Isard 1986). Snowbed communities have the most snow cover of alpine vegetation types. Snow accumulation averages 100 cm and melts late, providing ample soil moisture and restricting the growing season to 55 days on average (Isard 1986).

Kiener (1967) states that dominance of *Carex pyrenaica* indicates a pioneer community within a snowpatch habitat. *Sibbaldia procumbens* and *Erigeron* are also indicators of snowpatch habits and are often present to codominant. *Carex pyrenaica* requires the longest snow cover; therefore, occurrences are located next to places where snow lasts the longest (mid July to mid August) (Kierner 1967).

IVC Environment: This small-patch alliance occurs in alpine zone in the Rocky Mountain cordillera and high-elevation areas in the Colorado Plateau and Great Basin. Elevations range from 2520-3760 m depending on latitude. Stands are found in alpine areas of late-melting snowpatches that are located on lee sides of ridges, saddles, hills and knolls, and rock outcrops in snow-filled depressions. Theses late-melting snowbeds create wet-mesic soil conditions through most of the growing season and can produce lush vegetation. Stands also occur in hygric swales fed by snowmelt and seeps and on solifluction terraces on slopes where soil moisture is abundant. Snowbed communities often develop in concentric rings with later melting communities in the center. Some sites do not become snow-free until August and have a very short growing season with little time for vegetation to develop more than lichens, mosses and a few rhizomatous sedges. Slopes range from 2-49% (Willard 1963, Komarkova 1976, 1986). Rock and bare soil may cover half the ground surface. Substrates are variable and range from muck to well-drained,

shallow, coarse to fine-textured mineral soil. Soils are young and poorly developed due to low soil temperature, high soil moisture during the summer, and a short growing season. Soils are classified as Entisols (Cryorthents). The average surface pH is often slightly acidic, possibly due to leaching from late-lying snow (Komarkova 1976). Parent materials are variable and may include gneiss, granite, limestone, and quartz monzonite (Komarkova 1976, 1986, Cooper et al. 1997).

DISTRIBUTION

IVC Geographic Range: This small patch snowbed alliance occurs above upper treeline throughout the Rocky Mountain cordillera and alpine areas in high plateaus and ranges in the Colorado Plateau and Great Basin.
IVC Nations: CA,US
IVC States/Provinces: AB, AZ, CA, CO, ID, MT, NM, NV, UT, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005871 *Juncus parryi / Sibbaldia procumbens* Alpine Snowbed** [Parry's Rush / Creeping Sibbaldia Alpine Snowbed] []
  G3G4 (2004-02-09) AB, CO, MT, WY
- **CEGL005855 *Arenaria capillaris / Polytrichum piliferum* Alpine Snowbed** [Slender Mountain Sandwort / Bristly Haircap Moss Alpine Snowbed] []
  G2G3 (2004-01-12) AB?, MT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D.E. May (1973)
IVC Description Author: K.A. Schulz
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A3154 Twin-flower Sandwort - Rocky Mountain Nailwort - Moss Campion Alpine Fell-field Alliance

[ ]
Minuartia obtusiloba - Paronychia pulvinata - Silene acaulis Alpine Fell-field Alliance
Rocky Mountain Cushion Plant Alpine Fell-field

IVC Scientific Name: *Minuartia obtusiloba - Paronychia pulvinata - Silene acaulis* Alpine Fell-field Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This Rocky Mountain alpine alliance is composed of sparse to moderate plant cover, which ranges from 10-50%, with exposed gravel and rock making up the rest of the cover. The herbaceous layer is characterized by a sparse to moderate herbaceous layer dominated by cushion plants with lesser cover of graminoids. Diagnostic and often dominant species are *Aquilegia scopulorum, Carex albonigra, Carex arapahoensis, Eriogonum caespitosum, Eriogonum holmgrenii, Geum rossii, Ivesia gordonii, Minuartia obtusiloba, Myosotis asiatica, Paronychia pulvinata, Phlox pulvinata, Potentilla ovina, Potentilla sierrae-blancae, Silene acaulis, Sphaeromeria argentea, Trifolium dasyphyllum*, and *Trifolium nanum*. These plants are adapted to harsh conditions with their cushioned or matted, frequently succulent, flat-to-the-ground rosettes, and are often densely haired and thickly cutinized. Widespread alpine turf species such as *Carex rupestris* or *Geum rossii* may be present but usually with low cover. Great Basin alpine areas tend to be drier and include some lower elevation species common in desert scrub such as *Poa secunda*. The moss *Selaginella densa* is often present. This alliance occurs in higher elevation alpine zone above upper treeline throughout the Rocky Mountain cordillera and alpine areas of high plateaus and ranges in the Colorado Plateau and Great Basin. It includes wind-scoured fell-fields and stabilized scree and talus fields that are typically free of snow during the winter as they are found on ridgetops, upper slopes or exposed saddles. Stands are usually located on flat to gently sloping ridges and summits in the upper alpine zone between 1900 and 3865 m elevation depending on latitude. The ridgetops are

subject to extremely high winds and are blown free of snow in winter. The ground is covered with rocks that have been stabilized for a long period of time, often forming a gravelly pavement. The sites are called fell-fields and differ from talus or scree which are located on steeper slopes and are unstable and often moving. The soils are poorly developed and have little organic matter.

IVC Dynamics: Snow cover is a driving variable in alpine vegetation dynamics by protecting plant from desiccating effects of high winds during winter and providing soil moisture during the growing season (Isard 1986). Fell-field communities occur on exposed sites and have the least snow cover of alpine vegetation types. Sites typically have discontinuous snow cover or are blown snow-free much of the winter, exposing the alpine plants to extreme cold and the desiccating effects of high winds. The limited snow accumulation (<10 cm) melts early and does not provide much soil moisture for the relatively long growing season (>3 months) (Isard 1986).

IVC Environment: Vegetation in this alliance occurs in the alpine tundra of the Rocky Mountains. The climate regime is continental, with long, cold winters and short summers with frequent afternoon thunderstorms. Strong westerly winds are common in the winter and spring. Stands are usually located on flat to gently sloping ridges and summits in the upper alpine zone between 1900 and 3865 m elevation depending on latitude. The ridgetops are subject to extremely high winds and are blown free of snow in winter. The ground is covered with rocks that have been stabilized for a long period of time, often forming a gravelly pavement. The sites are called fell-fields and differ from talus or scree which are located on steeper slopes and are unstable and often moving. The soils are poorly developed, have little organic matter, and are classified as Inceptisols (Cryochrepts). Soils have variable texture, ranging from sandy loam to clay and are derived from a variety of metamorphic or igneous rocks, as well as sedimentary rocks such as limestone.

DISTRIBUTION

IVC Geographic Range: This fell-field alliance occurs in higher elevation alpine zone above upper treeline throughout the Rocky Mountain cordillera and alpine areas of high plateaus and ranges in the Colorado Plateau and Great Basin.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, CA?, CO, ID, MT, NM, NV, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005863 *Carex albonigra* - *Myosotis asiatica* Alpine Fell-field** [Black-and-White Sedge - Asian Forget-Me-Not Alpine Fell-field] []
  G2G3 (2004-02-03) AB, MT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D.E. May (1973)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-03-14

IVC Acknowledgments:

G571 Rocky Mountain & Sierran Alpine Bedrock & Scree

[ ]

IVC Colloquial Name: Rocky Mountain & Sierran Alpine Bedrock & Scree

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alpine group consists of exposed rock and rubble at or above the upper treeline in the Rocky Mountains, from Alberta and British Columbia, Canada, south into New Mexico, and west into the highest mountain ranges of the Great Basin, eastern Oregon and Washington, and the Sierra Nevada. It is composed of barren and sparsely vegetated alpine substrates,

typically including bedrock outcrops, talus and scree slopes, upper mountain slopes, and summits. Vascular plants growing on loose substrates typically have either an extensive shallow root and rhizome system or a massive taproot that anchors the plant. Sparse cover of forbs, grasses, low shrubs and small trees may be present with total vascular plant cover typically less than 25% due to the high cover of exposed rock. Many species are tiny, growing in cracks in rock outcrops. Nonvascular (lichen)-dominated communities are common and may greatly exceed 25% cover in some areas. The lower elevational limit for the alpine zone varies with latitude ranging from near 3660 m (12,000 feet) in the southern extent to near 2286 m (7500 feet) in the northern extent. Exposure to desiccating winds, rocky and sometimes unstable substrates, and a short growing season limit vascular plant growth.

IVC Dynamics: Stands in the more xeric alpine in the Great Basin and southern Sierra Nevada include lower elevation semi-desert species such as *Poa secunda* and *Petrophyton caespitosum*.

IVC Environment: This alpine group consists of exposed rock and rubble at or above the upper treeline in the Rocky Mountains, from Alberta and British Columbia, Canada, south into New Mexico, and west into the highest mountain ranges of the Great Basin and the Sierra Nevada. The lower elevational limit for the alpine zone varies with latitude ranging from near 3660 m (12,000 feet) in the southern extent to near 2286 m (7500 feet) in the northern extent. The alpine zone in the Sierra Nevada begins at 3200 m (10,500) in the south and lower to 2895 m (9500 feet) in the northern extent (Zwinger and Willard 1996). The alpine zone extends further downslope on cooler north aspects. Exposure to desiccating winds, rocky and sometimes unstable substrates, and a short growing season limit vascular plant growth.

DISTRIBUTION

IVC Geographic Range: This group is restricted to the highest elevations of the Rocky Mountains, from Alberta and British Columbia, Canada, south into New Mexico, and west into the highest mountain ranges of the Great Basin, eastern Oregon and Washington, and the Sierra Nevada.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.12.5:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.1.8.12:P, 10.2.4.24:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4022 Rocky Mountain Alpine Nonvascular Bedrock & Scree Alliance** [Rocky Mountain Alpine Nonvascular Bedrock & Scree Alliance] []
  This alpine alliance is characterized by sparse to moderately dense nonvascular cover (5-40%) composed of mostly lichens and mosses. Vascular vegetation (tree, shrub, herbaceous species) is absent or sparse (<5% cover). It is found throughout the Rocky Mountain cordillera and alpine areas in high plateaus and ranges in the Colorado Plateau and Great Basin on rocky scree slopes and boulderfields in the alpine extending down into the subalpine and montane zones.
- **A4021 Rocky Mountain Alpine Sparse Herb Bedrock & Scree Alliance** [Rocky Mountain Alpine Sparse Herb Bedrock & Scree Alliance] []
  Vegetation with between 5-15% cover is predominantly vascular plant species of forbs and/or graminoids. Moss and other bryophytes may be present to abundant. It occurs in rocky alpine areas in the Rocky Mountain cordillera and alpine areas in high plateaus and ranges in the Colorado Plateau and Great Basin.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: B.E. Willard (1963)
IVC Description Author: K.A. Schulz
IVC Description Date: 2015-11-09

IVC Acknowledgments:

A4022 Rocky Mountain Alpine Nonvascular Bedrock & Scree Alliance

[ ]

Rocky Mountain Alpine Nonvascular Bedrock & Scree Alliance

Rocky Mountain Alpine Nonvascular Bedrock & Scree

IVC Scientific Name: Rocky Mountain Alpine Nonvascular Bedrock & Scree Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation is characterized by sparse to moderately dense cover (5-40%) of nonvascular species (mostly lichens and mosses) on rocky substrates. Vascular vegetation is absent or sparse, with a few tree, shrub, herbaceous, and moss species growing in rock crevices at some sites with very low coverage (<5%) in openings between rocks. Species vary with site and size of microsite habitats. Nonvascular cover exceeds vascular plant cover. This sparsely vegetated alliance occurs throughout the Rocky Mountains cordillera and alpine areas in high plateaus and ranges in the Colorado Plateau and Great Basin from New Mexico north to central Alberta. Stands occur on rocky scree slopes and boulderfields in the alpine and extend down into the subalpine and montane zones.

IVC Dynamics: Alpine rock outcrops and boulderfields provide many microsites which allows for high species diversity.

IVC Environment: This alpine alliance is found throughout the Rocky Mountain cordillera and alpine areas in high plateaus and ranges in the Colorado Plateau and Great Basin. Stands occur on rocky scree slopes and boulderfields in the alpine extending down into the subalpine and montane zones. Sites are typically rocky and windswept, lacking protective cover of snow, but also include the centers of late-melt snowbeds where vascular plants do not have time to develop. In Colorado elevation ranges from 2360 to 4055 m. Substrates include a variety of rocks such as granite, gneiss, sandstone, etc.

DISTRIBUTION

IVC Geographic Range: This alpine alliance is found throughout the Rocky Mountain cordillera and alpine areas in high plateaus and ranges in the Colorado Plateau and Great Basin from Alberta and British Columbia, Canada, south into New Mexico, and west into Nevada.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CO, MT, NM, NV, UT, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: K.A. Schulz

IVC Description Date: 2014-03-14

IVC Acknowledgments:

A4021 Rocky Mountain Alpine Sparse Herb Bedrock & Scree Alliance

[ ]

Rocky Mountain Alpine Sparse Herb Bedrock & Scree Alliance

Rocky Mountain Alpine Sparse Herb Bedrock & Scree

IVC Scientific Name: Rocky Mountain Alpine Sparse Herb Bedrock & Scree Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation is predominantly vascular plant species of forbs and/or graminoids. Moss and other bryophytes may be present to as abundant as the vascular cover. Sparse cover of forbs, grasses, low shrubs and small trees may be present with total vascular plant cover typically between 5 and 15% due to the high cover of exposed rock. Many species are tiny, growing in cracks in rock outcrops. Some characteristic species include *Astragalus kentrophyta, Astragalus molybdenus, Collomia larsenii, Dryas octopetala, Noccaea fendleri ssp. glauca, Townsendia leptotes, Townsendia rothrockii*, and alpine species of *Eriogonum* and *Phlox*, as well as *Achnatherum swallenii, Athyrium americanum, Carex perglobosa, Cirsium scopulorum, Cryptogramma acrostichoides, Ericameria discoidea, Hulsea algida, Ivesia cryptocaulis, Oxyria digyna, Phacelia hastata var. compacta, Polemonium viscosum, Saxifraga bronchialis, Saxifraga chrysantha, Saxifraga mertensiana, Saxifraga rivularis, Senecio taraxacoides, Silene acaulis*, and *Sphaeromeria argentea*. This alpine alliance is found throughout the Rocky Mountain cordillera and alpine areas in high plateaus and ranges in the Colorado Plateau and Great Basin. Stands occur in rock outcrop, cliff crevices, unstable talus and scree slopes, and boulder fields. Elevation ranges from 3000-3915 m in Colorado to 1600-2400 m in northwestern Montana. Sites occur on all aspects near the upper elevational limit for vascular plants; only nonvascular mosses, lichens, and algae survive at higher altitudes. Soils are young and poorly developed due to low soil temperature, low soil moisture during the summer, and a short growing season.

IVC Dynamics: There is often evidence of marmot and pika in stands of this alliance.

IVC Environment: This alpine alliance is found throughout the Rocky Mountain cordillera and alpine areas in high plateaus and ranges in the Colorado Plateau and Great Basin. The climate regime is continental, with long, cold winters and short summers with frequent afternoon thunderstorms. Strong westerly winds are common in the winter. Stands are located in the subnival zone, the area just below permanent snow and ice, on rock faces and summits of high peaks and extend down into the upper subalpine. Elevation ranges from 3000-3915 m in Colorado (Komarkova 1976). Stands in northwestern Montana were sampled between 1600-2400 m. Stands occur on rock outcrops, talus and scree slopes, boulderfields and moist crevices occurring in subalpine to more often alpine cliff faces and overhangs. Sites occur on all aspects near the upper elevational limit for vascular plants; only nonvascular mosses, lichens, and algae survive at higher altitudes. Soils are young and poorly developed due to low soil temperature, low soil moisture during the summer, and a short growing season. Soils are classified as Entisols (Cryorthents) (Kiener 1967, Komarkova 1976). The soil profile has only one thin horizon. Soils tend to be coarse-textured, rapidly drained gravelly or sandy loam, loamy sand, and sandy clay. Stands are dominated by rock cover (15-95%) and gravel (0-60%).

DISTRIBUTION

IVC Geographic Range: This alpine alliance is found throughout the Rocky Mountain cordillera and alpine areas in high plateaus and ranges in the Colorado Plateau and Great Basin from New Mexico to central Alberta and British Columbia and Intermountain West ranges.

IVC Nations: CA,US

IVC States/Provinces: AB, BC?, CO, ID, MT, NV, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005900 *Athyrium americanum - Cryptogramma acrostichoides* Alpine Sparse Vegetation** [Alpine Ladyfern - American Rockbrake Alpine Sparse Vegetation] []
  G2G3 (2004-01-21) AB?, BC?, MT, WA
- **CEGL005903 *Saxifraga mertensiana* Alpine Cliff Crevice** [Wood Saxifrage Cliff Alpine Crevice] []
  G2? (2004-01-22) AB?, MT
- **CEGL005902 *Saxifraga bronchialis* Scree Slope Alpine Sparse Vegetation** [Yellow-spot Saxifrage Scree Slope Alpine Sparse Vegetation] []
  G3? (2004-01-22) AB, BC?, CO, MT, WA?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: M.S. Reid and K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: M.S. Reid
IVC Description Date: 2014-03-14
IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by M. Damm.

M101 Vancouverian Alpine Tundra

Toundra alpine de la région de Vancouver

IVC Colloquial Name: Vancouverian Alpine Tundra

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup consists primarily of alpine vegetation where dwarf-shrubs characterize the cover. The dwarf-shrubs vary in cover from sparse to continuous. Herbaceous meadows are also common, but even they often have a dwarf-shrub component. Rocky and sparsely vegetated sites are characteristic of the higher elevations and exposed sites. Dominant dwarf-shrub species include *Cassiope mertensiana, Cassiope tetragona, Dryas octopetala, Empetrum nigrum, Harrimanella stelleriana, Loiseleuria procumbens, Luetkea pectinata, Phyllodoce aleutica, Phyllodoce empetriformis, Phyllodoce glanduliflora, Salix arctica, Salix nivalis, Salix reticulata, Vaccinium uliginosum*, and *Vaccinium vitis-idaea*. Herbaceous species include *Aconitum delphiniifolium, Anemone narcissiflora, Arenaria capillaris, Artemisia arctica, Carex breweri, Carex capitata, Carex macrochaeta, Carex nardina, Carex proposita, Carex spectabilis, Castilleja unalaschcensis, Chamerion* spp., *Eriogonum pyrolifolium, Festuca brachyphylla, Festuca idahoensis ssp. roemeri, Fritillaria camschatcensis, Geranium erianthum, Lupinus nootkatensis, Nephrophyllidium crista-galli, Packera cana, Pedicularis contorta, Phlox diffusa, Polemonium acutiflorum, Polygonum bistortoides, Sanguisorba canadensis, Saxifraga tolmiei, Senecio triangularis, Valeriana sitchensis, Veratrum viride* and *Viola* spp. Some sites are dominated by nonvascular taxa such as *Racomitrium* spp. and *Stereocaulon* spp. This macrogroup occurs in the Pacific Northwest coastal region north to maritime Alaska, including the Aleutian Islands. It is primarily on alpine and subalpine sites, but it can also be found at lower elevations on the Alaska Peninsula, Aleutian Islands and Kodiak Island, where it is found on cliffs, rocky outcrops, exposed summits, windswept ridges, fell-fields, valley bottoms, sideslopes, stabilized dunes, terraces, moraines and fans. The dominant disturbances are snow avalanche, soil creep and freeze-thaw action.

IVC Geographic Range: This macrogroup occurs in the highest elevations in the Cascade Range, from southwestern British Columbia south into northern California, the mountains of the Pacific Northwest coast north to southeastern maritime Alaska, primarily on alpine and subalpine sites, but it is also found at lower elevations on the Aleutian Islands, Kenai Fjords and in Prince William Sound.

IVC Nations: CA,US

IVC States/Provinces: AB?, AK, BC, CA, ID, MT, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments:

Groups in Canada:

- **G317 North Pacific Alpine-Subalpine Dwarf-shrubland & Heath []**
- **G320 North Pacific Alpine-Subalpine Tundra []**
- **G319 North Pacific Alpine-Subalpine Bedrock & Scree []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G317 North Pacific Alpine-Subalpine Dwarf-shrubland & Heath

[ ]

IVC Colloquial Name: North Pacific Alpine-Subalpine Dwarf-shrubland & Heath

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alpine dwarf-shrubland group occurs in the coastal mountains of the Pacific Northwest north into southeastern Alaska. The vegetation ranges from a sparse to near continuous cover of dwarf-shrubs (alpine heath) or

dwarf-shrub-herbaceous meadows. Dominant dwarf-shrub species include *Cassiope mertensiana, Cassiope tetragona, Empetrum nigrum, Harrimanella stelleriana, Luetkea pectinata, Phyllodoce aleutica, Phyllodoce empetriformis*, and *Phyllodoce glanduliflora*. Other common species may include *Arctostaphylos uva-ursi, Dryas octopetala, Loiseleuria procumbens, Vaccinium uliginosum*, and *Vaccinium vitis-idaea*. Ericaceous species typically dominate, but sites dominated by *Salix arctica, Salix nivalis*, and *Salix reticulata* are included in this group. Scattered tall shrubs and dwarf trees may also be present. Common herbaceous species include *Aconitum delphiniifolium, Anemone narcissiflora, Artemisia arctica, Carex macrochaeta, Castilleja unalaschcensis, Geranium erianthum, Lupinus nootkatensis, Sanguisorba canadensis, Saxifraga tolmiei, Valeriana sitchensis*, and *Viola* spp. On slopes on the outer coast and also in Kenai Fjords and Prince William Sound, *Nephrophyllidium crista-galli* is common. This group occurs above 2350 m (7200 feet) in the Klamath Mountains and Cascade Range north into the Coast Mountains of British Columbia where it is confined to the coldest, wind-blown areas above treeline and above the subalpine parkland. It occurs on slopes and depressions where snow lingers, the soil has become relatively stabilized, and the water supply is more-or-less constant, as well as on exposed summits, windswept ridges, and fell-fields that are much drier. Slopes vary from steep to flat. These sites are characterized by harsh environmental conditions.

IVC Dynamics:

IVC Environment: This group occurs above the environmental limit of trees, at the highest elevations of the mountain regions of the Pacific Northwest coast north to southeastern, maritime Alaska primarily on alpine and subalpine sites, but it can also be found at lower elevations (e.g., Kenai Fjords and Prince William Sound). It occurs above 2350 m (7200 feet) in the Klamath Mountains and Cascade Range north into the Coast Mountains of British Columbia where it is confined to the coldest, wind-blown areas above treeline and above the subalpine parkland. It occurs on slopes and depressions where snow lingers, the soil has become relatively stabilized, and the water supply is more or less constant. Vegetation in these areas is controlled by snow retention, wind desiccation, permafrost, and a short growing season. In Alaska, stands occur on sideslopes, shoulder slopes, and low summits, and the terrain varies from gently sloping to steep. This group also includes sparsely vegetated alpine stands that occur on exposed summits, windswept ridges, and fell-fields. These sites are characterized by harsh environmental conditions. Slopes vary from moderately sloped to flat.

DISTRIBUTION

IVC Geographic Range: This alpine group occurs in the mountains of the Pacific Northwest coast north to southeastern, maritime Alaska primarily on alpine and subalpine sites, but it can also be found at lower elevations (e.g., Kenai Fjords and Prince William Sound).

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA, ID, OR, WA

IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.11.78:P, 7.1.8.1:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5* rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3335 *Dryas drummondii - Dryas integrifolia* Alpine Dwarf-shrubland Alliance** [Drummond's Mountain-avens - Entireleaf Mountain-avens Alpine Dwarf-shrubland Alliance] []
  This alliance is characterized by dwarf-shrublands dominated by *Dryas drummondii* and *Dryas integrifolia*.
- **A3334 *Phyllodoce aleutica - Harrimanella stelleriana* Alpine Dwarf-shrubland Alliance** [Aleutian Mountain-heath - Alaska Bell-heather Alpine Dwarf-shrubland Alliance] []
  This alliance is characterized by dwarf-shrublands dominated by *Phyllodoce aleutica* and/or *Harrimanella stelleriana* and is known from Alaska and British Columbia.
- **A3331 *Phyllodoce empetriformis - Cassiope mertensiana - Vaccinium deliciosum* Alpine Dwarf-shrubland Alliance** [Pink Mountain-heath - Western Moss-heather - Cascade Bilberry Alpine Dwarf-shrubland Alliance] []
  Within these communities, dwarf-shrub is often the dominant lifeform, but they also occur with a mosaic of very low subshrub-like perennial- and herbaceous-dominated communities. *Cassiope mertensiana, Luetkea pectinata, Phyllodoce empetriformis, Phyllodoce glanduliflora*, or *Vaccinium deliciosum* may be the dominant. These dwarf-shrublands are typically

located in subalpine or low alpine habitats on high mountains of the Pacific Northwest, often in association with subalpine parkland.

- **A3332 *Salix cascadensis - Salix nivalis - Salix reticulata* Alpine Dwarf-shrubland Alliance** [Cascade Willow - Snow Willow - Netleaf Willow Alpine Dwarf-shrubland Alliance] []
  Dwarf-shrublands of the Cascade Range dominated by *Salix cascadensis, Salix nivalis*, or *Salix reticulata*.
- **A3333 *Salix rotundifolia - Salix setchelliana* Alpine Dwarf-shrubland Alliance** [Least Willow - Setchell's Willow Alpine Dwarf-shrubland Alliance] []
  This alliance is characterized dwarf-shrublands dominated by *Salix rotundifolia* and *Salix setchelliana* and is known from Alaska and British Columbia.
- **A3330 *Vaccinium cespitosum - Vaccinium membranaceum - Vaccinium scoparium* Cascadian Alpine Dwarf-shrubland Alliance** [Dwarf Bilberry - Thinleaf Huckleberry - Grouse Whortleberry Cascadian Alpine Dwarf-shrubland Alliance] []
  This alliance consists of dwarf-shrublands dominated by *Vaccinium cespitosum, Vaccinium membranaceum*, or *Vaccinium scoparium*. It occurs in the high montane and subalpine elevations of the Cascade Range.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2011)
IVC Description Author: K.A. Schulz
IVC Description Date: 2015-11-09
IVC Acknowledgments:

A3335 Drummond's Mountain-avens - Entireleaf Mountain-avens Alpine Dwarf-shrubland Alliance

[ ]
Dryas drummondii - Dryas integrifolia Alpine Dwarf-shrubland Alliance
Mountain-avens Alpine Dwarf-shrubland

IVC Scientific Name: *Dryas drummondii - Dryas integrifolia* Alpine Dwarf-shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is characterized by dwarf-shrublands dominated by *Dryas drummondii* and *Dryas integrifolia*.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance is known from Alaska and British Columbia.
IVC Nations: CA,US
IVC States/Provinces: AK, BC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.E. Hall, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall

IVC Description Date: 2014-03-14
IVC Acknowledgments:

A3334 Aleutian Mountain-heath - Alaska Bell-heather Alpine Dwarf-shrubland Alliance

[ ]
Phyllodoce aleutica - Harrimanella stelleriana Alpine Dwarf-shrubland Alliance
Aleutian Mountain-heath - Alaska Bell-heather Alpine Dwarf-shrubland

IVC Scientific Name: *Phyllodoce aleutica - Harrimanella stelleriana* Alpine Dwarf-shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is characterized by dwarf-shrublands dominated by *Phyllodoce aleutica* and/or *Harrimanella stelleriana*. It is known from Alaska and British Columbia.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance is known from Alaska and British Columbia.
IVC Nations: CA,US
IVC States/Provinces: AK, BC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Boggs, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3331 Pink Mountain-heath - Western Moss-heather - Cascade Bilberry Alpine Dwarf-shrubland Alliance

[ ]
Phyllodoce empetriformis - Cassiope mertensiana - Vaccinium deliciosum Alpine Dwarf-shrubland Alliance
Pacific Northwest Mountain-heath Alpine Dwarf-shrubland

IVC Scientific Name: *Phyllodoce empetriformis - Cassiope mertensiana - Vaccinium deliciosum* Alpine Dwarf-shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Within these communities, dwarf-shrub is often the dominant lifeform, but they also occur with a mosaic of very low subshrub-like perennials- and herbaceous-dominated communities. *Cassiope mertensiana, Luetkea pectinata, Phyllodoce empetriformis, Phyllodoce glanduliflora*, or *Vaccinium deliciosum* may be the dominant. *Kalmia microphylla, Ledum glandulosum, Salix cascadensis, Vaccinium membranaceum*, and *Vaccinium scoparium* may also be shrub associates. The herbaceous layer is usually a lush mix of forbs and graminoids, especially sedges, including, *Antennaria lanata, Arenaria capillaris, Carex breweri, Carex nigricans, Carex phaeocephala, Carex scirpoidea, Carex spectabilis, Castilleja parviflora, Claytonia*

lanceolata, Deschampsia cespitosa, Erigeron spp., *Erythronium* spp., *Festuca brachyphylla, Festuca viridula, Hieracium gracile, Juncus parryi, Juncus drummondii, Ligusticum grayi, Luetkea pectinata, Lupinus sellulus var. lobbii, Luzula piperi, Minuartia obtusiloba, Oreostemma alpigenum, Pedicularis ornithorhyncha, Polygonum bistortoides, Potentilla flabellifolia, Ranunculus eschscholtzii, Saxifraga tolmiei* (which can be codominant with the dwarf-shrub layer), *Sibbaldia procumbens, Tauschia stricklandii* (a forb that can be the dominant in mosaic meadow patch), *Valeriana sitchensis*, and *Veronica cusickii*. Moss and lichen cover can be high in spaces between vascular plants (70-80%). These communities usually grade into herbaceous meadows dominated by *Carex* spp. at their wetter margin and, in stands below treeline, into woodlands of *Tsuga mertensiana, Abies lasiocarpa*, and/or *Pinus albicaulis* at their drier margins, and alpine fell-fields, rock, or ice on higher elevation alpine slopes. Such changes are generally related to only minor changes in microelevation, and woodland, dwarf-shrubland, and herbaceous meadow communities may be strongly intermingled. These dwarf-shrubland and herbaceous communities are typically located in subalpine or low alpine habitats on high mountains of the Pacific Northwest, often in association with subalpine parkland. Some of these dwarf-shrublands form part of a subalpine parkland mosaic just below the upper treeline. The climate is cold and snowy with annual precipitation exceeding 150 cm and a snow-free period of only 3-4 months. These habitats receive abundant (100-250 cm) precipitation and accumulate very heavy snowpacks in winter. These sites are subirrigated by snowmelt during most of the short growing season, although some meadows have soils that dry out by summer's end. Elevations typically range from 1400-2500 m. These communities occur in areas of level or concave to very steep slopes (over 100%) on hills and ridges of glacial topography, with late-lying snow, and subirrigation from surrounding slopes. In exceptionally wet areas, they may occur on convex slopes with better drainage. Soils are moist, but well-drained, strongly acidic, and often with substantial peat layers. Some stands are found on the base of a lobe of soil formed by solifluction. Other are found on deep deposits of volcanic ash, such as thick accumulations of pumice parent material; some occur on andesite.

IVC Dynamics: These communities are associated with frigid, wet, nutrient-poor acidic soils, often derived from volcanic ash, which inhibit decomposition and accumulate organic matter. Such acidic soils favor persistence of ericaceous shrubs, resulting in stable stands. *Cassiope mertensiana* is sensitive to fire and burning usually results in seral communities dominated by *Vaccinium* spp. or *Carex* spp.

IVC Environment: The climate is cold and snowy with annual precipitation exceeding 150 cm and a snow-free period of only 3-4 months. These habitats receive abundant (100-250 cm) precipitation and accumulate very heavy snowpacks in winter. These sites are subirrigated by snowmelt during most of the short growing season, although some meadows have soils that dry out by summer's end. Elevations typically range from 1400-2500 m. These communities occur in areas of level or concave to very steep slopes (over 100%) on hills and ridges of glacial topography, with late-lying snow, and subirrigation from surrounding slopes. In exceptionally wet areas, they may occur on convex slopes with better drainage. Soils are moist, but well-drained, strongly acidic, and often with substantial peat layers. Some stands are found on the base of a lobe of soil formed by solifluction. Others are found on deep deposits of volcanic ash, such as thick accumulations of pumice parent material; some occur on andesite.

DISTRIBUTION

IVC Geographic Range: This alliance has been reported primarily from the higher mountains of Oregon and Washington, Alaska, and British Columbia, Canada, and in the mountains of northern Idaho and northern California. The range may extend south into the Klamath Mountains and Sierra Nevada of California.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA, ID, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001404 *Phyllodoce empetriformis* Parkland Alpine Dwarf-shrubland** [Pink Mountain-heath Parkland Alpine Dwarf-shrubland] []
  G5 (1996-02-01) BC?, CA?, OR, WA
- **CEGL001406 *Phyllodoce empetriformis / Lupinus latifolius* Alpine Dwarf-shrubland** [Pink Mountain-heath / Broadleaf Lupine Alpine Dwarf-shrubland] []
  G4? (1996-02-01) BC?, WA
- **CEGL001407 *Phyllodoce empetriformis /- Vaccinium deliciosum* Alpine Dwarf-shrubland** [Pink Mountain-Heath /- Cascade Bilberry Alpine Dwarf-shrubland] []
  G4 (1996-02-01) BC?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3332 Cascade Willow - Snow Willow - Netleaf Willow Alpine Dwarf-shrubland Alliance

[ ]

Salix cascadensis - Salix nivalis - Salix reticulata Alpine Dwarf-shrubland Alliance

Cascade Willow - Snow Willow - Netleaf Willow Alpine Dwarf-shrubland

IVC Scientific Name: *Salix cascadensis - Salix nivalis - Salix reticulata* Alpine Dwarf-shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Plant associations that occur within this alpine alliance are classified as cold-deciduous, dwarf-shrubland and are dominated by *Salix cascadensis, Salix nivalis*, or *Salix reticulata*. The herbaceous layer forms sparse to moderate cover (10-25%). Species include *Carex scirpoidea, Erigeron aureus, Festuca brachyphylla, Lupinus lepidus, Minuartia obtusiloba*, and *Oxytropis campestris*. These dwarf-shrublands are known from the northern, eastern and western Cascades. Communities within this alliance are found on rocky slopes in alpine areas on level to moderately steep, exposed, southern slopes. Elevation ranges from 1950 to 2400 m.

IVC Dynamics:

IVC Environment: Communities within this alliance are found on rocky slopes in alpine areas on level to moderately steep, exposed, southern slopes. Elevation ranges from 1900 to 2400 m. The soils are extremely rocky and often show indications of frost action (i.e., unsorted nets, frost-boils). Snowmelt is relatively early, generally occurring between mid May and early June. Information on adjacent plant communities is unavailable.

DISTRIBUTION

IVC Geographic Range: This alliance is an alpine vegetation type that has a distribution from the northern, eastern and western Cascades.

IVC Nations: CA?,US
IVC States/Provinces: BC?, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001433 *Salix cascadensis / Festuca brachyphylla* Alpine Dwarf-shrubland** [Cascade Willow / Alpine Fescue Alpine Dwarf-shrubland] []
  G3G4 (1996-02-01) BC?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Culver and K.A. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3333 Least Willow - Setchell's Willow Alpine Dwarf-shrubland Alliance

[ ]

Salix rotundifolia - Salix setchelliana Alpine Dwarf-shrubland Alliance

Least Willow - Setchell's Willow Alpine Dwarf-shrubland

IVC Scientific Name: *Salix rotundifolia - Salix setchelliana* Alpine Dwarf-shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is characterized by dwarf-shrublands dominated by *Salix rotundifolia* and *Salix setchelliana*. It is known from Alaska and British Columbia.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance is known from Alaska and British Columbia.

IVC Nations: CA,US

IVC States/Provinces: AK, BC

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K. Boggs, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-03-14

IVC Acknowledgments:

A3330 Dwarf Bilberry - Thinleaf Huckleberry - Grouse Whortleberry Cascadian Alpine Dwarf-shrubland Alliance

[ ]

Vaccinium cespitosum - Vaccinium membranaceum - Vaccinium scoparium Cascadian Alpine Dwarf-shrubland Alliance

Cascadian Heath Alpine Dwarf-shrubland

IVC Scientific Name: *Vaccinium cespitosum - Vaccinium membranaceum - Vaccinium scoparium* Cascadian Alpine Dwarf-shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These are dwarf-shrublands dominated by *Vaccinium cespitosum, Vaccinium membranaceum*, or *Vaccinium scoparium*. Herbaceous species are mostly forbs which vary in their composition and can be quite abundant, nearly as much as the dwarf-shrub cover in some stands. Species include *Antennaria lanata, Arenaria capillaris, Arnica latifolia, Erigeron peregrinus, Ligusticum grayi, Lomatium martindalei, Lupinus arcticus ssp. subalpinus, Lupinus latifolius, Moehringia macrophylla, Phlox diffusa, Potentilla flabellifolia, Sedum divergens, Silene parryi*, and other rocky site species. This alliance occurs in the high montane and subalpine zones of the Cascade Range. Elevations range from 1520 to 2200 m (5000-7200 feet) within tree islands and in the surrounding meadows. It is maintained by fire. Slopes are gentle to steep with rocky substrates.

IVC Dynamics: Ecological dynamics of these communities are poorly understood, but Henderson (1973) speculated that these communities represent an early-seral stage in primary or post-fire succession of subalpine snow basins. He described *Luetkea pectinata - Saxifraga tolmiei* herbaceous communities as falling between *Carex nigricans* communities and *Phyllodoce - Vaccinium* shrublands as soils develop. The shrublands, in turn, eventually succeed to *Tsuga mertensiana - Abies lasiocarpa* forests in the absence of disturbance.

IVC Environment: This alliance occurs in the high montane and subalpine elevations at 1520 to 2200 m (5000-7200 feet) within tree islands and in the surrounding meadows. It is maintained by fire. Climate is maritime-influenced with deep snowpacks. Stands occur in nearly level basins to very steep slopes on hills and ridges. Sites are moist to mesic, and are typically near where snow accumulates or on poorly drained substrates. Aspects are generally cool and do not occur on south- or west-facing slopes. Soils are variable.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the Cascade Range and Olympic Mountains of Washington. It is likely to occur in Oregon and may extend down into the Sierra Nevada of California.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-09-26

IVC Acknowledgments:

G320 North Pacific Alpine-Subalpine Tundra

[ ]

IVC Colloquial Name: North Pacific Alpine-Subalpine Tundra

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This mesic alpine and subalpine herbaceous meadow group occurs in the mountain regions of the Pacific Northwest coast north to the maritime and boreal transition regions of Alaska. The vegetation is characterized by a moderately dense to dense herbaceous layer, often composed of a mixture of graminoids such as *Calamagrostis canadensis* (often present but not dominant), *Carex breweri, Carex capitata, Carex macrochaeta, Carex nardina, Carex proposita, Carex spectabilis, Festuca brachyphylla, Festuca idahoensis ssp. roemeri*, and forbs such as *Arenaria capillaris, Aconitum delphiniifolium, Anemone narcissiflora, Artemisia arctica, Athyrium filix-femina, Castilleja unalaschcensis, Chamerion* spp., *Eriogonum pyrolifolium, Fritillaria camschatcensis, Geranium erianthum, Lupinus* spp., *Nephrophyllidium crista-galli, Packera cana, Pedicularis contorta, Phlox diffusa, Polemonium acutiflorum, Polygonum bistortoides, Sanguisorba canadensis, Saxifraga tolmiei, Senecio triangularis, Valeriana sitchensis*, and *Veratrum viride*. Some stands have an open herbaceous layer. Scattered dwarf-shrubs may be present with low cover. Stands occur above 2350 m (7200 feet) elevation in the Klamath Mountains and Cascade Range north into the Coast Mountains of British Columbia where it is confined to the coldest, wind-blown areas above treeline and above the subalpine parkland. The slope shape is usually straight to concave (depressions) where snow lingers, the soil has become relatively stabilized, and the water supply is more-or-less constant. Vegetation in these areas is controlled by snow retention, wind desiccation, permafrost, and a short growing season. The substrate is colluvium, residuum, or glacial till. The dominant disturbances are snow avalanche, soil creep and freeze-thaw action.

IVC Dynamics: The dominant disturbances are snow avalanche, soil creep and freeze-thaw action.

IVC Environment: This mesic alpine and subalpine herbaceous meadow group occurs above the environmental limit of trees, at the highest elevations of the mountain regions of the Pacific Northwest coast and extends north to maritime and boreal transition regions of Alaska where it is found on mountain sideslopes. Stands occur above 2350 m (7200 feet) elevation in the Klamath Mountains and Cascade Range north into the Coast Mountains of British Columbia where they are confined to the coldest, wind-blown areas above treeline and above the subalpine parkland. The slope shape is usually straight to concave (depressions) where snow lingers, the soil has become relatively stabilized, and the water supply is more-or-less constant. Vegetation in these areas is controlled by snow retention, wind desiccation, permafrost, and a short growing season. The substrate is colluvium, residuum, or glacial till.

DISTRIBUTION

IVC Geographic Range: This mesic alpine and subalpine herbaceous meadow group occurs in the mountains of the Pacific Northwest coast and extends north to maritime and boreal transition regions of Alaska and from Kodiak Island through southeastern Alaska.

IVC Nations: CA,US

IVC States/Provinces: AB?, AK, BC, CA, MT, OR, WA

IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 6.2.11.78:P, 7.1.8.1:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5* rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy low, long-term decline moderate, and threats high from climate change.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1640 *Antennaria lanata - Juncus parryi* Alpine Meadow Alliance** [Woolly Pussytoes - Parry's Rush Alpine Meadow Alliance] []
  This alliance is characterized by a ground layer of *Antennaria lanata* and/or *Juncus parryi* and occurs in snowmelt basins and subalpine meadows of the Cascade Range.
- **A1300 *Carex spectabilis* Subalpine Meadow Alliance** [Showy Sedge Subalpine Meadow Alliance] []
  These vegetation types are dominated by a mix of graminoids and forbs and are typically located at or slightly below the upper treeline at high elevations in the mountains of the Pacific Northwest.
- **A3336 *Eriogonum* spp. - *Luzula* spp. Alpine Snowbed Alliance** [Buckwheat species - Woodrush species Alpine Snowbed Alliance] []
  This alliance is characterized by low-growing (3-8 cm), mat-forming perennial forbs and graminoids. It is found in the subalpine and alpine of the Cascade Range of Washington and British Columbia.
- **A3337 *Festuca idahoensis ssp. roemeri - Festuca saximontana* Alpine Meadow Alliance** [Roemer's Fescue - Rocky Mountain Fescue Alpine Meadow Alliance] []
  Vegetation in this alliance is characterized by xeric graminoids combined with a diverse flora of herbaceous and cryptogram species. It is found in the subalpine and alpine zones of the high mountains of the Pacific Coast and Cascade Range of Washington and British Columbia, and south into the Sierra Nevada of California.
- **A3338 *Minuartia obtusiloba - Lupinus sellulus* Cascade Alpine Fell-field Alliance** [Twin-flower Sandwort - Donner Lake Lupine Cascade Alpine Fell-field Alliance] []
  This alliance is characterized by a sparse herbaceous layer dominated by the perennial forbs *Erigeron aureus, Lupinus sellulus var. lobbii*, or *Minuartia obtusiloba*. Stands included in this alliance have been described from windswept alpine and harsh exposed subalpine areas in the Washington Cascade Range.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2011)

IVC Description Author: K.A. Schulz

IVC Description Date: 2015-11-09
IVC Acknowledgments:

A1640 Woolly Pussytoes - Parry's Rush Alpine Meadow Alliance

[ ]
Antennaria lanata - Juncus parryi Alpine Meadow Alliance
Woolly Pussytoes - Parry's Rush Alpine Meadow

IVC Scientific Name: *Antennaria lanata - Juncus parryi* Alpine Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This vegetation is characterized by a ground layer of *Antennaria lanata* and/or *Juncus parryi*, herbaceous perennials less than 30 cm in height. Regardless of dominance, the associated herbaceous species are very similar and include *Arenaria capillaris, Carex breweri, Carex nigricans, Carex phaeocephala, Carex scirpoidea, Carex spectabilis, Festuca brachyphylla, Hieracium gracile, Juncus drummondii, Luetkea pectinata, Lupinus arcticus ssp. subalpinus, Lupinus latifolius, Luzula piperi, Luzula spicata, Minuartia obtusiloba, Oreostemma alpigenum, Polygonum bistortoides*, and *Sibbaldia procumbens*. *Cassiope mertensiana, Phyllodoce empetriformis*, and *Salix cascadensis* may form a very sparse shrub layer. Lichens and bryophyte species are often abundant, including *Cetraria islandica, Cladonia pyxidata, Lepraria neglecta, Polytrichum juniperinum*, and *Polytrichum piliferum*. This alliance occurs in snowmelt basins and subalpine meadows of the Cascade Range at 1800-2200 m elevation. These habitats receive abundant precipitation (100-250 cm) and accumulate very heavy snowpacks in winter. These sites are subirrigated by snowmelt during most of the short growing season.
IVC Dynamics: Ecological dynamics of these communities are poorly understood, but Henderson (1973) speculated that these communities represent an intermediate-seral stage in primary or post-fire succession of subalpine snow basins. He described *Antennaria lanata* herbaceous communities as falling between *Carex nigricans* communities and *Phyllodoce - Vaccinium* shrublands as soils develop. The shrublands, in turn, eventually succeed to *Tsuga mertensiana - Abies lasiocarpa* forests in the absence of disturbance.
IVC Environment: This vegetation occurs in snowmelt basins and subalpine meadows of the Cascade Range at 1800-2200 m elevation. These habitats receive abundant precipitation (100-250 cm) and accumulate very heavy snowpacks in winter. Summer is the driest season, but these sites are subirrigated by snowmelt during most of the short growing season. Environmental stresses include growing-season frost, abrasion from wind-borne snow particles, and late-summer drought. Soils range from skeletal volcanic regolith to well-developed Histosols.

DISTRIBUTION

IVC Geographic Range: This alliance has been described primarily from the northern Cascade Range of Washington and southern British Columbia, Canada.
IVC Nations: CA,US
IVC States/Provinces: BC, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL001949 *Antennaria lanata* Alpine Meadow** [Woolly Pussytoes Alpine Meadow] []
  G4 (1996-02-01) BC, WA
- **CEGL008257 *Juncus parryi* - (*Polygonum bistortoides*) Alpine Meadow** [Parry's Rush - (American Bistort) Alpine Meadow] []
  Juncus parryi dominates in rocky parklands and on open ridges. GNR. BC?, OR?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Sarr, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A1300 Showy Sedge Subalpine Meadow Alliance

[ ]
Carex spectabilis Subalpine Meadow Alliance
Showy Sedge Subalpine Meadow

IVC Scientific Name: *Carex spectabilis* Subalpine Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These are lush herbaceous communities with a mix of forbs and graminoids, either of which may be dominant or codominant. *Carex spectabilis* is usually the dominant graminoid species in terms of cover and constancy. The most constant dominant or codominant forbs include *Arnica x diversifolia, Lupinus arcticus ssp. subalpinus, Pedicularis contorta, Phlox diffusa ssp. longistylis, Polygonum bistortoides, Potentilla flabellifolia*, and *Sibbaldia procumbens*. These vegetation types are typically located at or slightly below the upper treeline in high mountains primarily of the Olympic Mountains and Cascade Range, although some associations extend to the Sierra Nevada and northern Rocky Mountains. They are often found in association with subalpine parkland. The climate is cold and snowy with annual precipitation exceeding 150 cm and a short growing season. Elevations typically range from 1000-24000 m. These communities occur on well-drained, moderately steep to steep slopes which are clear of snow by early summer. Soils are composed of varied parent materials, but are usually young and poorly developed. This alliance often forms part of a subalpine parkland mosaic just below upper treeline.

IVC Dynamics: These communities are associated with frigid, wet, nutrient-poor soils which inhibit decomposition and accumulate organic matter. Rapid erosion generally results in young, poorly stratified soils at most sites. Recurrent avalanches may be important in maintaining these communities where they occur below treeline (Franklin and Dyrness 1973).

IVC Environment: These vegetation types are typically located at or slightly below the upper treeline often in association with subalpine parkland. The climate is cold and snowy with annual precipitation exceeding 150 cm and a short growing season. Elevations typically range from 1000-2400 m. These communities occur on well-drained, moderately steep to steep slopes which are clear of snow by early summer. Soils are composed of varied parent materials, but are usually young and poorly developed.

DISTRIBUTION

IVC Geographic Range: Vegetation within this alliance occurs primarily in Olympic Mountains and Cascade Range of Washington, although some associations extend south to the Sierra Nevada and east to the northern Rocky Mountains.

IVC Nations: CA?,US

IVC States/Provinces: AB?, BC?, CA, MT, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4 (2013-09-27) Stands inhabit talus slopes and rock outcrops at alpine and subalpine elevations, which are areas largely unaffected by grazing, trampling, or invasive species. Climatic change may have a long-term effect on the distribution and viability of stands, since they are associated with late-melting snowbeds.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001827 *Carex spectabilis* Alpine Meadow** [Showy Sedge Alpine Meadow] []
  G5 (1996-02-01) BC?, CA, OR, WA
- **CEGL001828 *Carex spectabilis - Polygonum bistortoides* Alpine Meadow** [Showy Sedge - American Bistort Alpine Meadow] []
  G4 (1996-02-01) BC?, WA
- **CEGL001973 *Lupinus arcticus - Carex spectabilis* Alpine Meadow** [Arctic Lupine - Showy Sedge Alpine Meadow] []
  G4 (1996-02-01) BC?, OR, WA
- **CEGL005867 *Carex spectabilis - Arnica x diversifolia* Alpine Meadow** [Showy Sedge - Rayless Arnica Alpine Meadow] []
  G3G4 (2004-02-04) AB?, MT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Sarr, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3336 Buckwheat species - Woodrush species Alpine Snowbed Alliance

[ ]
Eriogonum spp. - *Luzula* spp. Alpine Snowbed Alliance
Buckwheat - Woodrush Alpine Snowbed

IVC Scientific Name: *Eriogonum* spp. - *Luzula* spp. Alpine Snowbed Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: The vegetation is characterized by low-growing (3-8 cm), mat-forming perennial forbs and graminoids, which can be sparse, with less than 25% total cover. *Eriogonum pyrolifolium, Saxifraga tolmiei*, and *Luzula piperi* can be dominant to codominant. Other commonly associated herbaceous species include *Carex nigricans, Carex pyrenaica, Carex spectabilis, Juncus drummondii, Luetkea pectinata, Lupinus arcticus ssp. subalpinus, Lupinus latifolius*, or *Oreostemma alpigenum var. alpigenum*. Bryophytes such as *Polytrichum sexangulare* and *Marsupella brevissima* may also be present. This alliance is found in the subalpine and alpine of the Cascade Range of Washington and British Columbia. It appears to be restricted to the western side of the North Cascades where a maritime climate predominates. Stands occur between 1750 and 2100 m elevation on gentle to moderately steep north- or south-facing slopes. It is a snowbed habitat where snow remains on the ground until late July or early August, occurring above treeline on north-facing, gentle to moderate slopes with very late snowmelt and well-drained soils. It can also occur in subalpine parklands, where it tends to occur on north-facing slopes. Soils can be unstable, poorly to moderately well-drained, and somewhat acidic with a pH between 4.7 and 5.9.
IVC Dynamics: The vegetation is restricted to the western side of the northern Cascade Range, which receives considerably more snowfall and has a steeper gradient than the eastern side of the range. This results in patches of varying snow depths and snowmelt times and a distinct mosaic of communities. The following information is based on Douglas and Bliss (1977). The time of snowmelt seems to be the most important environmental factor determining the pattern of the North Cascades tundra communities. The snowmelt date influences the summer soil moisture regime, at least during the early part of the growing season. The communities described within this alliance have the latest snowmelt dates (late July-early August) of any of the alpine communities.
IVC Environment: Stands occur between 1750 and 2100 m elevation on gentle to moderately steep south-facing slopes. This vegetation appears to be restricted to the western side of the North Cascades where a maritime climate predominates. The mean annual precipitation is 280 cm, with a large majority of the precipitation falling as snow; only an average of 28 cm falls in the summer. This alliance is associated with a snowbed habitat where snow remains on the ground until late July or early August. Soils are unstable and poorly to moderately well-drained. Soils are classified as Entisols and are young and poorly developed. If present, A through C horizons are thin. Soils are somewhat acidic with a pH between 4.7 and 5.9 and have low organic matter content, cation-exchange capacity, and nutrient levels.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the subalpine and alpine of the northern Cascade Range and Olympic Mountains of Washington and the Coast Mountains of British Columbia, Canada.
IVC Nations: CA,US
IVC States/Provinces: BC, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001918 *Luetkea pectinata - Saxifraga tolmiei* Alpine Meadow** [Partridgefoot - Tolmie's Saxifrage Alpine Meadow] []
  G5 (1996-02-01) BC, CA, OR, WA
- **CEGL001986 *Saxifraga tolmiei - Luzula piperi* Alpine Snowbed** [Tolmie's Saxifrage - Piper's Woodrush Alpine Snowbed] []
  G4 (1996-02-01) BC, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G.W. Douglas and L.C. Bliss (1977)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3337 Roemer's Fescue - Rocky Mountain Fescue Alpine Meadow Alliance

[ ]
Festuca idahoensis ssp. roemeri - Festuca saximontana Alpine Meadow Alliance
North Pacific Fescue Alpine Meadow

IVC Scientific Name: *Festuca idahoensis ssp. roemeri - Festuca saximontana* Alpine Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation is characterized by a dense cover (>100%) and a diverse flora of herbaceous and cryptogam species; 35 species is the average number per stand. The alliance is characterized by xeric graminoids combined with a diverse flora of herbaceous and cryptogram species often occurring as a "turf" of sod-forming sedges or grasses, dominated by one or more, and often an intermixed combination of, species. These are often expressed with one or two having higher cover than the rest, but with usually at least three of the following species present: *Calamagrostis purpurascens, Carex breweri, Carex capitata, Carex nardina, Carex scirpoidea ssp. pseudoscirpoidea, Carex phaeocephala, Carex proposita, Festuca saximontana, Festuca brachyphylla*, and/or *Festuca idahoensis ssp. roemeri*. A variety of other alpine forbs are also typically present such as *Lupinus arcticus ssp. subalpinus, Lupinus latifolius, Lupinus sellulus var. lobbii, Minuartia obtusiloba, Oreostemma alpigenum, Selaginella wallacei, Sibbaldia procumbens, Silene parryi, Smelowskia ovalis, Solidago multiradiata*, and *Trisetum spicatum*. This alliance is found in the subalpine and alpine zones of the high mountains of the Pacific Coast and Cascade Range of Washington and British Columbia, and south into the Sierra Nevada of California. Stands occur between 1700 and 2600 m elevation on all aspects of dry, well-drained moderate, gentle to steep upper slopes. Some sites can be slightly more mesic. Sites may have exposed rocks and mineral soil. A few stands can occur at lower elevations, on exposed grassy bald ridges well below treeline.

IVC Dynamics: The time of snowmelt appears to be the most important environmental factor determining the pattern of the Cascade tundra communities (Douglas and Bliss 1977). The snowmelt date influences the summer soil moisture regime, at least during the early part of the growing season. Stands that occur in areas with an early snowmelt date (mid April to early May) may be able to tolerate drier conditions later in the season than the other alpine communities. Climate change may have a strong influence on the duration of snowpack and the timing of snowmelt.

IVC Environment: Vegetation in this alliance is found in the subalpine and alpine zones of the high mountains of the Pacific Coast and Cascade Range of Washington and British Columbia, and south into the Sierra Nevada of California. Much of the following environmental information is from Douglas and Bliss (1977) and Crawford et al. (2009). Stands occur between 1700 and 2600 m elevation on all aspects of dry, well-drained, moderate, gentle to steep upper slopes. Some sites can be slightly more mesic. Sites may have exposed rocks and mineral soil. A few stands can occur at lower elevations, on exposed grassy bald ridges well below treeline. The climate is cold and snowy with severe winds, late-lying snow, and a short growing season. Annual precipitation ranges from over 250 cm near the Cascade Crest to less than 100 cm farther east in the Cascades and in the Sierra Nevada of California. The vegetation typically occurs on concave snowbeds, which are well-drained. Snow melts by late July and soils dry thoroughly by late summer. Soils are composed of varied parent materials, including granitics, pumice, pyroclastic deposits, or basalt, with abundant coarse fragments. Most soils are classified as poorly developed Inceptisols due to the slow weathering at high altitudes. The A horizon can be moderately thick (4-10 cm) with a dense mat of mainly fine roots, and often covered with a layer of graminoid litter. Soil pH has been observed between 5.2 and 6.0. Soils can be relatively deep yet poorly developed sandy loams. It has also been reported to occur on calcareous soils in the Sierra Nevada (Bamberg and Major 1968).

DISTRIBUTION

IVC Geographic Range: Vegetation in this alliance is found in the subalpine and alpine zones of the high mountains of the Pacific Coast and Cascade Range of Washington and British Columbia, and south into the Sierra Nevada of California. It has been reported to occur in the Klamath Mountains and southern Cascades, but data are lacking.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL001850 *Calamagrostis purpurascens* Alpine Meadow** [Purple Reedgrass Alpine Meadow] []
  G2 (2001-01-26) BC, CA, WA
- **CEGL001807 *Carex capitata* Alpine Meadow** [Capitate Sedge Alpine Meadow] []
  G3? (1996-02-01) BC?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Kagan and G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3338 Twin-flower Sandwort - Donner Lake Lupine Cascade Alpine Fell-field Alliance

[ ]
Minuartia obtusiloba - Lupinus sellulus Cascade Alpine Fell-field Alliance
Cascadian Twin-flower Sandwort - Donner Lake Lupine Alpine Fell-field

IVC Scientific Name: *Minuartia obtusiloba - Lupinus sellulus* Cascade Alpine Fell-field Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Stands have a sparse herbaceous layer dominated by the perennial forbs *Erigeron aureus, Lupinus sellulus var. lobbii*, or *Minuartia obtusiloba* and the sedges *Carex breweri* and *Carex phaeocephala*, in various combinations. Although plant cover is low, species richness is high, especially with cushion plants such as *Phlox* spp. and *Silene acaulis*. Other frequent species include *Draba lonchocarpa, Festuca brachyphylla, Festuca saximontana, Luzula spicata, Penstemon davidsonii, Penstemon procerus, Phlox diffusa, Poa lettermanii, Polemonium elegans, Smelowskia ovalis, Solidago simplex var. spathulata*, and *Solidago simplex var. nana*. Stands included in this alliance have been described from windswept alpine and harsh exposed subalpine areas in the Washington Cascade Range. Elevations range from 1950-2500 m. Sites are very dry fell-fields with large and small exposed rocks. Winter snow cover is generally low because high winds remove it. This vegetation grows between exposed rocks in depressions to gentle slopes. Aspects are southeast- and west-facing, on flat to gentle slopes. Cushion plants are favored because of extreme desiccating conditions. There is significant frost action in the soils that causes stones to be pushed to the surface forming stone stripes and other disturbance such as soil boils. There is little soil material. Parent material is typically andesite on Mount Rainier. Adjacent vegetation in more mesic habitats is alpine turf dominated by graminoids and more mesic forbs.
IVC Dynamics: Hamann (1972) suggested that although both *Erigeron aureus* and *Lupinus sellulus var. lobbii* are common species in the alpine, *Erigeron aureus* is most abundant in this community, perhaps because of lack of competition with associates in the more mesic habitats.
IVC Environment: Stands included in this alliance have been described from windswept alpine areas in the Washington Cascade Range. Elevations range from 1950-2500 m. Sites are very dry fell-fields with large and small exposed rocks. Winter snow cover

is generally low because high winds remove it. This vegetation grows between exposed rocks in depressions to gentle slopes. Aspects are southeast- and west-facing. There is significant frost action in the soils that cause stones to be pushed to the surface forming stone stripes and other disturbance such as soil boils. There is little soil material.

DISTRIBUTION

IVC Geographic Range: Vegetation included in this alliance has been described from alpine areas on Mount Rainer, the Olympic Mountains, Mount Stuart and elsewhere in the Cascade Range in Washington.
IVC Nations: CA?,US
IVC States/Provinces: BC?, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008265 *Phlox diffusa* - *Lupinus sellulus* - (*Pedicularis contorta*) Alpine Meadow** [Spreading Phlox - Donner Lake Lupine - (Coiled Lousewort) Alpine Meadow] []
  High fell-fields codominated by *Phlox diffusa* and *Lupinus sellulus* GNR. BC?, OR?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Schulz, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

G319 North Pacific Alpine-Subalpine Bedrock & Scree

[ ]

IVC Colloquial Name: North Pacific Alpine-Subalpine Bedrock & Scree
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group consists of exposed rock and rubble above the forestline (subalpine parkland and above) in the North Pacific mountain ranges and is restricted to the highest elevations in the Cascade Range, from southwestern British Columbia south into northern California, and also north into southeastern Alaska. It is composed of barren and sparsely vegetated alpine substrates, typically including bedrock outcrops, scree slopes, rock crevices, upper mountain slopes, summits and nunataks. Species composition is variable and may include *Artemisia arctica, Astragalus alpinus, Carex microchaeta, Carex* spp., *Minuartia arctica, Paxistima myrsinites, Saxifraga* spp., *Lomatium* spp., *Luina hypoleuca, Phlox* spp., *Salix rotundifolia, Saxifraga sibirica, Saxifraga bronchialis, Sibbaldia procumbens*, and *Silene acaulis*. Nonvascular (lichen)-dominated communities are common. Common nonvascular genera include *Racomitrium* and *Stereocaulon*. Exposure to desiccating winds, rocky and sometimes unstable substrates, and a short growing season limit plant growth. In Alaska, this group usually occurs above alpine dwarf-shrub, herbaceous meadow, and dwarf-shrub-herbaceous systems typically at elevations higher than 915 m (3000 feet) (possibly higher in southeastern Alaska). There can be sparse cover of forbs, grasses, lichens, shrubs and small trees, but the total vascular plant cover is typically less than 25% due to the high cover of exposed rock.
IVC Dynamics:
IVC Environment: *Soil/substrate/hydrology:* It is composed of barren and sparsely vegetated alpine substrates, typically including bedrock outcrops, scree slopes, rock crevices, upper mountain slopes, summits and nunataks. Nonvascular (lichen)-dominated communities are common. Exposure to desiccating winds, rocky and sometimes unstable substrates, and a short growing season limit plant growth. Environmental information compiled from Meidinger and Pojar (1991) and Viereck et al. (1992).

DISTRIBUTION

IVC Geographic Range: This group is restricted to the highest elevations in the North Pacific ranges, from southeastern Alaska south into northern Oregon.
IVC Nations: CA,US
IVC States/Provinces: AK, BC, CA, OR, WA
IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.11.78:P, 7.1.8.1:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3781 *Paxistima myrsinites* - *Saxifraga* spp. - *Luina hypoleuca* Alpine Rock Crevice Alliance** [Oregon Boxleaf - Saxifrage species - Littleleaf Silverback Alpine Rock Crevice Alliance] []
  This alliance is characterized by sparse vegetation of rock crevices dominated by *Campanula piperi, Juniperus communis, Luina hypoleuca, Paxistima myrsinites, Petrophytum hendersonii*, and/or *Saxifraga bronchialis*. It is known from high elevations in the Olympic Mountains and Cascade Range of northern Washington.
- **A3780 *Phlox* spp. - *Lomatium* spp. - *Carex* spp. Alpine Talus & Scree Sparse Alliance** [Phlox species - Desert-parsley species - Sedge species Alpine Talus & Scree Sparse Alliance] []
  The most common dominant species are *Carex spectabilis, Lomatium martindalei*, and *Phlox diffusa*. This alliance is known from the Olympic Mountains and northern Cascade Range of Washington and British Columbia, but it is expected to occur in other parts of the Cascade Range at least in Washington.
- **A4087 *Rhizocarpon geographicum* Sparsely Vegetated Alpine Nonvascular Alliance** [World Map Lichen Sparsely Vegetated Alpine Nonvascular Alliance] []
  This nonvascular alliance is characterized by a sparse assortment of evergreen shrubs, bryophytes, lichens, and/or dwarf woody plants. It occurs on moderately dry, exposed rock walls, rock bluffs, and ridges of the coastal mountain ranges of British Columbia.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: R. Crawford, M.S. Reid et al., in Faber-Langendoen et al. (2011)
IVC Description Author: R. Crawford, M.S. Reid, C. Chappell, T. Boucher, G. Kittel
IVC Description Date: 2015-05-20
IVC Acknowledgments:

A3781 Oregon Boxleaf - Saxifrage species - Littleleaf Silverback Alpine Rock Crevice Alliance

[ ]
Paxistima myrsinites - *Saxifraga* spp. - *Luina hypoleuca* Alpine Rock Crevice Alliance
Oregon Boxleaf - Saxifrage - Littleleaf Silverback Alpine Rock Crevice

IVC Scientific Name: *Paxistima myrsinites* - *Saxifraga* spp. - *Luina hypoleuca* Alpine Rock Crevice Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance covers dwarf-shrub- and forb-dominated vegetation that grow in the crevices and cracks of bare rock on cliffs to moderately steep, sloping rock faces as well as talus slopes. Within those places, the canopy cover can be as much as 15%, but the overall impression is of a sparsely vegetated rock surface. Most locations are near treeline at all aspects. Dominant species include *Campanula piperi, Juniperus communis, Luina hypoleuca, Paxistima myrsinites, Petrophytum hendersonii*, and/or *Saxifraga bronchialis*. Regardless of the dominant species, many of these companion species can be present and include *Achillea*

millefolium, Carex phaeocephala, Cryptogramma acrostichoides, Douglasia laevigata, Erysimum arenicola, Eucephalus paucicapitatus, Festuca saximontana, Hedysarum occidentale, Lomatium martindalei, Penstemon davidsonii, Phlox diffusa, Saxifraga bronchialis, Sedum divergens, Silene parryi, and *Viola flettii*. This alliance is known from high in the Olympic Mountains and Cascade Range of northern Washington. It occurs at high elevations (1220-1980 m [4000-6500 feet]). Exposed rock is characteristic of this alliance, while the vegetation is confined to cracks and crevices.

IVC Dynamics:

IVC Environment: Vegetation grows in the crevices and cracks of bare rock on cliffs to moderately steep, sloping rock faces as well as talus slopes. Most locations are near treeline at all aspects. This alliance occurs at high elevations (1220-1980 m [4000-6500 feet]). Exposed rock is characteristic of this alliance.

DISTRIBUTION

IVC Geographic Range: This alliance is known from high in the Olympic Mountains and Cascade Range of northern Washington.
IVC Nations: CA?,US
IVC States/Provinces: BC?, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008248 *Lewisia columbiana - (Juncus parryi)* Rock Vegetation** [Columbian Bitterroot - (Parry's Rush) Rock Vegetation] [] Sparsely vegetated high montane and subalpine balds with *Lewisia columbiana* as the most abundant herb GNR. BC?, OR?, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A3780 Phlox species - Desert-parsley species - Sedge species Alpine Talus & Scree Sparse Alliance

[ ]
Phlox spp. - *Lomatium* spp. - *Carex* spp. Alpine Talus & Scree Sparse Alliance
Phlox - Desert-parsley - Sedge Alpine Talus & Scree

IVC Scientific Name: *Phlox* spp. - *Lomatium* spp. - *Carex* spp. Alpine Talus & Scree Sparse Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: The vegetation within this alliance is sparse, generally covering less than 10% of the ground. There may be patches of vegetation where within a square meter the total cover is higher than 10%, but for the community as a whole, bare ground or bare rock characterize the structure. The species composition is highly variable with different shrub and herbs being the most abundant "dominant" species. However, there are usually common species nearly always present and that can be abundant. These are *Carex spectabilis, Lomatium martindalei*, and *Phlox diffusa*. Other species that may be more abundant include *Arnica x diversifolia, Astragalus cottonii, Athyrium americanum, Dasiphora fruticosa ssp. floribunda, Delphinium glareosum, Elmera racemosa, Penstemon davidsonii, Senecio neowebsteri*, and *Vaccinium deliciosum*. When these later species are the most abundant (that being about 3-6% cover), one of the previously mentioned species is usually present, but may also be entirely absent. Many other associated dwarf-shrub, forb and graminoid species may be found in this alliance, including *Carex phaeocephala, Elmera racemosa, Elymus elymoides, Festuca idahoensis ssp. roemeri, Luetkea pectinata, Lupinus arcticus ssp. subalpinus, Lupinus latifolius*, and *Phacelia sericea*. This alliance is described from the Olympic Mountains and northern Cascade Range of Washington and British Columbia, but it is expected to occur in other parts of the Cascade Range at least in Washington. This sparsely vegetated alliance appears at elevations of 1460 to 2040 m (4800-6700 feet). It is most often found

on steep, loose talus slopes, but it is also known to appear of scree slopes, cliff faces, ridges and glacier-scoured bedrock. It can also occur on gentle slopes. It occurs on all aspects. Soils are thin to nonexistent, the substrate broken and very coarse rock and bedrock.

IVC Dynamics:

IVC Environment: This sparsely vegetated alliance occurs at elevations of 1460 to 2040 m (4800-6700 feet). It is most often found on steep, loose talus slopes, but it is also known to appear of scree slopes, cliff faces, ridges and glacier-scoured bedrock. It can also occur on gentle slopes. It occurs on all aspects. Soils are thin to nonexistent, the substrate broken and very coarse rock and bedrock.

DISTRIBUTION

IVC Geographic Range: This alliance is known only from the Olympic Mountains and northern Cascade Range of Washington and British Columbia, but it is expected to occur in other parts of the Cascade Range in Washington. The description is based on 207 plots from Olympic, Mount Rainer and North Cascades national parks (Crawford et al. 2009).

IVC Nations: CA,US

IVC States/Provinces: BC, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL008260 *Luina hypoleuca* - (*Lomatium martindalei* - *Castilleja parviflora*) Alpine Sparse Vegetation** [Littleleaf Silverback - (Cascade Desert-Parsley - Mountain Indian-Paintbrush) Alpine Sparse Vegetation] []
  Steep scree and near-vertical cliffs with relatively sparse vegetation dominated by Luina hypoleuca GNR. BC?, OR?, WA
- **CEGL008263 *Chamerion latifolium* - *Oxyria digyna* - (*Valeriana sitchensis*) Alpine Sparse Vegetation** [Dwarf Fireweed - Alpine Mountain-Sorrel - (Sitka Valerian) Alpine Sparse Vegetation] []
  Open vegetation on scree slopes of high elevation basins dominated by *Chamerion latifolium, Oxyria digyna*, and/or *Valeriana sitchensis* GNR. BC?, OR?, WA
- **CEGL008252 *Dasiphora fruticosa ssp. floribunda - (Phlox diffusa)* Dwarf-shrubland** [Shrubby-cinquefoil - (Spreading Phlox) Dwarf-shrubland] []
  Sparsely vegetated scree with *Dasiphora fruticosa* most abundant. GNR. BC?, WA
- **CEGL008245 *Artemisia ludoviciana* - *Lomatium martindalei* Dry Meadow** [White Sagebrush - Cascade Desert-Parsley Dry Meadow] []
  High-elevation, south-facing scree and loose talus slopes dominated by *Artemisia ludoviciana* in a variably sparse herb layer. GNR. BC?, WA
- **CEGL008262 *Phlox diffusa* - (*Lomatium martindalei*) Alpine Sparse Vegetation** [Spreading Phlox - (Cascade Desert-Parsley) Alpine Sparse Vegetation] []
  Sparse to moderately dense herbaceous vegetation on rocky soils dominated by *Phlox diffusa* GNR. BC?, OR?, WA
- **CEGL008254 *Eucephalus paucicapitatus* - (*Phacelia hastata* - *Castilleja miniata*) Dry Meadow** [Olympic Mountain Aster - (Silverleaf Phacelia - Giant Red Indian-Paintbrush) Dry Meadow] []
  Steep sites with poorly developed, erosive soils dominated by *Eucephalus paucicapitatus*. GNR. BC?, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: R.C. Crawford, C.B. Chappell, C.C. Thompson, and F.J. Rocchio (2009)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A4087 World Map Lichen Sparsely Vegetated Alpine Nonvascular Alliance

[ ]

Rhizocarpon geographicum Sparsely Vegetated Alpine Nonvascular Alliance
World Map Lichen Sparsely Vegetated Nonvascular Parkland

IVC Scientific Name: *Rhizocarpon geographicum* Sparsely Vegetated Alpine Nonvascular Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: The vegetation is characterized by an assortment of evergreen shrubs, bryophytes, lichens, and/or dwarf woody plants. Shrub and herbaceous covers are both sparse, and species composition is patchy, variable and typically restricted to cracks and crevices of rocks where soil accumulates. The most common dominant shrubs include *Juniperus communis* and *Phyllodoce glanduliflora* and shrub-form *Abies lasiocarpa*. The most common herbaceous species include *Antennaria alpina, Carex spectabilis, Juncus drummondii, Luetkea pectinata, Penstemon davidsonii, Phacelia sericea, Saxifraga bronchialis, Sibbaldia procumbens*, and *Silene acaulis*. The most common nonvascular dominants include the moss *Polytrichum piliferum* and lichens *Rhizocarpon geographicum* and *Umbilicaria proboscidea*. Associations of this alliance occur in coastal mountain ranges of British Columbia. Sites include moderately dry, rock walls, rock bluffs, and ridges. These habitats are very exposed and subjected to extreme wind-scour. Soils are thin, acidic, and consist mostly of accumulations of grit and sand in cracks between rocks.
IVC Dynamics:
IVC Environment: These habitats are very exposed and subjected to extreme wind-scour and represent the driest and most nutrient-poor parkland sites in the region. Soils are thin, acidic, and consist mostly of accumulations of grit and sand in cracks between rocks. Due to cold temperatures and snow accumulation, these communities experiences a very short growing season of approximately 2.5 months per year.

DISTRIBUTION

IVC Geographic Range: Associations of this alliance occur in coastal mountain ranges of British Columbia.
IVC Nations: CA
IVC States/Provinces: BC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Klinka and C. Chourmouzis (2001)
IVC Description Author:
IVC Description Date: 2014-09-26
IVC Acknowledgments:

M404 Western Boreal Alpine Tundra

Toundra alpine boréale de l'Ouest

IVC Colloquial Name: Western Boreal Alpine Tundra

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: Boreal tundra vegetation comprises this macrogroup. It occurs in high elevations from north-central British Columbia, through Yukon, to Alaska, in areas of continental climate. Typical tundra vascular species include *Artemisia arctica, Carex microchaeta, Dryas integrifolia, Festuca altaica, Luzula spicata, Polygonum viviparum, Potentilla diversifolia, Salix phlebophylla, Salix polaris, Salix reticulata, Sibbaldia procumbens*, and *Silene acaulis*. Mosses include *Hylocomium splendens, Polytrichum* spp., and *Stereocaulon* spp.; lichens include *Flavocetraria nivalis*, among others. Tundra encompasses various microsites with different physiognomies from the driest to more mesic: Very dry rocky and wind-blown sites are mostly characterized by sparse vegetation of *Dryas integrifolia, Kobresia myosuroides, Oxytropis podocarpa, Potentilla nana, Saxifraga tricuspidata*, and *Silene acaulis*, and lichens such as *Flavocetraria nivalis*. Drier climate microsites have open graminoid-dominated communities that are characterized by *Festuca altaica, Anthoxanthum monticola ssp. alpinum, Carex bigelowii*, and *Carex microchaeta*; other associated vascular species include *Artemisia arctica, Festuca brachyphylla, Luzula spicata, Polygonum viviparum, Potentilla diversifolia*, and *Sibbaldia procumbens*. Nonvascular species include *Polytrichum* spp., and *Cladonia* spp. Slightly more moist sites with dwarf-shrub alpine heath are dominated by *Cassiope mertensiana* or *Cassiope tetragona* with *Salix phlebophylla* or *Salix polaris*, or with an ericaceous mix of *Vaccinium vitis-idaea, Vaccinium uliginosum, Empetrum nigrum*, and *Arctostaphylos alpina*. Low shrublands with 15-40% cover occur where moisture accumulates, and are mostly dominated by *Betula nana, Betula glandulosa*, or *Salix arctica*, with a dense lichen understory, as well as the moss *Polytrichum juniperinum*. Some of the wettest sites have meadow species, including *Aconitum delphiniifolium, Artemisia arctica, Carex macrochaeta, Festuca altaica, Geranium erianthum, Myosotis asiatica, Parnassia fimbriata, Ranunculus occidentalis, Sanguisorba canadensis, Senecio triangularis, Valeriana sitchensis*, and/or *Veronica wormskjoldii*. Lastly, scattered trees or krummholz may occur at the boundary between forest and alpine tundra at lower elevations, and include *Abies lasiocarpa, Picea glauca*, or *Pinus contorta*, depending upon the area. Sites occur on gentle to steep slopes (5-50°) on mountaintops and high plateaus of boreal western North America, mostly from 1000-2000 m in elevation but as low as 100 m in Alaska and over 2000 m in British Columbia. The climate is continental, so snowpack tends to be light. The frost-free period is very short; in some locales, frost may occur at any time. Soils are typically shallow, well-drained, and stony, and can be subject to downslope movement, solifluction, and cryoturbation; permafrost can occur. Wind exposure has a strong influence on site conditions by varying exposure, snow depth, and soil moisture. Although this is a very cold climate environment, daylight is long during much of the growing season due to latitude.

IVC Geographic Range: This macrogroup occurs from interior Alaska, east to the Yukon and western edge of Northwest Territories, and south through the interior mountains of northern British Columbia. It also occurs on some high mountains of the Chilcotin Plateau of west central British Columbia.

IVC Nations: CA,GL?,US

IVC States/Provinces: AK, BC, NT, YT

ADDITIONAL INFORMATION

CNVC Status: Standard

CNVC Classification Comments:

Groups in Canada:

- **G613 Western Boreal Alpine Dwarf-shrubland []**
- **G747 Western Boreal Alpine Acidic Mesic Meadow []**
- **G785 Western Boreal Alpine Cliff, Scree & Rock Vegetation []**
- **G867 Western Boreal Alpine Mesic Dwarf Birch - Willow Shrubland []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: D. Meidinger and G. Kittel

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G613 Western Boreal Alpine Dwarf-shrubland

[ ]

IVC Colloquial Name: Western Boreal Alpine Dwarf-shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is defined as tundra vegetation dominated by the dwarf-shrub *Empetrum nigrum* often in combination with other shrubs such as the low shrubs *Vaccinium uliginosum* and *Ledum palustre ssp. decumbens* and the dwarf-shrubs *Loiseleuria procumbens* and *Salix arctica*. Erect shrubs and trees provide less than 10% cover. The group occurs on mountain slopes and hillslopes, low summits and ridges, and valley bottoms across a range of soil types and hydrologies. It is found in the Aleutian Islands and boreal regions of Alaska, Canada, and possibly Greenland. Patch size is small to matrix-forming.

IVC Dynamics: This group occupies large areas and is thought to be stable. Fire-return interval is long, likely due to the lack of dry fuel to sustain a fire.

IVC Environment: This group occurs on mountain slopes and hillslopes, low summits and ridges, and valley bottoms across a range of soil types and hydrologies. It develops on thin, well-drained mineral soils to poorly-drained peats; permafrost may be present but is not a formative element. Patch size ranges from small in protected pockets where snow is retained to matrix-forming across flat lowlands.

DISTRIBUTION

IVC Geographic Range: This group is well-represented the Aleutian Islands and boreal Alaska and Canada. While the range of *Empetrum nigrum* is circumboreal and extends to both the arctic and temperate regions, it does not dominate communities in these areas of Alaska; the occurrence of this group in arctic and temperate Canada as well as Greenland needs review.

IVC Nations: CA,GL?,US

IVC States/Provinces: AK, BC, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4316 *Cassiope tetragona - Salix rotundifolia* Alpine Dwarf-shrubland Alliance** [White Arctic Mountain-heather - Least Willow Alpine Dwarf-shrubland Alliance] []
- **A4318 *Dryas integrifolia - Oxytropis nigrescens* Alkaline Alpine Dwarf-shrubland Alliance** [Entireleaf Mountain-avens - Blackish Oxytrope Alkaline Alpine Dwarf-shrubland Alliance] []
- **A4317 *Dryas octopetala* Acidic Alpine Dwarf-shrubland Alliance** [Eight-petal Mountain-avens Acidic Alpine Dwarf-shrubland Alliance] []
- **A4319 *Empetrum nigrum - Vaccinium uliginosum - Artemisia arctica* Alpine Dwarf-shrubland Alliance** [Black Crowberry - Bog Blueberry - Boreal Sagebrush Alpine Dwarf-shrubland Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program

IVC Description Author: L. Flagstad

IVC Description Date: 2016-01-19

IVC Acknowledgments: D. Faber-Langendoen and T. Boucher

A4316 White Arctic Mountain-heather - Least Willow Alpine Dwarf-shrubland Alliance

[ ]

Cassiope tetragona - Salix rotundifolia Alpine Dwarf-shrubland Alliance

Western Boreal Alpine Cassiope - Dwarf Willow Tundra

IVC Scientific Name: *Cassiope tetragona - Salix rotundifolia* Alpine Dwarf-shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4318 Entireleaf Mountain-avens - Blackish Oxytrope Alkaline Alpine Dwarf-shrubland Alliance

[ ]

Dryas integrifolia - Oxytropis nigrescens Alkaline Alpine Dwarf-shrubland Alliance

Western Boreal Alpine Dryas Alkaline Tundra

IVC Scientific Name: *Dryas integrifolia - Oxytropis nigrescens* Alkaline Alpine Dwarf-shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4317 Eight-petal Mountain-avens Acidic Alpine Dwarf-shrubland Alliance

[ ]
Dryas octopetala Acidic Alpine Dwarf-shrubland Alliance
Western Boreal Alpine Dryas Acidic Tundra

IVC Scientific Name: *Dryas octopetala* Acidic Alpine Dwarf-shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4319 Black Crowberry - Bog Blueberry - Boreal Sagebrush Alpine Dwarf-shrubland Alliance

[ ]
Empetrum nigrum - Vaccinium uliginosum - Artemisia arctica Alpine Dwarf-shrubland Alliance

Western Boreal Alpine Ericaceous Acidic Dwarf-shrub Tundra

IVC Scientific Name: *Empetrum nigrum - Vaccinium uliginosum - Artemisia arctica* Alpine Dwarf-shrubland Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G747 Western Boreal Alpine Acidic Mesic Meadow

[ ]

IVC Colloquial Name: Western Boreal Alpine Acidic Mesic Meadow
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group consists of alpine mesic grasslands and meadows found in boreal climates of North America. They are dominated mostly by grasses and sedges, including *Arctagrostis latifolia, Carex aquatilis, Carex bigelowii, Carex microchaeta, Carex podocarpa, Festuca altaica, Festuca rubra, Anthoxanthum monticola ssp. alpinum, Poa arctica, Poa eminens*, and *Trisetum spicatum*. Other forbs that can be abundant include *Anemone* spp., *Bupleurum triradiatum, Erigeron peregrinus, Eriogonum flavum, Geranium erianthum, Pedicularis* spp., *Polygonum* spp., and *Saxifraga* spp. These are mesic sites found in the alpine, on sheltered well-drained, south-facing mesic alpine slopes and protected alpine swales. Soils are on well-developed to thin, often silt loams, and soil pH tends to be neutral to acidic. Permafrost, if present, is at least 36 cm below the surface or deeper.
IVC Dynamics:
IVC Environment: These are mesic alpine sites found in the boreal climates of North America, on sheltered well-drained, south-facing slopes and protected alpine swales. Soils are on well-developed to thin, often silt loams, and soil pH tends to be neutral to acidic. Permafrost, if present, is at least 36 cm below the surface or deeper.

DISTRIBUTION

IVC Geographic Range: This group is known from boreal Alaska, British Columbia and the Yukon Territory.
IVC Nations: CA,US
IVC States/Provinces: AK, BC, NT, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4321 *Carex bigelowii - Dryas integrifolia* Alpine Meadow Alliance** [Bigelow's Sedge - Entireleaf Mountain-avens Alpine Meadow Alliance] []
- **A4322 *Carex bigelowii - Eriophorum angustifolium - Salix pulchra* Alpine Meadow Alliance** [Bigelow's Sedge - Tall Cottongrass - Tealeaf Willow Alpine Meadow Alliance] []
- **A4320 *Eriophorum vaginatum - Salix pulchra - Polygonum bistorta* Alpine Meadow Alliance** [Tussock Cottongrass - Tealeaf Willow - Meadow Bistort Alpine Meadow Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Viereck et al. (1992) and Alaska Heritage Ecologists
IVC Description Author: G. Kittel
IVC Description Date: 2017-03-29
IVC Acknowledgments:

A4321 Bigelow's Sedge - Entireleaf Mountain-avens Alpine Meadow Alliance

[ ]
Carex bigelowii - Dryas integrifolia Alpine Meadow Alliance
Western Boreal Alpine Alkaline Mesic Sedge - Dryas Meadow

IVC Scientific Name: *Carex bigelowii - Dryas integrifolia* Alpine Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4322 Bigelow's Sedge - Tall Cottongrass - Tealeaf Willow Alpine Meadow Alliance

[ ]
Carex bigelowii - Eriophorum angustifolium - Salix pulchra Alpine Meadow Alliance
Western Boreal Alpine Acidic Mesic Sedge - Willow Meadow

IVC Scientific Name: *Carex bigelowii - Eriophorum angustifolium - Salix pulchra* Alpine Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4320 Tussock Cottongrass - Tealeaf Willow - Meadow Bistort Alpine Meadow Alliance

[ ]
Eriophorum vaginatum - Salix pulchra - Polygonum bistorta Alpine Meadow Alliance
Western Boreal Alpine Acidic Mesic Sedge - Tussock Meadow

IVC Scientific Name: *Eriophorum vaginatum - Salix pulchra - Polygonum bistorta* Alpine Meadow Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G785 Western Boreal Alpine Cliff, Scree & Rock Vegetation

[ ]

IVC Colloquial Name: Western Boreal Alpine Cliff, Scree & Rock Vegetation
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group occurs in Alaska and possibly western Canada on talus- and bedrock-dominated sites above the dwarf-shrub zone, and also on early-seral alpine sites near glaciers. Sites are well-drained to excessively drained, and there is little soil development. They are often rocky and sparsely vegetated with forbs and graminoids such as *Draba* spp., *Saxifraga* spp., *Oxyria digyna, Festuca brachyphylla, Carex pyrenaica ssp. micropoda*, and *Luzula* spp. Dwarf-shrubs are uncommon.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This group occurs in Alaska and possibly western Canada.
IVC Nations: CA,US
IVC States/Provinces: AK, BC, NT, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4325 *Artemisia arctica - Festuca altaica - Valeriana capitata* Alpine Rock Alliance** [Boreal Sagebrush - Altai Fescue - Capitate Valerian Alpine Rock Alliance] []
- **A4324 *Cladonia* spp. - *Umbilicaria* spp. - *Rhizocarpon geographicum* Alpine Rock Alliance** [Cup Lichen species - Rocktripe Lichen species - World Map Lichen Alpine Rock Alliance] []
- **A4323 *Dryas integrifolia - Oxytropis nigrescens - Arctostaphylos rubra* Alpine Rock Alliance** [Entireleaf Mountain-avens - Blackish Oxytrope - Red-fruit Bearberry Alpine Rock Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program
IVC Description Author: M.S. Reid and G. Kittel
IVC Description Date: 2017-03-29
IVC Acknowledgments:

A4325 Boreal Sagebrush - Altai Fescue - Capitate Valerian Alpine Rock Alliance

[ ]
Artemisia arctica - Festuca altaica - Valeriana capitata Alpine Rock Alliance
Western Boreal Alpine Mixed Forb Rocky Tundra

IVC Scientific Name: *Artemisia arctica - Festuca altaica - Valeriana capitata* Alpine Rock Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4324 Cup Lichen species - Rocktripe Lichen species - World Map Lichen Alpine Rock Alliance

[ ]

Cladonia spp. - *Umbilicaria* spp. - *Rhizocarpon geographicum* Alpine Rock Alliance

Western Boreal Alpine Lichen Rocky Tundra

IVC Scientific Name: *Cladonia* spp. - *Umbilicaria* spp. - *Rhizocarpon geographicum* Alpine Rock Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4323 Entireleaf Mountain-avens - Blackish Oxytrope - Red-fruit Bearberry Alpine Rock Alliance

[ ]

Dryas integrifolia - Oxytropis nigrescens - Arctostaphylos rubra Alpine Rock Alliance

Western Boreal Alpine Dryas Rocky Tundra

IVC Scientific Name: *Dryas integrifolia - Oxytropis nigrescens - Arctostaphylos rubra* Alpine Rock Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G867 Western Boreal Alpine Mesic Dwarf Birch - Willow Shrubland

[ ]

IVC Colloquial Name: Western Boreal Alpine Mesic Dwarf Birch - Willow Shrubland
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AK, BC, NT, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4314 *Betula nana* Alpine Shrubland Alliance** [Dwarf Birch Alpine Shrubland Alliance] []
- **A4315 *Salix pulchra* Alpine Shrubland Alliance** [Tealeaf Willow Alpine Shrubland Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4314 Dwarf Birch Alpine Shrubland Alliance

[ ]

Betula nana Alpine Shrubland Alliance

Western Boreal Alpine Dwarf Birch Shrubland

IVC Scientific Name: *Betula nana* Alpine Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4315 Tealeaf Willow Alpine Shrubland Alliance

[ ]

Salix pulchra Alpine Shrubland Alliance

Western Boreal Alpine Tealeaf Willow Shrubland

IVC Scientific Name: *Salix pulchra* Alpine Shrubland Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA?,US
IVC States/Provinces: AK, BC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

4.B.2. Polar Tundra & Barrens

Upland or dry polar tundra is dominated by dwarf-shrubs, sedges and grasses, mosses and lichens, and is found in the high latitudes north of 60°N in the Arctic region and south of 50°S in the Antarctic region, in permafrost soils that range from dry to seasonally saturated.

Macrogroups in Canada:

- **M173 North American Arctic & Subarctic Tundra [Toundra arctique et subactique de l'America Du Nord]**
  This macrogroup is characterized by graminoid- or shrub-dominated vegetation underlain by continuous permafrost, which occupies the landscape located inland from coastal zones and north of latitudinal treeline in arctic Alaska and Canada as well as the region west of longitudinal treeline in subarctic Alaska.
- **M175 Arctic Cliff, Scree & Rock Vegetation [Falaise arctique,eboulis et vegetation rocheuse]**
  This macrogroup consists of sparsely vegetated talus, bedrock, cliffs, rock outcrops, and rocky floodplains in the Arctic regions of North America, with <10% vascular cover and variable cover of mosses and lichens. Some forbs and graminoids include *Draba* spp., *Saxifraga* spp., *Oxyria digyna, Festuca brachyphylla*, and others.
- **CM366 Subarctic Alpine Tundra (provisional) [Toundra alpines subarctique]**

M173 North American Arctic & Subarctic Tundra

Toundra arctique et subactique de l'America Du Nord

IVC Colloquial Name: Arctic Dry-Moist Tundra

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup is consists of low shrub, herbaceous and sparsely vegetated tundra in North American arctic and subarctic zones of continuous permafrost, located north of latitudinal treeline of arctic Alaska and Canada and includes subarctic Alaska west of longitudinal treeline. These are non-coastal areas. Tundra here comes is several forms: **Tussock grasslands** dominated by *Eriophorum vaginatum*, and/or *Carex bigelowii* often with dwarf-shrubs and low shrubs; **Moist sedge-dominated, non-tussocked tundra** with dominant sedges including *Eriophorum angustifolium, Carex aquatilis var. stans, Luzula arctica*, and *Eriophorum vaginatum*, often with a scattered (<25% cover), low-statured shrub layer that can include *Salix pulchra, Betula nana, Ledum palustre ssp. decumbens, Vaccinium vitis-idaea, Cassiope tetragona*, and *Dryas integrifolia*; **Mesic herbaceous tundra** with >25% cover, and dominant species that include *Carex microchaeta ssp. nesophila, Alopecurus magellanicus, Artemisia arctica, Polygonum bistorta, Valeriana capitata, Pedicularis* spp., *Polemonium acutiflorum, Salix rotundifolia*, and *Salix reticulata*; **Mesic low and dwarf-shrub**, including low-shrub species *Salix richardsonii, Salix pulchra, Salix glauca, Betula nana*, and *Vaccinium uliginosum* and dwarf-shrub species including *Dryas octopetala, Ledum palustre ssp. decumbens, Vaccinium vitis-idaea, Cassiope tetragona, Salix polaris, Salix reticulata, Salix rotundifolia*, and *Salix phlebophylla* with an understory that can be sparse to thick, with graminoids *Carex bigelowii, Arctagrostis latifolia*, forbs such as *Petasites frigidus*, and lichens *Flavocetraria cucullata, Flavocetraria nivalis* and *Thamnolia vermicularis*; ***Dryas* tundra** common on exposed, windswept areas, dominated by *Dryas octopetala* and/or *Dryas integrifolia*, often with graminoids *Anthoxanthum monticola ssp. alpinum* and *Carex scirpoidea*; and **Sparse dry-site dwarf-shrub tundra** on extreme exposure bedrock and unstable substrates, typically vascular vegetation is <25% cover and characterized by *Dryas octopetala, Dryas integrifolia, Empetrum nigrum, Vaccinium uliginosum, Loiseleuria procumbens*, and/or *Salix phlebophylla*. Foliose and fruticose lichens may dominate (with well above 25% cover) and include *Umbilicaria* spp., *Rhizocarpon geographicum, Cladina stellaris, Racomitrium lanuginosum, Flavocetraria* spp., and/or *Alectoria ochroleuca*.

IVC Geographic Range: This macrogroup occupies the landscape located inland from coastal zones and north of latitudinal treeline in arctic Alaska and Canada as well as the region west of longitudinal treeline in subarctic Alaska.

IVC Nations: CA,GL,IS,NO,RU,US

IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G897 Arctic Low Shrub Tundra []**
- **G896 Arctic Dwarf-shrub Tundra []**
- **G898 Arctic Herbaceous Tundra []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2016)

IVC Description Author: L. Flagstad and G. Kittel

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G897 Arctic Low Shrub Tundra

[ ]

IVC Colloquial Name: Arctic Low Shrub Tundra

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4337 Arctic Acidic Low Willow Tundra Alliance** [Arctic Acidic Low Willow Tundra Alliance] []
  This low-shrub tundra group is found on mesic to moist sites throughout arctic and subarctic alpine regions of Alaska. Vegetation is dominated by low willows, including *Salix richardsonii, Salix pulchra*, and *Salix glauca*.
- **A4339 Arctic Dwarf Birch Low Shrub Tundra Alliance** [Arctic Dwarf Birch Low Shrub Tundra Alliance] []
  This shrub tundra alliance is found on mesic to moist sites throughout the low arctic region of Alaska. Vegetation is dominated *Betula nana* and other low ericaceous shrubs, including *Ledum palustre ssp. decumbens* and *Vaccinium uliginosum*.
- **A4338 Arctic Nonacidic Low Willow Tundra Alliance** [Arctic Nonacidic Low Willow Tundra Alliance] []
  This low-shrub tundra alliance is found on mesic to moist sites throughout arctic and subarctic alpine regions of Alaska. Vegetation is dominated by low willows, including *Salix richardsonii, Salix pulchra*, and *Salix glauca*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4337 Arctic Acidic Low Willow Tundra Alliance

[ ]
Arctic Acidic Low Willow Tundra Alliance
Arctic Acidic Low Willow Tundra

IVC Scientific Name: Arctic Acidic Low Willow Tundra Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This shrub tundra group is common throughout arctic and subarctic Alaska on mesic to moist sideslopes and ridges in the Brooks Range foothills and also high-centered polygonal tundra of the Arctic Coastal Plain. Vegetation is dominated by low-shrub willows, including *Salix richardsonii, Salix pulchra*, and *Salix glauca*. Associated shrubs that occur frequently at low cover include *Salix reticulata, Betula nana*, and *Vaccinium uliginosum*. Understory herbaceous species typically have low cover and may include *Equisetum arvense, Petasites frigidus, Arctagrostis latifolia, Carex bigelowii*, and *Poa arctica*. *Hylocomium splendens* is the most common moss; lichens are uncommon.
IVC Dynamics: This group appears to be fairly stable. Change in site hydrology is the most likely driver of successional change with drying promoting the development of tussocks and wetting promoting the development of a wet sedge understory.

IVC Environment: This shrub tundra group is common throughout arctic and subarctic Alaska on mesic to moist sideslopes and ridges in the Brooks Range foothills and also high-centered polygonal tundra of the Arctic Coastal Plain. Patch size is small to matrix-forming. Permafrost is typically present.

DISTRIBUTION

IVC Geographic Range: This group occurs throughout arctic and subarctic regions of Alaska. Its distribution in Canada needs to be determined.
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002538 *Salix arctophila - Salix herbacea* Dwarf-shrub Tundra** [Northern Willow - Snowbed Willow Dwarf-shrub Tundra] [] GNR. MB, ON, QC

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program, in Faber-Langendoen et al. (2016)
IVC Description Author: T. Boucher and L. Flagstad
IVC Description Date: 2016-01-19
IVC Acknowledgments:

A4339 Arctic Dwarf Birch Low Shrub Tundra Alliance

[ ]
Arctic Dwarf Birch Low Shrub Tundra Alliance
Arctic Dwarf Birch Low Shrub Tundra

IVC Scientific Name: Arctic Dwarf Birch Low Shrub Tundra Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is dominated by *Betula nana* and is commonly found throughout the low arctic region on mesic to moist sideslopes and ridges in the Brooks Range foothills and on high-centered polygonal tundra of the Arctic Coastal Plain. Vegetation is characterized by low and prostrate shrubs, including *Betula nana, Ledum palustre ssp. decumbens, Vaccinium uliginosum*, and *Salix pulchra*. Dwarf-shrubs such as *Vaccinium vitis-idaea* and *Loiseleuria procumbens* may be common. Herbaceous species are sparse, but certain graminoids have high constancy, including *Anthoxanthum monticola ssp. alpinum* in montane sites and sedges in moist tundra on the coastal plain. Fruticose lichens, particularly *Cladonia rangiferina* and other *Cladonia* species, are often abundant in the ground layer. Common mosses include *Hylocomium splendens* and *Sphagnum, Aulacomnium*, and *Polytrichum* species. Patch size is small to matrix-forming.
IVC Dynamics: This alliance appears to be fairly stable. Change in site hydrology is the most likely driver of successional change with drying promoting the development of dwarf-shrub types and wetting promoting the development of shrub bogs.
IVC Environment: This shrub tundra alliance is common throughout the low arctic bioclimatic zones on mesic mountain slopes, hillslopes, high-centered polygons, drained lake basins, and terraces. The vegetation can form complex small-scale patterning in response to a variety of environmental gradients (Walker et al. 2011). Patch size is small to matrix-forming. Permafrost is typically present.

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout the low arctic bioclimatic zones (E and D); *Betula nana* does not occur in the high arctic.

IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program, in Faber-Langendoen et al. (2016)
IVC Description Author: T. Boucher, K. Boggs and M. Hall
IVC Description Date: 2016-01-19
IVC Acknowledgments:

A4338 Arctic Nonacidic Low Willow Tundra Alliance

[ ]
Arctic Nonacidic Low Willow Tundra Alliance
Arctic Nonacidic Low Willow Tundra

IVC Scientific Name: Arctic Nonacidic Low Willow Tundra Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This shrub tundra alliance is common throughout arctic and subarctic Alaska on mesic to moist sideslopes and ridges in the Brooks Range foothills and also high-centered polygonal tundra of the Arctic Coastal Plain. Vegetation is dominated by low-shrub willows, including *Salix richardsonii, Salix pulchra*, and *Salix glauca*. Associated shrubs that occur frequently at low cover include *Salix reticulata, Betula nana*, and *Vaccinium uliginosum*. Understory herbaceous species typically have low cover and may include *Equisetum arvense, Petasites frigidus, Arctagrostis latifolia, Carex bigelowii*, and *Poa arctica*. *Hylocomium splendens* is the most common moss; lichens are uncommon.
IVC Dynamics: This alliance appears to be fairly stable. Change in site hydrology is the most likely driver of successional change with drying promoting the development of tussocks and wetting promoting the development of a wet sedge understory.
IVC Environment: This shrub tundra alliance is common throughout arctic and subarctic Alaska on mesic to moist sideslopes and ridges in the Brooks Range foothills and also high-centered polygonal tundra of the Arctic Coastal Plain. Patch size is small to matrix-forming. Permafrost is typically present.

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout arctic and subarctic regions of Alaska. Its distribution in Canada needs to be determined.
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program, in Faber-Langendoen et al. (2016)
IVC Description Author: T. Boucher and L. Flagstad
IVC Description Date: 2016-01-19
IVC Acknowledgments:

G896 Arctic Dwarf-shrub Tundra

[ ]

IVC Colloquial Name: Arctic Dwarf-shrub Tundra
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL?,IS,NO,RU,US
IVC States/Provinces: AK, LB?, MB, NT?, NU?, QC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4332 Arctic Acidic Dryas Dwarf-shrub Tundra Alliance** [Arctic Acidic Dryas Dwarf-shrub Tundra Alliance] []
  This alliance is defined by tundra vegetation dominated by the dwarf, broad-leaved evergreen shrub species, *Dryas octopetala* and/or *Dryas integrifolia* often in combination with dwarf willows or ericaceous shrubs occurring in the arctic and subarctic regions of Alaska and Canada.
- **A4335 Arctic Acidic Dwarf Willow Tundra Alliance** [Arctic Acidic Dwarf Willow Tundra Alliance] []
  This tundra alliance is defined as dwarf-shrub vegetation dominated by prostrate willow species found on exposed sites in the arctic and subarctic regions of Alaska and Canada.
- **A4330 Arctic Acidic Lichen - Sparse Dwarf-shrub Tundra Alliance** [Arctic Acidic Lichen - Sparse Dwarf-shrub Tundra Alliance] []
  This group is characterized by lichen cover >25% or a sparse cover (<25%) of dwarf-shrubs that may or may not include lichens in the lowlands, hills and mountains of arctic and the alpine of subarctic Alaska.
- **A4334 Arctic Ericaceous Dwarf-shrub Tundra Alliance** [Arctic Ericaceous Dwarf-shrub Tundra Alliance] []
  This alliance is defined by tundra vegetation dominated by dwarf- to low ericaceous shrubs such as *Ledum palustre ssp. decumbens, Cassiope tetragona*, and *Vaccinium vitis-idaea* often in combination with abundant bryophytes and lichens in the arctic and subarctic regions of Alaska and Canada.
- **A4333 Arctic Nonacidic Dryas Dwarf-shrub Tundra Alliance** [Arctic Nonacidic Dryas Dwarf-shrub Tundra Alliance] []
  This group is defined by tundra vegetation dominated by the dwarf, broad-leaved evergreen shrub species, *Dryas octopetala*

and/or *Dryas integrifolia* often in combination with dwarf willows or ericaceous shrubs occurring in the arctic and subarctic regions of Alaska and Canada.

- **A4336 Arctic Nonacidic Dwarf Willow Tundra Alliance** [Arctic Nonacidic Dwarf Willow Tundra Alliance] []
  This tundra group is defined as dwarf-shrub vegetation dominated by prostrate willow species found on exposed sites in the arctic and subarctic regions of Alaska and Canada.
- **A4331 Arctic Nonacidic Lichen - Sparse Dwarf-shrub Tundra Alliance** [Arctic Nonacidic Lichen - Sparse Dwarf-shrub Tundra Alliance] []
  This group is characterized by lichen cover >25% or a sparse cover (<25%) of dwarf-shrubs that may or may not include lichens in the lowlands, hills and mountains of arctic and the alpine of subarctic Alaska.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4332 Arctic Acidic Dryas Dwarf-shrub Tundra Alliance

[ ]
Arctic Acidic Dryas Dwarf-shrub Tundra Alliance
Arctic Acidic Dryas Dwarf-shrub Tundra

IVC Scientific Name: Arctic Acidic Dryas Dwarf-shrub Tundra Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This tundra alliance is defined by vegetation dominated by the dwarf, broad-leaved evergreen shrub species *Dryas octopetala* and/or *Dryas integrifolia*. In addition to its dominant species, *Dryas* dwarf-shrub tundra supports high constancy of the dwarf willows *Salix reticulata, Salix arctica, Salix phlebophylla*, the ericaceous shrubs *Cassiope tetragona* and *Vaccinium uliginosum*, the grass *Anthoxanthum monticola ssp. alpinum*, the sedge *Carex scirpoidea*, and the lichens *Thamnolia vermicularis* and *Flavocetraria nivalis*. *Dryas* vegetation is common on exposed, windswept areas with little winter snow cover throughout arctic and subarctic Alaska, Canada, and possibly parts of Greenland. Types dominated by *Dryas octopetala* appear to be more common at high elevation on alpine slopes and ridges, whereas types dominated by *Dryas integrifolia* are more common at high latitude in the Arctic as well as on inactive floodplains and in drained lake basins. Substrates are typically mineral and are non-acidic to circumneutral. Patch size is small to matrix-forming.
IVC Dynamics: While this alliance forms in regions of continuous permafrost, it is likely that a deep active layer, either due to ice-poor soils in the alpine or taliks surrounding waterbodies in the Arctic diminishes the effects of permafrost processes such as the formation of tussocks. The successional status of this type is thought to be intermediate. In the alpine, exposure may hold this type in a mid-seral state; however, in the Arctic, gradual accumulation of organic material may facilitate transition to a low shrubland.
IVC Environment: This alliance is common on exposed, windswept areas with little winter snow cover throughout arctic and subarctic Alaska, Canada, and possibly parts of Greenland. Types dominated by *Dryas octopetala* appear to be more common at high elevation on alpine slopes and ridges, whereas types dominated by *Dryas integrifolia* are more common at high latitude on inactive floodplains and in drained lake basins. Where *Dryas* species co-occur, *Dryas octopetala* occupies drier, more exposed microsites with *Dryas integrifolia* restricted to wetter, more protected microsites such as swales or areas of late-lying snow. Patch size is small to matrix-forming. Substrates are typically mineral and non-acidic to circumneutral.

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout arctic and subarctic Alaska, and possibly through much of arctic and subarctic Canada into Greenland.
IVC Nations: CA,GL?,IS,NO,RU,US
IVC States/Provinces: AK, LB?, MB, NT?, NU?, QC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Boggs, M. Raynolds, J. Jorgenson, in Faber-Langendoen et al. (2011)
IVC Description Author: L. Flagstad and K. Boggs
IVC Description Date: 2016-01-19
IVC Acknowledgments: M. Hall and D. Faber-Langendoen

A4335 Arctic Acidic Dwarf Willow Tundra Alliance

[ ]
Arctic Acidic Dwarf Willow Tundra Alliance
Arctic Acidic Dwarf Willow Tundra

IVC Scientific Name: Arctic Acidic Dwarf Willow Tundra Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This tundra alliance is dominated by dwarf willow shrubs and is commonly found on exposed sites in the arctic and subarctic regions of Alaska and Canada. The alliance is indicated by the dwarf willows *Salix reticulata, Salix polaris, Salix rotundifolia*, and *Salix phlebophylla*. Characteristic species include the dwarf-shrubs *Dryas octopetala* and *Cassiope tetragona*, the graminoids *Carex bigelowii* and *Arctagrostis latifolia*, the forb *Petasites frigidus*, and the lichens *Flavocetraria cucullata* and *Thamnolia vermicularis*. The erect shrub *Salix pulchra* is constant at low cover. This is a small-patch type developing in shallow, well-drained soils on non-acidic substrates underlain by permafrost.
IVC Dynamics: Sites appear to be stable. Changes in exposure or drainage are likely drivers of successional change.
IVC Environment: This tundra alliance is common in the arctic and subarctic regions of Alaska, Canada and possibly extending to Greenland. It most commonly occurs along exposed slopes, ridges, polygon summits and stabilized dunes but may also develop in wetter areas of late-lying snow, high-alpine drainage channels and solifluction lobes. Soils are shallow and well-drained in exposed sites; however, a thin organic mat may develop in moist and mesic settings. This is a small-patch type developing on non-acidic substrates underlain by permafrost.

DISTRIBUTION

IVC Geographic Range: This alliance is common in the arctic and subarctic regions of Alaska, Canada and possibly extending to Greenland.
IVC Nations: CA,GL?,IS,NO,RU,US
IVC States/Provinces: AK, LB?, MB, NT?, NU?, QC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:

IVC Primary Concept Source: L.A. Viereck, C.T. Dyrness, A.R. Batten, and K.J. Wenzlick (1992)
IVC Description Author: L. Flagstad and K. Boggs
IVC Description Date: 2016-01-20
IVC Acknowledgments: Mark Hall

A4330 Arctic Acidic Lichen - Sparse Dwarf-shrub Tundra Alliance

[ ]
Arctic Acidic Lichen - Sparse Dwarf-shrub Tundra Alliance
Arctic Acidic Lichen - Sparse Dwarf-shrub Tundra

IVC Scientific Name: Arctic Acidic Lichen - Sparse Dwarf-shrub Tundra Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This is a common group on acidic and basic substrates in the hills and mountains of arctic and subarctic Alaska and Canada, and possibly in the arctic lowlands. Common slope positions include valleys, sideslopes, and summits and ridges. The canopy is sparse due to extreme exposure and stands occur on exposed bedrock or unstable substrates. Sites are typically dry to mesic. Soils are typically thin, stony, and well-drained. Patch size is small to matrix-forming. Total vascular plant cover is less than 25%, and lichen and moss cover are variable, but often exceed 25%. Common dwarf-shrub species include *Dryas octopetala, Empetrum nigrum, Vaccinium uliginosum, Dryas integrifolia, Loiseleuria procumbens*, and *Salix phlebophylla*. Herbaceous species may include *Antennaria alpina, Anthoxanthum monticola ssp. alpinum, Minuartia obtusiloba, Carex scirpoidea, Carex microchaeta, Lupinus arcticus*, and *Festuca altaica*. Foliose and fruticose lichens may dominate and include *Umbilicaria* spp., *Rhizocarpon geographicum, Cladonia stellaris, Racomitrium lanuginosum, Flavocetraria* spp., and *Alectoria ochroleuca*.
IVC Dynamics:
IVC Environment: This is a common group on acidic and basic substrates in the hills and mountains of arctic and subarctic North America. Common slope positions include sideslopes, and summits and ridges. The canopy is sparse due to extreme exposure, exposed bedrock or unstable substrates. Sites are typically dry to mesic. Soils are typically thin, stony, and well-drained. Patch size is small to matrix-forming.

DISTRIBUTION

IVC Geographic Range: This group occurs throughout arctic and subarctic Alaska, and possibly much of Canada and into Greenland.
IVC Nations: CA,GL?,IS,NO,RU,US
IVC States/Provinces: AK, LB?, MB, NT?, NU?, QC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Boggs and M. Raynolds, in Faber-Langendoen et al. (2011)
IVC Description Author: K. Boggs
IVC Description Date: 2016-01-19
IVC Acknowledgments: M.E. Hall and D. Faber-Langendoen

A4334 Arctic Ericaceous Dwarf-shrub Tundra Alliance

[ ]

Arctic Ericaceous Dwarf-shrub Tundra Alliance
Arctic Ericaceous Dwarf-shrub Tundra

IVC Scientific Name: Arctic Ericaceous Dwarf-shrub Tundra Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This tundra alliance is defined by vegetation dominated by dwarf- to low ericaceous shrubs in the arctic and subarctic regions of Alaska and Canada. The alliance is characterized by high constancy of, and indicated by the presence of, the ericaceous shrubs *Ledum palustre ssp. decumbens, Cassiope tetragona*, and *Vaccinium vitis-idaea*. The moss *Hylocomium splendens* and lichen species in the genus *Cladonia* may exceed 20% cover. The low shrubs *Betula nana, Salix pulchra* and dwarf-shrubs *Salix phlebophylla* and *Diapensia lapponica* may reach high abundances but do not assume dominance. This alliance is common in semi-protected, mesic sites in the hills and mountains where snow cover is retained. Substrates are acidic to non-acidic; patch size is small to large.
IVC Dynamics: This type is considered to be highly stable. Fire may revert types to a graminoid-dominated system whereas low shrubs may assume dominance with amelioration of site condition (e.g., accumulation of organics, decreased exposure to wind).
IVC Environment: This is a common type on acidic and non-acidic substrates in the hills and mountains of arctic and subarctic Alaska and Canada; circumneutral sites are associated with soils derived from carbonate parent materials and areas of fluvial or wind deposition. Sites are typically mesic and somewhat protected so that snow cover is retained. Slope positions include valleys, north-facing sideslopes, and concave microtopography along summits and ridges.

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout arctic and subarctic Alaska, Canada, and possibly into Greenland.
IVC Nations: CA,GL?,IS,NO,RU,US
IVC States/Provinces: AK, LB?, MB, NT?, NU?, QC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002535** ***Empetrum nigrum - Vaccinium (uliginosum, vitis-idaea) - Rhododendron lapponicum*** **Dwarf-shrub Tundra** [Black Crowberry - (Bog Blueberry, Lingonberry) - Lapland Rosebay Dwarf-shrub Tundra] []
  GNR. MB, ON
- **CEGL002540** ***Vaccinium uliginosum - Diapensia lapponica*** **Dwarf-shrub Tundra** [Bog Blueberry - Pincushion Plant Dwarf-shrub Tundra] []
  GNR. MB

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Boggs, M. Raynolds, J. Jorgenson, in Faber-Langendoen et al. (2011)
IVC Description Author: L. Flagstad and K. Boggs
IVC Description Date: 2016-01-19
IVC Acknowledgments: M. Hall and D. Faber-Langendoen

A4333 Arctic Nonacidic Dryas Dwarf-shrub Tundra Alliance

[ ]
Arctic Nonacidic Dryas Dwarf-shrub Tundra Alliance
Arctic Nonacidic Dryas Dwarf-shrub Tundra

IVC Scientific Name: Arctic Nonacidic Dryas Dwarf-shrub Tundra Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This tundra group is defined by vegetation dominated by the dwarf, broad-leaved evergreen shrub species *Dryas octopetala* and/or *Dryas integrifolia*. In addition to its dominant species, *Dryas* dwarf-shrub tundra supports high constancy of the dwarf willows *Salix reticulata, Salix arctica, Salix phlebophylla*, the ericaceous shrubs *Cassiope tetragona* and *Vaccinium uliginosum*, the grass *Anthoxanthum monticola ssp. alpinum*, the sedge *Carex scirpoidea*, and the lichens *Thamnolia vermicularis* and *Flavocetraria nivalis*. *Dryas* vegetation is common on exposed, windswept areas with little winter snow cover throughout arctic and subarctic Alaska, Canada, and possibly parts of Greenland. Types dominated by *Dryas octopetala* appear to be more common at high elevation on alpine slopes and ridges, whereas types dominated by *Dryas integrifolia* are more common at high latitude in the Arctic as well as on inactive floodplains and in drained lake basins. Substrates are typically mineral and are non-acidic to circumneutral. Patch size is small to matrix-forming.

IVC Dynamics: While this group forms in regions of continuous permafrost, it is likely that a deep active layer, either due to ice-poor soils in the alpine or taliks surrounding waterbodies in the Arctic diminishes the effects of permafrost processes such as the formation of tussocks. The successional status of this type is thought to be intermediate. In the alpine, exposure may hold this type in a mid-seral state; however, in the Arctic, gradual accumulation of organic material may facilitate transition to a low shrubland.

IVC Environment: This group is common on exposed, windswept areas with little winter snow cover throughout arctic and subarctic Alaska, Canada, and possibly parts of Greenland. Types dominated by *Dryas octopetala* appear to be more common at high elevation on alpine slopes and ridges, whereas types dominated by *Dryas integrifolia* are more common at high latitude on inactive floodplains and in drained lake basins. Where *Dryas* species co-occur, *Dryas octopetala* occupies drier, more exposed microsites with *Dryas integrifolia* restricted to wetter, more protected microsites such as swales or areas of late-lying snow. Patch size is small to matrix-forming. Substrates are typically mineral and non-acidic to circumneutral.

DISTRIBUTION

IVC Geographic Range: This group occurs throughout arctic and subarctic Alaska, and possibly through much of arctic and subarctic Canada into Greenland.

IVC Nations: CA,GL?,IS,NO,RU,US

IVC States/Provinces: AK, LB?, MB, NT?, NU?, QC?, YT?

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002534 *Dryas integrifolia* Dwarf-shrub Tundra** [Entireleaf Mountain-avens Dwarf-shrub Tundra] [] GNR. MB, ON, QC

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K. Boggs, M. Raynolds, J. Jorgenson, in Faber-Langendoen et al. (2011)

IVC Description Author: L. Flagstad and K. Boggs

IVC Description Date: 2016-01-19

IVC Acknowledgments: M. Hall and D. Faber-Langendoen

A4336 Arctic Nonacidic Dwarf Willow Tundra Alliance

[ ]

Arctic Nonacidic Dwarf Willow Tundra Alliance

Arctic Nonacidic Dwarf Willow Tundra

IVC Scientific Name: Arctic Nonacidic Dwarf Willow Tundra Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This tundra group is dominated by dwarf willow shrubs and is commonly found on exposed sites in the arctic and subarctic regions of Alaska and Canada. The group is indicated by the dwarf willows *Salix reticulata, Salix polaris, Salix rotundifolia*, and *Salix phlebophylla*. Characteristic species include the dwarf-shrubs *Dryas octopetala* and *Cassiope tetragona*, the graminoids *Carex bigelowii* and *Arctagrostis latifolia*, the forb *Petasites frigidus*, and the lichens *Flavocetraria cucullata* and *Thamnolia vermicularis*. The erect shrub *Salix pulchra* is constant at low cover. This is a small-patch type developing in shallow, well-drained soils on non-acidic substrates underlain by permafrost.

IVC Dynamics: Sites appear to be stable. Changes in exposure or drainage are likely drivers of successional change.

IVC Environment: This tundra group is common in the arctic and subarctic regions of Alaska, Canada and possibly extending to Greenland. It most commonly occurs along exposed slopes, ridges, polygon summits and stabilized dunes but may also develop in wetter areas of late-lying snow, high-alpine drainage channels and solifluction lobes. Soils are shallow and well-drained in exposed sites; however, a thin organic mat may develop in moist and mesic settings. This is a small-patch type developing on non-acidic substrates underlain by permafrost.

DISTRIBUTION

IVC Geographic Range: This group is common in the arctic and subarctic regions of Alaska, Canada and possibly extending to Greenland.

IVC Nations: CA,GL?,IS,NO,RU,US

IVC States/Provinces: AK, LB?, MB, NT?, NU?, QC?, YT?

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: L.A. Viereck, C.T. Dyrness, A.R. Batten, and K.J. Wenzlick (1992)

IVC Description Author: L. Flagstad and K. Boggs

IVC Description Date: 2016-01-20

IVC Acknowledgments: Mark Hall

A4331 Arctic Nonacidic Lichen - Sparse Dwarf-shrub Tundra Alliance

[ ]

Arctic Nonacidic Lichen - Sparse Dwarf-shrub Tundra Alliance

Arctic Nonacidic Lichen - Sparse Dwarf-shrub Tundra

IVC Scientific Name: Arctic Nonacidic Lichen - Sparse Dwarf-shrub Tundra Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This is a common group on acidic and basic substrates in the hills and mountains of arctic and subarctic Alaska and Canada, and possibly in the arctic lowlands. Common slope positions include valleys, sideslopes, and summits and ridges. The canopy is sparse due to extreme exposure and stands occur on exposed bedrock or unstable substrates. Sites are typically dry to mesic. Soils are typically thin, stony, and well-drained. Patch size is small to matrix-forming. Total vascular plant cover is less than 25%, and lichen and moss cover are variable, but often exceed 25%. Common dwarf-shrub species include *Dryas octopetala, Empetrum nigrum, Vaccinium uliginosum, Dryas integrifolia, Loiseleuria procumbens*, and *Salix phlebophylla*. Herbaceous species may include *Antennaria alpina, Anthoxanthum monticola ssp. alpinum, Minuartia obtusiloba, Carex*

scirpoidea, Carex microchaeta, Lupinus arcticus, and *Festuca altaica*. Foliose and fruticose lichens may dominate and include *Umbilicaria* spp., *Rhizocarpon geographicum, Cladonia stellaris, Racomitrium lanuginosum, Flavocetraria* spp., and *Alectoria ochroleuca*.

IVC Dynamics:

IVC Environment: This is a common group on acidic and basic substrates in the hills and mountains of arctic and subarctic North America. Common slope positions include sideslopes, and summits and ridges. The canopy is sparse due to extreme exposure, exposed bedrock or unstable substrates. Sites are typically dry to mesic. Soils are typically thin, stony, and well-drained. Patch size is small to matrix-forming.

DISTRIBUTION

IVC Geographic Range: This group occurs throughout arctic and subarctic Alaska, and possibly much of Canada and into Greenland.
IVC Nations: CA,GL?,IS,NO,RU,US
IVC States/Provinces: AK, LB?, MB, NT?, NU?, QC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Boggs and M. Raynolds, in Faber-Langendoen et al. (2011)
IVC Description Author: K. Boggs
IVC Description Date: 2016-01-19
IVC Acknowledgments: M.E. Hall and D. Faber-Langendoen

G898 Arctic Herbaceous Tundra

[ ]

IVC Colloquial Name: Arctic Herbaceous Tundra
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4341 Arctic Acidic Nontussock Sedge Tundra Alliance** [Arctic Acidic Nontussock Sedge Tundra Alliance] []
- **A4340 Arctic Herb Tundra Alliance** [Arctic Herb Tundra Alliance] []
  This group represents mesic herbaceous vegetation dominated by perennial sedges, grasses and/or broad-leaved herbaceous species found throughout the arctic and subarctic regions of Alaska and Canada, possibly extending to Greenland.
- **A4342 Arctic Nonacidic Nontussock Sedge Tundra Alliance** [Arctic Nonacidic Nontussock Sedge Tundra Alliance] []
- **A4344 Arctic Rush/Grass, Forb, Cryptogam Tundra Alliance** [Arctic Rush/Grass, Forb, Cryptogam Tundra Alliance] []
  This alliance consists of moist tundra in the high and low Arctic, dominated by sedges with scattered prostrate and dwarf-shrubs. Dominant sedges include *Carex aquatilis var. stans, Eriophorum angustifolium*, and *Luzula arctica*; shrub species include *Betula nana, Cassiope tetragona, Dryas integrifolia, Ledum palustre, Salix pulchra*, and *Vaccinium vitis-idaea*.
- **A4343 Arctic Tussock Sedge Tundra Alliance** [Arctic Tussock Sedge Tundra Alliance] []
  This tundra alliance is defined by tussock-forming sedges often in combination with dwarf- or low shrubs developing over continuous, ice-rich permafrost throughout arctic and subarctic Alaska and Canada.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4341 Arctic Acidic Nontussock Sedge Tundra Alliance

[ ]
Arctic Acidic Nontussock Sedge Tundra Alliance
Arctic Acidic Nontussock Sedge Tundra

IVC Scientific Name: Arctic Acidic Nontussock Sedge Tundra Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4340 Arctic Herb Tundra Alliance

[ ]
Arctic Herb Tundra Alliance
Arctic Herb Tundra

IVC Scientific Name: Arctic Herb Tundra Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This mesic herbaceous group is most common in western Alaska but occurs throughout arctic and subarctic Alaska, and Canada, possibly extending to Greenland. It occurs as small patches in the alpine zones of hill and mountain slopes, upper drainages, and lowlands including drained lake basins. This group occurs on mesic sites with >25% cover of herbaceous species. Species include *Carex microchaeta ssp. nesophila* (the dominant sedge in higher elevations), *Alopecurus magellanicus, Artemisia arctica, Polygonum bistorta, Valeriana capitata, Pedicularis* spp., *Polemonium acutiflorum, Salix rotundifolia*, and *Salix reticulata*. Collapsed acidic lowland snowbeds that support *Phippsia algida* and *Alopecurus magellanicus* and drained lake basins dominated by *Calamagrostis canadensis* (western Alaska) are also included in this group.
IVC Dynamics:
IVC Environment: This mesic herbaceous group occurs on the coastal plain, arctic foothills, and typically above treeline in the boreal forests. It is thought to be associated with areas of late-lying snow and streamsides.

DISTRIBUTION

IVC Geographic Range: This group occurs throughout arctic and subarctic Alaska and Canada, possibly extending to Greenland.
IVC Nations: CA,GL?,IS,NO,RU,US
IVC States/Provinces: AK, LB?, MB, NT?, NU?, QC?, YT?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002559 *Hedysarum boreale - Arnica angustifolia - Saxifraga tricuspidata* Tundra** [Boreal Sweet-vetch - Narrowleaf Leopardbane - Three-tooth Saxifrage Tundra] []
  GNR. MB, ON?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Boggs, in Faber-Langendoen et al. (2011)
IVC Description Author: K. Boggs and M. Hall
IVC Description Date: 2016-01-19
IVC Acknowledgments:

A4342 Arctic Nonacidic Nontussock Sedge Tundra Alliance

[ ]
Arctic Nonacidic Nontussock Sedge Tundra Alliance

Arctic Nonacidic Nontussock Sedge Tundra

IVC Scientific Name: Arctic Nonacidic Nontussock Sedge Tundra Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4344 Arctic Rush/Grass, Forb, Cryptogam Tundra Alliance

[ ]
Arctic Rush/Grass, Forb, Cryptogam Tundra Alliance
Arctic Rush/Grass, Forb, Cryptogam Tundra

IVC Scientific Name: Arctic Rush/Grass, Forb, Cryptogam Tundra Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is most common in the high arctic but also occurs in the low arctic. Moist tundra types are associated with mesotopographic highs such as raised areas along drainages, the centers of high-centered polygons and the ridges of low-centered polygons. Sites are underlain by permafrost and patch size is small. Shrubs are prostrate (low) to dwarf. Low-shrub cover does not exceed 25% and dwarf-shrub cover is variable. Common low-shrub species are *Salix pulchra, Betula nana*, and *Ledum palustre ssp. decumbens* with the occurrence of *Betula nana* decreasing in the high arctic. Common dwarf-shrub species are *Vaccinium vitis-idaea, Cassiope tetragona*, and *Dryas integrifolia*. Vegetation is dominated by sedges such as *Eriophorum angustifolium, Carex aquatilis var. stans*, and *Luzula arctica* and may include *Eriophorum vaginatum*, but sites are not tussocked, Moist- to dry-site mosses and lichens are abundant, with notable presence of crustose lichens.
IVC Dynamics:
IVC Environment: This alliance is most common in the high arctic but also occurs in the low arctic. Moist tundra types are associated with mesotopographic highs such as raised areas along drainages, the centers of high-centered polygons and the ridges of low-centered polygons. Sites are underlain by permafrost and patch size is small.

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002542 *Leymus mollis - (Honckenya peploides)* Grassland** [American Dunegrass - (Seaside Sandplant) Grassland] [] GNR. MB

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Alaska Natural Heritage Program, in Faber-Langendoen et al. (2016)
IVC Description Author: L. Flagstad and T. Boucher
IVC Description Date: 2016-01-19
IVC Acknowledgments:

A4343 Arctic Tussock Sedge Tundra Alliance

[ ]
Arctic Tussock Sedge Tundra Alliance
Arctic Tussock Sedge Tundra

IVC Scientific Name: Arctic Tussock Sedge Tundra Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This tundra alliance is defined by tussock-forming sedges often in combination with dwarf- and low shrubs occurring in the arctic and subarctic regions of Alaska and Canada. The cottongrass *Eriophorum vaginatum* is the predominant tussock-former on older landscapes and acidic substrates. Tussock formation may transition to the sedge *Carex bigelowii* across younger landscapes, disturbance-prone landforms and circumneutral substrates. *Carex bigelowii* tussock tundra is considered a more productive type relative to mature *Eriophorum vaginatum* tussock tundra. *Eriophorum vaginatum* tussock tundra is characterized by high constancy of the dwarf-shrub *Vaccinium vitis-idaea* and the low shrub *Betula nana*, with the low shrub *Ledum palustre ssp. decumbens* and the forb *Rubus chamaemorus* indicating the type. By comparison, *Carex bigelowii* tussock tundra is characterized by high constancy of the dwarf-shrubs *Salix reticulata*, and *Cassiope tetragona* with the dwarf-shrub *Dryas octopetala* indicating the type. Where *Eriophorum vaginatum* and *Carex bigelowii* both contribute to tussock formation, the low shrub *Vaccinium uliginosum* and the dwarf-shrub *Empetrum nigrum*, and the forb *Polygonum bistorta*, have high constancy, with the shrub *Salix pulchra* indicating the type. For tussock tundra occurring in wet areas of Alaska's Arctic Coastal Plain, shrub abundance appears to increase on microtopographic highs such as high-centered polygons. On a broader scale, low-shrub cover appears to increase in tussock tundra with increasing slope, with the occurrence of dwarf-shrubs increasing in the subalpine. The presence of continuous, ice-rich permafrost renders sites cold and poorly-drained. Shallow organics in the intertussock hollows are underlain by silty mineral soils. Patch size is small to matrix-forming.
IVC Dynamics: Permafrost aggradation and degradation, cryoturbation, solifluction and fire are the dominant processes for this alliance. This type, especially sites dominated by *Eriophorum vaginatum*, are thought to represent a stable, late-successional stage. It is unknown if *Carex bigelowii* tussock tundra is seral to *Eriophorum vaginatum* tussock tundra.
IVC Environment: Tussock tundra is common across lowlands, terraces and shallow slopes throughout arctic and subarctic Alaska and Canada. These sites are cold, poorly-drained, with a thin organic layer over silty mineral soils, which are saturated at depth. Sites are underlain by continuous, ice-rich permafrost at depths of 30-50 cm. Patch size is small to matrix-forming.

DISTRIBUTION

IVC Geographic Range: This alliance occurs throughout arctic and subarctic Alaska and in western arctic and subarctic Canada. Its distribution in Canada needs review.

IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB, MB, NT, NU, QC, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Western Ecology Group and Alaska Natural Heritage Program
IVC Description Author: L. Flagstad and K. Boggs
IVC Description Date: 2016-01-19
IVC Acknowledgments: Mark Hall

M175 Arctic Cliff, Scree & Rock Vegetation

Falaise arctique,eboulis et vegetation rocheuse

IVC Colloquial Name: Arctic Scree, Rock & Cliff Barrens

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup occurs on talus- and bedrock-dominated sites on cliffs and rocky outcrops, and on sparsely vegetated rocky floodplains in the Arctic regions of North America. Sites are well-drained to excessively drained, rocky, and with little soil development. Sites may also occur on early-seral alpine sites near glaciers. The rocky substrate is sparsely vegetated, typically with <10% vascular cover and variable cover of mosses and lichens. Vascular species include forbs and graminoids such as *Draba* spp., *Saxifraga* spp., *Oxyria digyna, Festuca brachyphylla, Carex pyrenaica ssp. micropoda, Anthoxanthum monticola ssp. alpinum*, and *Luzula* spp. Dwarf-shrubs are uncommon. Floodplains may have seedlings of *Salix* spp., *Populus* spp., *Equisetum* spp., and *Carex* spp., but these sites are rapidly drained and not truly mesic environments, thus mesic vegetation does not persist.

IVC Geographic Range: This macrogroup occurs in arctic areas of North America from Alaska across northern Canada and possibly Greenland.

IVC Nations: CA,GL,IS,NO,RU,US

IVC States/Provinces: AK, LB?, MB, NT, NU, QC?, YT

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G616 Arctic Gravel Floodplain Vegetation []**
- **G868 Arctic Lichen Barrens []**
- **G869 Arctic Open Scree, Rock & Cliff Barrens []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2017)

IVC Description Author: G. Kittel

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G616 Arctic Gravel Floodplain Vegetation

[ ]

IVC Colloquial Name: Arctic Gravel Floodplain Vegetation

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This type includes sparsely vegetated rocky floodplains, with little soil alluvium. Nonvascular cover may be very low to absent, and vascular cover is low.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,GL,RU,US

IVC States/Provinces: AK, LB?, NT, NU, QC?, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2017)
IVC Description Author:
IVC Description Date: 2015-11-17
IVC Acknowledgments:

G868 Arctic Lichen Barrens

[ ]

IVC Colloquial Name: Arctic Lichen Barrens
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,RU,US
IVC States/Provinces: AK, LB?, NT, NU, QC?, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4326 Carbonate Mountain Barrens Alliance** [Carbonate Mountain Barrens Alliance] []
- **A4327 Noncarbonate Mountain Barrens Alliance** [Noncarbonate Mountain Barrens Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:

CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4326 Carbonate Mountain Barrens Alliance

[ ]
Carbonate Mountain Barrens Alliance
Carbonate Mountain Barrens

IVC Scientific Name: Carbonate Mountain Barrens Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,RU,US
IVC States/Provinces: AK, LB?, NT, NU, QC?, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4327 Noncarbonate Mountain Barrens Alliance

[ ]
Noncarbonate Mountain Barrens Alliance
Noncarbonate Mountain Barrens

IVC Scientific Name: Noncarbonate Mountain Barrens Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,RU,US
IVC States/Provinces: AK, LB?, NT, NU, QC?, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G869 Arctic Open Scree, Rock & Cliff Barrens

[ ]

IVC Colloquial Name: Arctic Open Scree, Rock & Cliff Barrens
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB?, MB, NT, NU, QC?, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4328 Arctic Carbonate Scree, Rock & Cliff Barrens Alliance** [Arctic Carbonate Scree, Rock & Cliff Barrens Alliance] []
- **A4329 Arctic Noncarbonate Scree, Rock & Cliff Barrens Alliance** [Arctic Noncarbonate Scree, Rock & Cliff Barrens Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4328 Arctic Carbonate Scree, Rock & Cliff Barrens Alliance

[ ]
Arctic Carbonate Scree, Rock & Cliff Barrens Alliance
Arctic Carbonate Scree, Rock & Cliff Barrens

IVC Scientific Name: Arctic Carbonate Scree, Rock & Cliff Barrens Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB?, MB, NT, NU, QC?, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4329 Arctic Noncarbonate Scree, Rock & Cliff Barrens Alliance

[ ]
Arctic Noncarbonate Scree, Rock & Cliff Barrens Alliance
Arctic Noncarbonate Scree, Rock & Cliff Barrens

IVC Scientific Name: Arctic Noncarbonate Scree, Rock & Cliff Barrens Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,GL,IS,NO,RU,US
IVC States/Provinces: AK, LB?, MB, NT, NU, QC?, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002574 Cobble - Gravel Eskers Sparse Vegetation** [Cobble - Gravel Eskers Sparse Vegetation] []
  GNR. MB, ON?
- **CEGL002573 Tundra Cobble - Gravel Flats Sparse Vegetation** [Tundra Cobble - Gravel Flats Sparse Vegetation] []
  GNR. MB, ON?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CM366 Subarctic Alpine Tundra (provisional)

Toundra alpines subarctique

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:
IVC Concept:
IVC Geographic Range:
IVC Nations: CA
IVC States/Provinces:

ADDITIONAL INFORMATION

CNVC Status: Provisional
CNVC Classification Comments: IVC treats subalpine arctic as a component of M175 within D044.
Groups in Canada:

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

5. AQUATIC VEGETATION

Open freshwater and saltwater wetlands dominated by aquatic vegetation, either rooted with leaves rising up to or near the surface, or floating freely on the water surface. Stands typically have surface water, generally up to 2 m in depth, along ocean, lake, pond, and river margins in non-tidal, tidal and intertidal habitats.

5.A. Saltwater Aquatic Vegetation

Saltwater Aquatic Vegetation occurs in shallow to deep saline habitats where emergent vegetation is <10% cover, and submerged or floating aquatic plants have >1% cover, occurring around the globe from the equator to the polar regions.

5.A.2. Benthic Macroalgae Saltwater Vegetation

The vegetation includes subtidal or intertidal bottoms and other areas dominated by attached macroalgae, including kelp, intertidal fucoids, and calcareous algae, which are usually submersed within or extend to the surface of the water column, though they may be exposed during low tides.

Macrogroups in Canada:

- **M104 Temperate Atlantic Intertidal Shore [Rives intertidales tempérées de l'Atlantique]**
- **M106 Temperate Pacific Seaweed Intertidal Vegetation [Algues intertidales des eaux tempérées du Pacifique]**
  This macrogroup is of marine algae living on tidal flats and rocky areas in the near-shore intertidal zone of the temperate North America Pacific coast. Some dominant species include *Enteromorpha* spp., *Fucus distichus, Postelsia palmiformis*, and *Vaucheria longicaulis*.

M104 Temperate Atlantic Intertidal Shore

Rives intertidales tempérées de l'Atlantique

IVC Colloquial Name: Temperate Atlantic Intertidal Shore
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:
IVC Concept:
IVC Geographic Range:
IVC Nations: CA,MX,US
IVC States/Provinces: CT, DE, FL, LB, MA, MD, ME, NB, NC, NF, NH, NJ, NS, NY, ON?, QC?, RI, TAM, TX, VA

ADDITIONAL INFORMATION

CNVC Status: Provisional
CNVC Classification Comments:
Groups in Canada:
- **G387 North American North Atlantic Intertidal Shore []**

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al.
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G387 North American North Atlantic Intertidal Shore

[ ]

IVC Colloquial Name: North American North Atlantic Intertidal Shore
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This group encompasses North American North Atlantic intertidal zones dominated by macroalgae. The substrate may be solid rock, mud, sand, and/or silt, with rock or coarse substrates generally marking the more exposed habitats that can experience extremes of exposure to winds, waves, currents, and ice-scour. Diagnostic species on rocky substrates include *Chondrus crispus, Fucus vesiculosus, Fucus evanescens, Fucus spiralis, Ascophyllum nodosum*, and *Laminaria* spp. Sandflats and mudflats are usually located in quiet pockets of bays and protected by headlands. Sand-sized particles are mixed with silt and clay. In the summer, *Enteromorpha intestinalis* can cover these mudflats. Other characteristic species include *Enteromorpha prolifera, Ulva lactuca, Rhizoclonium riparium, Ruppia maritima*, and *Zostera marina*. Mudflats and sandflats tend to be more sparsely vegetated than the rocky intertidal habitats.
IVC Dynamics: Regular tidal flooding alternately exposes and inundates this vegetation; macroalgae are attached to rock surfaces with holdfasts. Wave exposure, battering by flood debris, and desiccation all have varying effects on community composition and structure. Overturning of boulders by wave action are re-colonized by vegetative regrowth or by spore dispersal (Sousa 1979). Severe ice-scouring also acts to remove vegetation from rocky shores (McCook and Chapman 1997).
IVC Environment: Saltwater intertidal habitats on the North Atlantic shores of North America. Tidal amplitude varies with location, as does the degree of exposure to winds, waves, currents, and ice-scour. *Climate:* Temperate to sub-boreal oceanic.

DISTRIBUTION

IVC Geographic Range: Vegetation in this group ranges from North Carolina north into Canada.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, LB, MA, MD, ME, NB, NC, NF, NH, NJ, NS, NY, ON?, QC?, RI, VA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, area of occupancy moderate, and threats moderate. Effects of invasive species and sea level rise needs further review. Other threats include recreation and development More remote rocky shores in Maine are less threatened.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4132 North Atlantic Intertidal Mudflat Alliance** [North Atlantic Intertidal Mudflat Alliance] []
  This alliance comprises tidal mudflats on the North Atlantic Coast; they are largely unvegetated but may support *Ulva lactuca* on the surface intermittently.
- **A4133 North Atlantic Tidal Rocky Shore Alliance** [North Atlantic Tidal Rocky Shore Alliance] []
  This algal vegetation occurs on rocky intertidal habitats of the North Atlantic Coast.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: B. Brown (1993a); H.S. Conard (1935)
IVC Description Author: S.C. Gawler and L.A. Sneddon
IVC Description Date: 2015-05-08
IVC Acknowledgments:

A4132 North Atlantic Intertidal Mudflat Alliance

[ ]
North Atlantic Intertidal Mudflat Alliance
North Atlantic Intertidal Mudflat

IVC Scientific Name: North Atlantic Intertidal Mudflat Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This is a saline (>18.0 ppt) intertidal mudflat community that typically lacks vegetation. *Ulva lactuca* may be present or prominent. The substrate consists of silt or sand that is rich in organic matter and poorly-drained at low tide. These saline intertidal mudflats extend along the North Atlantic Coast from Maine to New York.
IVC Dynamics: Regular tidal flooding.
IVC Environment: Intertidal mudflat with varying amounts of sand.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from the Canadian Maritime Provinces to the mid-Atlantic.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, MA, MD, ME, NH, NJ, NY, RI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L. Sneddon, K. Metzler and M.G. Anderson, in Faber-Langendoen et al. (2014)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A4133 North Atlantic Tidal Rocky Shore Alliance

[ ]
North Atlantic Tidal Rocky Shore Alliance
North Atlantic Tidal Rocky Shore

IVC Scientific Name: North Atlantic Tidal Rocky Shore Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This algal vegetation occurs on rocky tidal habitats of the North Atlantic Coast. It spans the littoral zone between mean high tide and mean low tide as well as the sublittoral zone. This habitat is characterized by alternating submergence by tidal flooding and exposure to air. Substrate is composed of rocks, boulders, and cobbles. *Ascophyllum nodosum* and *Fucus* spp. are the most characteristic algae in the intertidal zones. Subtidal kelp beds are included in this alliance, in which *Laminaria agardhii, Alaria* spp., and *Chondrus crispus* are dominant and conspicuous. Invertebrates are important members of this community, including *Mytilus edulis* (blue mussel), *Semibalanus balanoides* (barnacles), *Littorina* spp., (periwinkles), and *Tectura testudinalis* (limpets), as well as species of *Asterias* (starfish).
IVC Dynamics: The rocky substrate is regularly flooded by tides, and is exposed to high wave action and storms. The subtidal zone is usually not exposed, but tidal flows can be substantial. Invertebrates are important members of this alliance, including *Mytilus edulis* (blue mussel), *Semibalanus balanoides* (barnacles), *Littorina* spp., (periwinkles), and *Tectura testudinalis* (limpets), as well as species of *Asterias* (starfish). The upper limit of this alliance is determined by desiccation.
IVC Environment: The rocky substrate is regularly flooded by tides, and is exposed to high wave action and storms. The subtidal zone is usually not exposed, but tidal flows can be substantial.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from the Canadian Maritime Provinces to the mid-Atlantic.
IVC Nations: CA,US
IVC States/Provinces: CT, MA, ME, NB?, NH, NS?, NY, ON?, QC?, RI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006344 *Laminaria agardhii* Tidal Algal Nonvascular Vegetation** [Common Southern Kelp Tidal Algal Nonvascular Vegetation] []
  GNR. CT, MA, ME, NB?, NH, NS?, NY, RI
- **CEGL006341 *Ascophyllum nodosum - Fucus vesiculosus* Tidal Algal Nonvascular Vegetation** [Yellow Tang - Black Tang Tidal Algal Nonvascular Vegetation] []
  GNR. CT, MA, ME, NB?, NH, NY, ON?, QC?, RI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L. Sneddon, in Faber-Langendoen et al. (2014)
IVC Description Author: L. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M106 Temperate Pacific Seaweed Intertidal Vegetation

Algues intertidales des eaux tempérées du Pacifique

IVC Colloquial Name: Temperate Pacific Seaweed Intertidal Vegetation

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup consists of algal communities on coastal flats and intertidal rocky zones found along the north Pacific coast from Kodiak Island and Cook Inlet, Alaska, south to central California. Algae are the dominant vegetation on mud or gravel flats where little vascular vegetation is present due to the daily (in some cases twice daily) tidal flooding of salt or brackish water. Dominant species include *Enteromorpha* spp., *Fucus distichus, Postelsia palmiformis*, and *Vaucheria longicaulis*. Habitats are tidal flats of mud or gravel, rocky intertidal pools and reefs. These habitats are exposed and inundated daily and sometimes twice daily.

IVC Geographic Range: This macrogroup is found along the north Pacific Coast from Kodiak Island and Cook Inlet, Alaska, south to central California.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G385 North American Pacific Intertidal Algal Flat []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: K. Boggs, G. Kittel, M.S. Reid

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G385 North American Pacific Intertidal Algal Flat

[ ]

IVC Colloquial Name: North American Pacific Intertidal Algal Flat

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group consists of algal communities on coastal flats found along the north Pacific Coast from Kodiak Island and Cook Inlet, Alaska, south to central California. Tidal flats form a narrow band along oceanic inlets and are more extensive at the mouths of larger rivers. Algae are the dominant vegetation on mud or gravel flats where little vascular vegetation is present due to the daily (in some cases twice daily) tidal flooding of salt or brackish water. Characteristic species include *Vaucheria longicaulis* and *Enteromorpha* spp. Vascular species are sparse, if present, and may include salt-tolerant species such as *Eleocharis palustris, Salicornia* spp., *Plantago maritima, Glaux maritima*, and other plants common to lower salt marshes; cover is less than 10%. The dominant processes are tectonic uplift or subsidence, isostatic rebound, and sediment deposition.

IVC Dynamics: Exposed daily at low tide.

IVC Environment: *Soil/substrate/hydrology:* Tidal flats form a narrow band along oceanic inlets and are more extensive at the mouths of larger rivers. Algae are the dominant vegetation on mud or gravel flats where little vascular vegetation is present due to the daily (in some cases twice daily) tidal flooding of salt or brackish water. Environmental information compiled in part from Viereck et al. (1992), Holland and Keil (1995), and Boggs (2002).

DISTRIBUTION

IVC Geographic Range: This group is found along the north Pacific Coast from Kodiak Island and Cook Inlet, Alaska, south to central California.

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: K. Boggs and G. Kittel, in Faber-Langendoen et al. (2011)
IVC Description Author: K. Boggs, G. Kittel, M.S. Reid
IVC Description Date: 2015-11-23
IVC Acknowledgments:

5.A.3. Benthic Vascular Saltwater Vegetation

The vegetation includes subtidal or intertidal bottoms of rooted vascular vegetation beds commonly dominated by any number of seagrass or eelgrass species, including species of *Cymodocea, Halodule, Thalassia, Halophila, Vallisneria, Ruppia, Phyllospadix*, and *Zostera*, and which are usually submersed in the water column or floating on the surface, or exposed during low tides.

Macrogroups in Canada:

- **M184 Temperate Pacific Seagrass Intertidal Vegetation [Herbes marines intertidales des eaux tempérées du Pacifique]**
  This macrogroup contains the sub-tidal and intertidal zones of temperate North America Pacific Coast dominated by seagrass and surfgrass and other vascular species, including *Zostera marina* and *Phyllospadix scouleri*.
- **M183 Temperate Eel-grass Vegetation [Végétation d'eaux tempérées composée de zostères]**
  This macrogroup encompasses submersed herbaceous vegetation which occurs in the world's temperate coastal waters. *Zostera marina* is dominant and occurs in nearly pure stands, which are rooted in the substrate in shallow, mostly brackish waters.
- **M186 Ditchgrass Saline Aquatic Vegetation [Végétation aquatique d'eaux salines composée de ruppies maritimes (Ruppia maritima)]**
  This subtidal brackish submerged vegetation occurs widespread in temperate and tropical areas. It grows on the shallow bottom of upper reaches of estuaries and lower reaches of tidal creeks, bayous and rivers.

M184 Temperate Pacific Seagrass Intertidal Vegetation

Herbes marines intertidales des eaux tempérées du Pacifique

IVC Colloquial Name: Temperate Pacific Seagrass Intertidal Vegetation
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup consists of marine near-shore intertidal beds dominated by macrophytic algae and marine aquatic angiosperms. Beds are dominated by *Zostera marina* and *Phyllospadix scouleri*. Algae consists of *Fucus distichus, Postelsia palmiformis*, and other green and brown algae species. Common substrates include marine silts, but may also include exposed bedrock and cobble, where many algal species become attached with holdfasts. Stands occur in the subtidal/lower intertidal where the water is clear most of the time to allow for photosynthesis. They occur throughout intertidal zones with clear water along the temperate North American Pacific Coast, from Baja California north to Bristol Bay, Alaska. Stands occur in subtidal zones that are never exposed, as well as intertidal zones exposed to air.

IVC Geographic Range: This macrogroup is found in along the temperate North America Pacific Coast, from Baja California, Mexico, north through California, Oregon, Washington, British Columbia and north into the Gulf of Alaska, Cook Inlet, and Bristol Bay coasts.

IVC Nations: CA,MX,US

IVC States/Provinces: AK, BC, BCN, CA, OR, WA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G373 Temperate Pacific Seagrass Bed []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: P. Comer, G. Kittel, K. Boggs, T. Keeler-Wolf

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G373 Temperate Pacific Seagrass Bed

[ ]

IVC Colloquial Name: Temperate Pacific Seagrass Bed
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group consists of marine near-shore beds dominated by macrophytic algae and marine aquatic angiosperms. They are found throughout intertidal zones with clear water in bays, inlets and lagoons in the coastal areas of the North Pacific Coast, from California north through Oregon, Washington, British Columbia and north into the Gulf of Alaska, Cook Inlet, and Bristol Bay coasts. Subtidal portions are never exposed, while intertidal areas support species that can tolerate exposure to the air. Common substrates include marine silts, but may also include exposed bedrock and cobble, where many algal species become attached with holdfasts. Stands occur in the subtidal/lower intertidal where the water is clear most of the time to allow for photosynthesis. Substrate is usually marine silts but may be cobble. Beds are dominated by *Zostera marina, Phyllospadix scouleri, Fucus distichus, Postelsia palmiformis*, and a host of green and brown algae. Adjacent subtidal zones, where rocky substrates are common, support undersea kelp "forest."

IVC Dynamics:

IVC Environment: *Soil/substrate/hydrology:* This group is found in intertidal zones with clear water in bays, inlets and lagoons. Subtidal portions are never exposed, while intertidal areas support species that can tolerate exposure to the air. Common substrates include marine silts, but may also include exposed bedrock and cobble, where many algal species become attached with holdfasts. Stands occur in the subtidal/lower intertidal where the water is clear most of the time to allow for

photosynthesis. Description combined from Barbour and Major (1988), Viereck et al. (1992), Holland and Keil (1995), and Boggs (2002).

DISTRIBUTION

IVC Geographic Range: This group is found throughout intertidal zones with clear water in bays, inlets and lagoons in the coastal areas of the North Pacific Coast, from California north through Oregon, Washington, British Columbia and north into the Gulf of Alaska, Cook Inlet, and Bristol Bay coasts.

IVC Nations: CA,MX,US

IVC States/Provinces: AK, BC, BCN, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: range moderately extensive, short-term declines moderate, area of occupancy moderate, and threats moderate. Effects of invasive species and sea level rise needs further review, as well as effects of poor landscape context.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: C. Den Hartog (2003)

IVC Description Author: P. Comer, G. Kittel, K. Boggs, T. Keeler-Wolf

IVC Description Date: 2015-11-23

IVC Acknowledgments:

M183 Temperate Eel-grass Vegetation

Végétation d'eaux tempérées composée de zostères

IVC Colloquial Name: Temperate Eel-grass Vegetation

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup encompasses submersed herbaceous vegetation which occurs in the world's temperate coastal waters. *Zostera marina* is dominant and occurs in nearly pure stands, which are rooted in the substrate in shallow brackish to oligohaline waters. The depth of the beds is determined by low tide level at the upper end and light penetration at the lower end, the latter being a function of water depth and turbidity. This vegetation is threatened by eutrophication, turbidity, and dredging.

IVC Geographic Range: This macrogroup occurs in temperate estuaries and coastal waters of North America, Europe, North Africa, China, Korea, and Japan (Green and Short 2003).

IVC Nations: BG,CA,CN,DE,DK,DZ,EE,ES,FI,FR,GB,GL,GR,IE,IS,IT,JP,KP,KR,LT,LV,LY,MA,MX,NL,NO,PL,PT,RO,RU,SE,TN,TR,UA,US

IVC States/Provinces: BC, CA, CT, DE, LB, MA, MB, MD, ME, NB, NC, NF, NH, NJ, NS, NU, NY, ON, OR, PE, QC, RI, VA, WA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G380 North Atlantic Seagrass Bed []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: C. Den Hartog (2003)

IVC Description Author: C.W. Nordman

IVC Description Date: 2014-10-15

IVC Acknowledgments: The previous work of C. Den Hartog, E.P. Green and F.T. Short, G.W. Thayer, W.J. Kenworthy and M.S. Fonseca has been very useful.

G380 North Atlantic Seagrass Bed

[ ]

IVC Colloquial Name: North Atlantic Seagrass Bed

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This seagrass bed type includes submersed herbaceous vegetation which occurs in the North Atlantic region's coastal waters. *Zostera marina* is dominant and occurs in nearly pure stands, which are rooted in the substrate in shallow brackish to oligohaline waters. The depth of the beds is determined by low tide level at the upper end and light penetration at the lower end, the latter being a function of water depth and turbidity. This vegetation is threatened by eutrophication, turbidity, and dredging.

IVC Dynamics: During the 1930s, wasting disease caused very large declines of *Zostera marina*. Eutrophication causes algal blooms, which decrease the amount of light that reaches seagrasses. Seagrasses are vulnerable to dredging, including damage from clam, oyster, and scallop dredging (Koch and Orth 2003, Grech et al. 2012).

IVC Environment: Water salinity ranges from oligohaline at the mouths of tidal rivers to brackish mesohaline waters. The depth of the beds is determined by low tide level at the upper end and light penetration at the lower end, the latter being a function of water depth and turbidity. The beds generally occur in areas with only moderate wave action where salinity fluctuations are minor. Eel-grass beds tend to stabilize and enrich substrate and provide habitat for epiphytes and other marine organisms.

DISTRIBUTION

IVC Geographic Range: This type occurs in temperate estuaries and coastal waters of Atlantic North America.

IVC Nations: CA,US

IVC States/Provinces: CT, DE, LB, MA, MD, ME, NB, NC, NF, NH, NJ, NS, NY, PE, RI, VA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process. Factors considered by the expert reviewers include: JAL: much lost across its range and continues to experience large die offs so seems more vulnerable than G4. G3G4 maybe. or G3 DFL2. Needs range-wide review, before raising rank, given wide range of type. range moderately extensive, area of occupancy moderate, and threats moderate. Effects of sea level rise needs further review.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4678 *Zostera marina* Atlantic Aquatic Vegetation Alliance** [Seawrack Atlantic Aquatic Vegetation Alliance] []
  This seagrass bed type includes submersed herbaceous vegetation which occurs in the North Atlantic region's coastal waters. *Zostera marina* is dominant and occurs in nearly pure stands, which are rooted in the substrate in shallow, mostly brackish waters.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: C. Den Hartog (2003)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

A4678 Seawrack Atlantic Aquatic Vegetation Alliance

[ ]
Zostera marina Atlantic Aquatic Vegetation Alliance
North Atlantic Eelgrass Bed

IVC Scientific Name: *Zostera marina* Atlantic Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This seagrass bed type includes submersed herbaceous vegetation which occurs in the North Atlantic region's coastal waters. *Zostera marina* is dominant and occurs in nearly pure stands, which are rooted in the substrate in shallow brackish to oligohaline waters. The depth of the beds is determined by low tide level at the upper end and light penetration at the lower end, the latter being a function of water depth and turbidity. This vegetation is threatened by eutrophication, turbidity, and dredging.
IVC Dynamics: During the 1930s, wasting disease caused very large declines of *Zostera marina*. Eutrophication causes algal blooms, which decrease the amount of light that reaches seagrasses. Seagrasses are vulnerable to dredging, including damage from clam, oyster, and scallop dredging (Koch and Orth 2003, Grech et al. 2012).
IVC Environment: Water salinity ranges from oligohaline at the mouths of tidal rivers to brackish mesohaline waters. The depth of the beds is determined by low tide level at the upper end and light penetration at the lower end, the latter being a function of water depth and turbidity. The beds generally occur in areas with only moderate wave action where salinity fluctuations are minor. Eel-grass beds tend to stabilize and enrich substrate and provide habitat for epiphytes and other marine organisms.

DISTRIBUTION

IVC Geographic Range: This type occurs in temperate estuaries and coastal waters of Atlantic North America.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, LB, MA, MD, ME, NB, NC, NF, NH, NJ, NS, NY, PE, RI, VA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021a)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

M186 Ditchgrass Saline Aquatic Vegetation

Végétation aquatique d'eaux salines composée de ruppies maritimes (Ruppia maritima)

IVC Colloquial Name: Ditchgrass Saline Aquatic Vegetation

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup occurs globally in tropical and temperate brackish estuarine waters. In the western Atlantic Ocean, this widely distributed macrogroup includes estuarine and marine beds of the Atlantic and Gulf coasts, from New England to Texas and Florida. *Ruppia maritima* is the only seagrass capable of growing in freshwater and is therefore often found in the oligohaline to mesohaline (i.e., brackish) upper reaches of estuaries and lower reaches of tidal creeks, bayous and rivers. Because it often behaves as an annual, the distribution and abundance of *Ruppia maritima* is often shifting both spatially and temporally. Other species characteristic of the brackish to fresh estuarine waters, include *Zannichellia palustris* and *Stuckenia pectinata*, which also occur globally. Rarely, some salt-tolerant species of otherwise freshwater genera may occur.

IVC Geographic Range: This macrogroup occurs in temperate and tropical coastal brackish waters. Its range includes coastal areas of the Atlantic Ocean, Gulf of Mexico, Baltic Sea, Mediterranean Sea, Adriatic Sea, Pacific Ocean, Sea of Japan, and Indian Ocean (Ito et al. 2010).

IVC Nations: AU,CA,CN,DE,DK,EE,ES,FK,FR,GB,HR,IN,JP,KR,MA,MX,RU,SE,TW,US,VU

IVC States/Provinces: AL, CT, DE, FL, GA, LA, MA, MD, ME, MS, NC, NH, NJ, NY, QC, RI, SC?, TX, VA

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G383 Widgeongrass Bed []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: C. Nordman, in Faber-Langendoen et al. (2014)

IVC Description Author: C.W. Nordman

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G383 Widgeongrass Bed

[ ]

IVC Colloquial Name: Widgeongrass Bed

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group occurs in tropical and temperate brackish estuarine waters. In the western Atlantic Ocean, this widely distributed group includes estuarine and marine beds of the Atlantic and Gulf coasts, from New England to Texas and Florida. *Ruppia maritima* is the only seagrass capable of growing in freshwater and is therefore often found in the oligohaline to mesohaline (i.e., brackish) upper reaches of estuaries and lower reaches of tidal creeks, bayous and rivers. Because it often behaves as an annual, the distribution and abundance of *Ruppia maritima* is often shifting both spatially and temporally. Other species characteristic of the brackish to fresh estuarine waters include *Zannichellia palustris* and *Stuckenia pectinata*. Rarely, some salt-tolerant species of otherwise freshwater genera may occur.

IVC Dynamics: Because it often behaves as an annual, the distribution and abundance of *Ruppia maritima* is often shifting both spatially and temporally. It is tolerant of freshwater, so can grow in the oligohaline conditions that other seagrasses cannot tolerate. *Zannichellia palustris* is an annual plant that completes its life cycle in the spring and early summer. In some areas it can complete a second life cycle in the fall.

IVC Environment: *Climate:* This group occurs in tropical and temperate brackish estuarine waters. *Soil/substrate/hydrology:* This submerged vegetation is found in upper reaches of estuaries and lower reaches of tidal creeks, bayous and rivers.

DISTRIBUTION

IVC Geographic Range: In the western Atlantic Ocean, this widely distributed group includes estuarine and marine beds of the Atlantic and Gulf coasts, from New England to Texas and Florida.

IVC Nations: CA,MX,US

IVC States/Provinces: AL, CT, DE, FL, GA?, LA, MA, MD, ME, MS, NC, NH, NJ, NY, QC, RI, SC?, TX, VA

IVC Omernik Ecoregions: 8.1.7.59:C, 8.1.8.82:C, 8.3.1.64:C, 8.3.5.65:C, 8.5.1.63:C, 8.5.2.73:C, 8.5.3.75:C, 8.5.4.84:C, 9.5.1.34:C, 15.4.1.76:C

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1769 *Ruppia maritima* Western Atlantic Seagrass Alliance** [Widgeongrass Western Atlantic Seagrass Alliance] []
  This subtidal brackish submerged vegetation, dominated by *Ruppia maritima*, is widespread in the Western Atlantic region. It grows on the shallow bottom of upper reaches of estuaries and lower reaches of tidal creeks, bayous, and rivers.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: C. Den Hartog (2003)

IVC Description Author: C.W. Nordman

IVC Description Date: 2015-05-08

IVC Acknowledgments:

A1769 Widgeongrass Western Atlantic Seagrass Alliance

[ ]

Ruppia maritima Western Atlantic Seagrass Alliance

Western Atlantic-Gulf Coast Seagrass

IVC Scientific Name: *Ruppia maritima* Western Atlantic Seagrass Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This subtidal brackish submerged vegetation, dominated by *Ruppia maritima*, is widespread in the Western Atlantic region. *Ruppia maritima* is the only seagrass capable of growing in freshwater and is therefore often found in the oligohaline to mesohaline (i.e., brackish) upper reaches of estuaries and lower reaches of tidal creeks, bayous and rivers. Because it often behaves as an annual, the distribution and abundance of *Ruppia maritima* is often shifting both spatially and temporally.

IVC Dynamics: Because it often behaves as an annual, the distribution and abundance of *Ruppia maritima* is often shifting both spatially and temporally. It is tolerant of freshwater, so can grow in the oligohaline conditions that other seagrasses cannot tolerate.

IVC Environment: *Climate:* This type occurs in temperate Atlantic brackish estuarine waters.

Soil/substrate/hydrology: This submerged vegetation is found in upper reaches of estuaries and lower reaches of tidal creeks, bayous and rivers. It is mainly found at depths of 2-4 m (Kantrud 1991).

DISTRIBUTION

IVC Geographic Range: In the western Atlantic Ocean, this widely distributed group includes estuarine and marine beds of the Atlantic and Gulf coasts, from New England to Texas and Florida.

IVC Nations: CA,US

IVC States/Provinces: AL, CT, DE, FL, GA?, LA, MA, MD, ME, MS, NC, NH, NJ, NY, QC, RI, SC?, TX, VA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: L.A. Sneddon
IVC Description Author: D. Faber-Langendoen, C. Nordman, and L. Sneddon
IVC Description Date:
IVC Acknowledgments:

5.B. Freshwater Aquatic Vegetation

Freshwater Aquatic Vegetation occurs in shallow to deep freshwater habitats where emergent vegetation is <10% cover, and submerged or floating aquatic plants have >1% cover, occurring around the globe from the equator to the polar regions.

5.B.2. Temperate to Polar Freshwater Aquatic Vegetation

Temperate to Polar Freshwater Aquatic Vegetation occurs in shallow to deep freshwater habitats (e.g., lakes, ponds, canals, streams, rivers, and freshwater portions of estuaries) where emergent vegetation is <10% cover, and submerged or floating aquatic plants have >1% cover, occurring around the globe in both hemispheres, from the tropics north and south to the polar regions.

Macrogroups in Canada:

- **M108 Eastern North American Freshwater Aquatic Vegetation [Végétation aquatique d'eau douce de l'est de l'Amérique du Nord]**
  This macrogroup consists of marshes dominated by floating-leaved and/or submerged vegetation of permanently flooded shallow freshwater and of permanently flooded inland saline water throughout temperate and subboreal eastern North America, east of the Rocky Mountains.
- **M109 Western North American Freshwater Aquatic Vegetation [Végétation aquatique d'eau douce de l'ouest de l'Amérique du Nord]**
  This macrogroup consists of rooted and floating freshwater aquatic herbaceous vegetation dominated by western U.S. aquatic species *Azolla filiculoides, Azolla microphylla, Nuphar polysepala, Nymphaea tetragona, Stuckenia striata*, and several other cosmopolitan species, found throughout the temperate regions of western North America.
- **M871 Boreal Freshwater Aquatic Vegetation [Végétation aquatique d'eau douce des zones arctique et boréale nordique]**
  Aquatic freshwater vegetation found in shallow to deep water within the Arctic and Boreal climate zones of Alaska, Canada and Greenland with dominant species such as *Isoetes tenella, Limosella aquatica, Potamogeton* spp., *Ranunculus* ssp., and *Sparganium angustifolium*.
- **M401 North American Temperate Ruderal Aquatic Vegetation []**
  This ruderal aquatic vegetation occurs in freshwater semipermanently or permanently flooded wetlands of lakes, rivers, and ponds dominated by floating or submerged herbaceous vegetation.

M108 Eastern North American Freshwater Aquatic Vegetation

Végétation aquatique d'eau douce de l'est de l'Amérique du Nord

IVC Colloquial Name: Eastern North American Freshwater Aquatic Vegetation

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: Aquatic beds can be found across a large part of North America, ranging from boreal, interior Canada (Saskatchewan, Manitoba, Ontario) south through the Great Plains to the Gulf Coastal Plain in Texas and east to the Atlantic. Stands in this macrogroup have rooted aquatic herbaceous vegetation, are permanently flooded with water generally less than 2 m deep, and are subject to low to moderate waves and currents. Emergent vegetation has <10% total cover. Common aquatic plant species include *Brasenia schreberi, Ceratophyllum demersum, Eleocharis robbinsii, Elodea canadensis, Eriocaulon aquaticum, Heteranthera dubia, Heteranthera reniformis, Bidens beckii, Myriophyllum* spp., *Najas flexilis, Nuphar advena, Nuphar microphylla, Nuphar variegata, Nymphaea odorata, Nymphaea tetragona* (in central Canada), *Nymphoides aquatica, Nymphoides cordata, Potamogeton amplifolius, Potamogeton epihydrus, Potamogeton friesii, Potamogeton gramineus, Potamogeton natans, Potamogeton perfoliatus, Potamogeton nodosus, Potamogeton richardsonii, Potamogeton zosteriformis, Ruppia maritima, Stuckenia pectinata, Utricularia* spp., and *Vallisneria americana*. *Zannichellia palustris* is a common component in the Great Plains. Alkaline sites may contain *Chara* spp. Water salinity varies from fresh to saline, with the saline and brackish sites tending to occur in the Great Plains.

IVC Geographic Range: These aquatic beds can be found across a large part of eastern North America, ranging from boreal, interior Canada (Saskatchewan, Manitoba, Ontario) south through the Great Plains to the Gulf Coast and east to the Atlantic. Stands occur from near sea level to 1525 m (5000 feet) elevation in the Great Plains.

IVC Nations: CA,MX?,US

IVC States/Provinces: AB, AL, AR, CA, CT, DC, DE, FL, GA, IA, IL, IN, KS, KY, LA, MA, MB, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NU, NY, OH, OK, ON, PA, QC, RI, SC, SD, SK, TN, TX, VA, VT, WI, WV, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G114 Eastern North American Freshwater Aquatic Vegetation []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: J. Drake

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G114 Eastern North American Freshwater Aquatic Vegetation

[ ]

IVC Colloquial Name: Eastern North American Freshwater Aquatic Vegetation

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Submergent marshes can be found across a large part of North America, ranging from boreal, interior Canada (Saskatchewan, Manitoba, Ontario) south through the Great Plains to the Gulf Coastal Plain in Texas and east to the Atlantic from Virginia to Maine. Stands in this group have rooted aquatic herbaceous vegetation, are permanently flooded with water generally less than 2 m deep, and are subject to low to moderate waves and currents. Water salinity varies from fresh to saline, with the saline and brackish sites tending to occur in the Great Plains. Submergent and floating-leaved aquatics dominate submergent marshes. Emergent vegetation has <10% total cover. Total vegetation cover ranges from sparse to dense.

IVC Dynamics: These submergent marshes are typically part of a complex of wetland communities. They tend to be stable if hydrologic conditions remain stable. Emergent marsh, shrub wetlands, and/or wet meadows are typically on the upland side of

these communities. Submergent marshes may form the center (deepest part) of wetlands. Other communities not typically part of terrestrial vegetation classifications tend to occur in deeper or higher energy settings.

IVC Environment: *Climate:* This aquatic vegetation can be found from boreal, through cool temperate, to warm temperate climates. *Soil/substrate/hydrology:* Submergent marshes can be found in lakes, ponds, low-gradient river channels, and oxbows and backwaters on rivers or streams. This includes the shoreline and estuaries along the Great Lakes. Surface soils are typically muck in richer sites, but there is substantial variance across the range of this group. Muck can be over nearly any material, including bedrock. Submergent vegetation can also root in mineral soils. Most sites have freshwater, but in closed basins in the Great Plains where evaporation is high, the water can be brackish or even saline. Stands of submergent marshes are flooded in all but the driest years. Water depth varies from several centimeters to 2 m. A few stands in the Great Plains dry out for part of most years, but water is present long enough to support the characteristic species. Submergent marsh vegetation occurs where wave and current action is minor to moderate. Frequent fast water or heavy waves prevent these vegetation communities from persisting.

DISTRIBUTION

IVC Geographic Range: These submergent marshes can be found across a large part of North America, ranging from boreal, interior Canada (Saskatchewan, Manitoba, Ontario) south through the Great Plains to coastal Texas and east throughout the United States and southern Canada to the Atlantic Ocean. Stands occur from near sea level to 1525 m (5000 feet) elevation in the Great Plains.

IVC Nations: CA,US

IVC States/Provinces: AB, AL, AR, CA, CT, DE, FL, GA, IA, IL, IN, KS, KY, LA, MA, MB, MD, ME, MI, MN, MO, MS, MT, NC, ND, NE, NH, NJ, NU, NY, OH, OK, ON, PA, QC, RI, SC, SD, SK, TN, TX, VA, VT, WI, WV, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4147 *Lemna* spp. - *Wolffia* spp. - *Spirodela polyrrhiza* Aquatic Vegetation Alliance** [Duckweed species - Watermeal species - Common Duckmeat Aquatic Vegetation Alliance] []
  This alliance is widespread across temperate eastern North America where floating, non-rooted species, typically *Lemna* spp., *Spirodela polyrrhiza*, and *Wolffia* spp., dominate flooded areas with little emergent or submergent vegetation.
- **A3542 *Myriophyllum* spp. Aquatic Vegetation Alliance** [Water-milfoil species Aquatic Vegetation Alliance] []
  This alliance consists of submergent aquatic vegetation dominated by native *Myriophyllum* spp. in the eastern United States and southern Canada.
- **A4064 *Nymphaea odorata - Nuphar* spp. - *Brasenia schreberi* Aquatic Vegetation Alliance** [American White Water-lily - Pond-lily species - Watershield Aquatic Vegetation Alliance] []
  This submerged aquatic alliance, common throughout most of the eastern and central United States and adjacent Canadian provinces, is dominated by hydromorphic-rooted aquatic plants, typically *Brasenia schreberi, Nuphar* spp., *Nymphaea odorata*, and *Nymphoides aquatica*. It may occur in a variety of slow-moving waterbodies, including rivers, millponds, streams, shallow ponds or lakes, or on shores of deeper waterbodies including freshwater tidal areas.
- **A1752 *Podostemum ceratophyllum* Aquatic Vegetation Alliance** [Hornleaf Riverweed Aquatic Vegetation Alliance] []
  This alliance is widely scattered in the eastern United States where *Podostemum ceratophyllum* forms monotypic or near-monotypic stands on rocks in moderate- to fast-flowing streams.
- **A4066 *Potamogeton* spp. - *Ceratophyllum* spp. - *Elodea* spp. Aquatic Vegetation Alliance** [Pondweed species - Hornwort species - Waterweed species Aquatic Vegetation Alliance] []
  This submergent marsh alliance is widespread in the eastern United States and adjacent Canada where a variety of submergent species, typically including *Ceratophyllum* spp., *Elodea* spp., *Potamogeton* spp., and *Utricularia macrorhiza*, can be dominant.
- **A4067 *Stuckenia pectinata - Potamogeton* spp. - *Ceratophyllum demersum* Aquatic Vegetation Alliance** [Sago Pondweed - Pondweed species - Coon's-tail Aquatic Vegetation Alliance] []

This alliance is found across the Great Plains in permanently flooded wetlands dominated by *Stuckenia pectinata, Ceratophyllum demersum, Potamogeton* spp., and *Myriophyllum* spp.

- **A4068 *Vallisneria americana* Aquatic Vegetation Alliance** [American Eel-grass Aquatic Vegetation Alliance] []
  This alliance consists of aquatic vegetation in rivers and springs dominated by *Vallisneria americana* in the eastern United States.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2011)
IVC Description Author: J. Drake
IVC Description Date: 2015-05-07
IVC Acknowledgments:

A4147 Duckweed species - Watermeal species - Common Duckmeat Aquatic Vegetation Alliance

[ ]
Lemna spp. - *Wolffia* spp. - *Spirodela polyrrhiza* Aquatic Vegetation Alliance
Duckweed Aquatic Vegetation

IVC Scientific Name: *Lemna* spp. - *Wolffia* spp. - *Spirodela polyrrhiza* Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This aquatic association of floating vegetation is known to occur throughout temperate eastern North America. *Lemna* spp. *Spirodela polyrrhiza*, and *Wolffia* spp. typically dominate but may be mixed with other plant taxa. These small plants may float on the water's surface or become stranded and possibly rooted during drawdown periods. The composition of examples varies across this wide distributional range. Associated rooted floating aquatics include *Potamogeton* spp., *Sagittaria* spp., or *Polygonum* spp. While these latter species are rooted submerged species, and technically not part of the strictly floating community, they do intermingle. Biomass can be abundant under eutrophic conditions. This alliance occupies wetlands that are permanently, semipermanently or seasonally flooded. Water chemistry is fresh. The standing water habitat is relatively shallow, generally less than 2-4 m and occurs as ponds, lakes, ditches, stock ponds, and backwater sloughs of river and stream channels. Standing water for much or most of the growing season is characteristic. Depth of the water is of no consequence to floating plants; they occur where the wind pushes them.
IVC Dynamics: This alliance can move easily as wind blows the unrooted dominant species around lakes and ponds.
IVC Environment: This alliance occupies wetlands that are permanently, semipermanently or seasonally flooded. Water chemistry is fresh. The standing water habitat is relatively shallow, generally less than 2-4 m and occurs as ponds, lakes, ditches, stock ponds, and backwater sloughs of river and stream channels. Standing water for much or most of the growing season is characteristic. Depth of the water is of no consequence to floating plants; they occur where the wind pushes them.

DISTRIBUTION

IVC Geographic Range: This aquatic alliance is known to occur throughout temperate eastern North America.
IVC Nations: CA,US
IVC States/Provinces: AL, AR, CT, DE, FL, GA, IA, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, ND, NE, NH, NJ, NY, OH, OK, ON, PA, QC, RI, SC, SD, TN, TX, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005451 *Lemna* spp. Eastern North American Aquatic Vegetation** [Duckweed species Eastern North American Aquatic Vegetation] []
  G5 (2013-07-11) AL, AR, CT, DE, FL, GA, IA, IL, IN, KS, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, ND, NE, NH, NJ, NY, OH, OK, ON, PA, QC, RI, SC, SD, TN, TX, VA, VT, WV

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2014)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A3542 Water-milfoil species Aquatic Vegetation Alliance

[ ]
Myriophyllum spp. Aquatic Vegetation Alliance
Water-milfoil Aquatic Vegetation

IVC Scientific Name: *Myriophyllum* spp. Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found in the eastern half of the United States and southern Canada. This is a submergent aquatic alliance; emergent species are not common. Total vegetation cover ranges from open to dense and is dominated by native *Myriophyllum* species, usually *Myriophyllum heterophyllum, Myriophyllum spicatum*, and *Myriophyllum verticillatum*. This alliance occurs in permanently flooded portions of ponds, lakes, and river backwaters where current and wave action is not great. Water depth is typically 1-3 m.
IVC Dynamics:
IVC Environment: This alliance occurs in permanently flooded portions of ponds, lakes, and river backwaters where current and wave action is not great. Water depth is typically 1-3 m.

DISTRIBUTION

IVC Geographic Range: This alliance has been documented in southern Ontario, Alabama, Georgia, and South Carolina but is almost certainly widespread in the eastern and central United States.
IVC Nations: CA,US
IVC States/Provinces: AL, GA, ON, SC
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL005149 *Myriophyllum* spp. Aquatic Vegetation** [Water-milfoil species Aquatic Vegetation] []
  GNR. ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A4064 American White Water-lily - Pond-lily species - Watershield Aquatic Vegetation Alliance

[ ]

Nymphaea odorata - Nuphar spp. - *Brasenia schreberi* Aquatic Vegetation Alliance

Water-lily - Pond-lily Aquatic Vegetation

IVC Scientific Name: *Nymphaea odorata - Nuphar* spp. - *Brasenia schreberi* Aquatic Vegetation Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance, common throughout most of the eastern and central United States and adjacent Canadian provinces, contains vegetation which may occur in a variety of slow-moving waterbodies, including rivers, millponds, streams, shallow ponds or lakes, or on shores of deeper waterbodies including freshwater tidal areas. Stands are dominated by hydromorphic-rooted aquatic plants, typically *Nuphar* spp., with or without *Nymphaea odorata* and *Nymphoides aquatica*. Emergent vegetation is less than 25%, and typically plant species diversity is low. Other species present may include *Utricularia* spp., *Potamogeton* spp., and others. In the north, *Brasenia schreberi* may be locally dominant. Other characteristic northern species include *Nymphaea tetragona* and *Potamogeton amplifolius*. Associates found in the Midwest include *Polygonum amphibium*. Stands of this alliance are permanently to semipermanently flooded, and water depth is generally greater than 0.5 m and up to 2 m.

IVC Dynamics:

IVC Environment: This alliance contains vegetation which may occur in a variety of slow-moving waterbodies, including rivers, millponds, blackwater rivers, streams, shallow ponds or lakes, or on shores of deeper waterbodies including freshwater tidal areas. The water depth is generally greater than 0.5 m and up to 2 m. Stands of this alliance are permanently to semipermanently flooded.

DISTRIBUTION

IVC Geographic Range: This alliance is widespread in the eastern United States and adjacent Canada.

IVC Nations: CA,US

IVC States/Provinces: AL, AR, CT, DE, FL, GA, IA, IL, IN, KY, LA, MA, MB, MD, ME, MI, MN, MO, MS, NC, NE, NH, NJ, NY, OH, OK, ON, PA, QC, RI, SC, TN, TX, VA, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL004323 *Nelumbo lutea* Aquatic Vegetation** [American Lotus Aquatic Vegetation] []
  G4? (2002-10-15) AL, AR, GA, IA, IL?, IN, KY, LA, MI, MO, MS, NC, NE, OK, ON, SC, TN, TX, VA, WI
- **CEGL002563 *Nymphaea tetragona - Nuphar (microphylla, variegata)* Aquatic Vegetation** [Pygmy Water-lily - (Yellow Pond-lily, Variegated Yellow Pond-lily) Aquatic Vegetation] []
  G4G5 (1996-10-03) MB, MN, ON
- **CEGL006086 *Nymphaea odorata - Eleocharis robbinsii* Aquatic Vegetation** [American White Water-lily - Robbins' Spikerush Aquatic Vegetation] []
  G2 (1998-12-07) DE, MA, MD, NH, NJ, NY, RI
- **CEGL002562 *Nymphaea odorata - Nuphar (microphylla, variegata)* Aquatic Vegetation** [American White Water-lily - (Yellow Pond-lily, Variegated Yellow Pond-lily) Aquatic Vegetation] []
  G5 (1996-10-03) MB, MI, MN, NE?, NY, ON, WI
- **CEGL002386 *Nuphar advena - Nymphaea odorata* Aquatic Vegetation** [Broadleaf Pond-lily - American White Water-lily Aquatic Vegetation] []
  G4G5 (2002-10-15) AL, AR, CT, DE, FL, GA, IA, IL, IN, KY, LA, MA, MD, ME, MI, MN, MO, MS, NC, NH, NJ, NY, OH, OK, ON, PA, RI, SC, TN, TX, VA, VT, WI, WV

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A1752 Hornleaf Riverweed Aquatic Vegetation Alliance

[ ]
Podostemum ceratophyllum Aquatic Vegetation Alliance
Eastern Hornleaf Riverweed Aquatic Vegetation

IVC Scientific Name: *Podostemum ceratophyllum* Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is found in the eastern one-third of the United States. This almost always is a monospecific community dominated by *Podostemum ceratophyllum* with no other vascular plants present; some Rhodophyta (red algae) may be present. This alliance is found on shoals in rocky streambeds and riverbeds in mature drainage systems where the streams have cut down to rock, and the floodplain is relatively narrow; or on dams in moderately fast- to fast-flowing water. The vegetation grows attached to rocks in outcrops and stream rubble, or to dams in moderate- to fast-flowing water.
IVC Dynamics:
IVC Environment: This alliance includes vegetation of shoals in rocky streambeds and riverbeds in mature drainage systems where the streams have cut down to rock, and the floodplain is relatively narrow; or on dams in moderately fast- to fast-flowing water. It tends to be associated with higher pH streams which cut through diabase, limestone or calcareous shales.

DISTRIBUTION

IVC Geographic Range: This alliance is widely scattered in the eastern one-third of the United States with some occurrences in Louisiana and Oklahoma.
IVC Nations: CA?,US
IVC States/Provinces: AL, AR, CT, DE, GA, KY, LA?, MA, MD, ME, NC, NH, NJ, NY, OK, PA, QC?, RI, SC, TN, VA, VT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL004331 *Podostemum ceratophyllum* Aquatic Vegetation** [Hornleaf Riverweed Aquatic Vegetation] []
  G3G5 (2002-08-19) AL, AR, CT, DE, GA, KY, LA?, MA, MD, ME, NC, NH, NJ, NY, OK, PA, QC?, RI, SC, TN, VA, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: A.S. Weakley, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A4066 Pondweed species - Hornwort species - Waterweed species Aquatic Vegetation Alliance

[ ]
Potamogeton spp. - *Ceratophyllum* spp. - *Elodea* spp. Aquatic Vegetation Alliance
Pondweed - Hornwort - Waterweed Aquatic Vegetation

IVC Scientific Name: *Potamogeton* spp. - *Ceratophyllum* spp. - *Elodea* spp. Aquatic Vegetation Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is widespread in the eastern United States and adjacent Canada from the western tallgrass prairies to the Atlantic Coast. Submergent vegetation dominates. Typical dominants are *Potamogeton* spp., including *Potamogeton natans, Potamogeton zosteriformis*, and *Potamogeton richardsonii*; *Ceratophyllum* spp., including *Ceratophyllum demersum*; *Elodea* spp., including *Elodea canadensis*; and *Myriophyllum* spp., including *Myriophyllum verticillatum*. Other associated species include emergents such as *Zizania palustris, Utricularia macrorhiza, Nuphar* spp., *Ranunculus longirostris, Chara* spp., *Lemna* spp., *Spirodela polyrrhiza*, and *Vallisneria americana*. This common alliance is found in permanently flooded wetlands with water usually less than 2 m deep.

IVC Dynamics:

IVC Environment: Stands are often found in sheltered bays of lakes and streams. Curtis (1959) suggests that water hardness may play an important role in species patterns within this group.

DISTRIBUTION

IVC Geographic Range: This alliance is widespread in the eastern United States and adjacent Canada from the western tallgrass prairies to the Atlantic Coast.

IVC Nations: CA,US

IVC States/Provinces: AL, GA, IA, IL, IN, ME, MI, MN, MS, NC, ND, NH?, NJ, NU, NY, OH, ON, PA, QC, SC, SD, TN, VA, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL006431 *Elodea canadensis* - *Potamogeton* spp. Eastern Aquatic Vegetation** [Canadian Waterweed - Pondweed species Eastern Aquatic Vegetation] []
  GNR. ME, NH?, NY, PA, VT
- **CEGL002282 *Potamogeton* spp. - *Ceratophyllum* spp. Midwest Aquatic Vegetation** [Pondweed species - Hornwort species Midwest Aquatic Vegetation] []
  G5 (1996-10-03) IA, IL, IN, MI, MN, ND, OH, ON, SD, WI
- **CEGL005273 *Potamogeton gramineus* - *Potamogeton natans* Northern Great Lakes Shore Aquatic Vegetation** [Variableleaf Pondweed - Floating Pondweed Northern Great Lakes Shore Aquatic Vegetation] []
  G3? (2000-04-12) MI, MN, ON, WI
- **CEGL005152 *Potamogeton zosteriformis* - *Ceratophyllum demersum* - *Elodea canadensis* Southern Great Lakes Shore Aquatic Vegetation** [Flatstem Pondweed - Coon's-tail - Canadian Waterweed Southern Great Lakes Shore Aquatic Vegetation] []
  G3G4 (2000-03-29) MI, NY, OH, ON, PA, QC, VT, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A4067 Sago Pondweed - Pondweed species - Coon's-tail Aquatic Vegetation Alliance

[ ]

Stuckenia pectinata - Potamogeton spp. - *Ceratophyllum demersum* Aquatic Vegetation Alliance

Great Plains Submergent Aquatic Vegetation

IVC Scientific Name: *Stuckenia pectinata - Potamogeton* spp. - *Ceratophyllum demersum* Aquatic Vegetation Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance is found across the Great Plains in permanently flooded wetlands. Water is usually 1-2 m deep and ranges from fresh to saline. Submergent vegetation dominates and emergents have <10% cover. Dominants are usually *Stuckenia pectinata, Ceratophyllum demersum, Potamogeton* spp., and *Myriophyllum* spp.

IVC Dynamics: This alliance occurs in a generally semi-arid climate. Sites can occasionally be subject to water drawdown during droughts. These cycles of flooding and drawdown help cycle nutrients and tend to favor more floristic diversity than sites that are under water many years.

IVC Environment: This alliance is found across the Great Plains in permanently flooded wetlands. Water is usually 1-2 m deep and ranges from fresh to saline. Parent material is often glacial till. The elevation of the plant associations ranges from 150-600 m in the Great Plains to 1200-2950 m in Montana and Colorado. Adjacent vegetation is midgrass and tallgrass prairie on the plains, and *Carex aquatilis* and *Carex utriculata* wetlands in Colorado.

DISTRIBUTION

IVC Geographic Range: This alliance is found across the Great Plains and adjacent areas from southern Alberta to northwestern Ontario south to northwestern Arkansas and Texas and west to western Oklahoma and Montana.

IVC Nations: CA,US

IVC States/Provinces: AB, AR, CA?, IA, KS, MB, MT, ND, NE, OK, ON?, SD, SK, TX, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002044 *Potamogeton* spp. - *Ceratophyllum demersum* Great Plains Aquatic Vegetation** [Pondweed species - Coon's-tail Great Plains Aquatic Vegetation] []
  G4G5 (1998-06-22) KS, MB, ND, NE, SD
- **CEGL002005 *Stuckenia pectinata - Zannichellia palustris* Aquatic Vegetation** [Sago Pondweed - Horned Pondweed Aquatic Vegetation] []
  G3G4 (1997-11-14) MT, ND, SD, SK
- **CEGL002003 *Stuckenia pectinata - Myriophyllum (sibiricum, spicatum)* Aquatic Vegetation** [Sago Pondweed - (Short-spike Water-milfoil, Eurasian Water-milfoil) Aquatic Vegetation] []
  G3G4 (1997-11-14) AB, CA?, MT, ND, ON?, SD, SK

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake

IVC Description Date: 2014-12-18

IVC Acknowledgments:

A4068 American Eel-grass Aquatic Vegetation Alliance

[ ]

Vallisneria americana Aquatic Vegetation Alliance

American Eel-grass Aquatic Vegetation

IVC Scientific Name: *Vallisneria americana* Aquatic Vegetation Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance consists of aquatic vegetation in rivers and springs dominated by *Vallisneria americana*. The extent and distribution of this alliance is only partly understood. The habitat includes alluvial rivers, above or extending to the upper limit of tidal influence. Stands are dominated by submergent or emergent plants with only minor floating-leaved components. Stands in the northeastern United States may additionally contain *Potamogeton perfoliatus, Potamogeton epihydrus, Utricularia* spp., and *Eriocaulon aquaticum*. New River occurrences have *Elodea canadensis, Potamogeton foliosus*, and *Potamogeton nodosus*. In addition, *Heteranthera dubia* may be locally abundant in stands in Virginia rivers. Further study is needed to fully characterize the variability in this alliance.

IVC Dynamics:

IVC Environment: The habitat of this alliance includes alluvial rivers, above or extending to the upper limit of tidal influence. In the midwestern United States, stands may be expected on sandy soil bottoms in shallow quiet waters, including lakes, streams, and ponds. Some sites where *Vallisneria americana* persists may have water as much as 7 m deep (Voss 1972). Stands also occur in "spring-runs" of the Florida Panhandle and peninsula, as well as from the southern and Central Appalachians, as in channels of the Clinch, Potomac, Shenandoah, James and New rivers.

DISTRIBUTION

IVC Geographic Range: This alliance is found across much of the eastern United States from Maine to Florida and possibly west in the Piedmont to Mississippi. Isolated stands have been observed in Iowa and southern Ontario and the alliance likely occurs elsewhere in the eastern United States and southern Canada.

IVC Nations: CA,US

IVC States/Provinces: AL?, CT, DE, FL, GA?, IA, KY, MA, MD, ME, MS?, NC, NH, NJ, NY, ON, PA, RI, SC?, TN, VA, VT, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002284 *Vallisneria americana* Aquatic Vegetation** [American Eel-grass Aquatic Vegetation] []
  GNR. IA, ON

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake

IVC Description Date: 2014-12-18

IVC Acknowledgments: We have incorporated significant descriptive information previously compiled by M. Pyne.

M109 Western North American Freshwater Aquatic Vegetation

Végétation aquatique d'eau douce de l'ouest de l'Amérique du Nord

IVC Colloquial Name: Western North American Freshwater Aquatic Vegetation
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup consists of rooted, floating, and submerged freshwater aquatic herbaceous vegetation found throughout the temperate regions of western North America. Their occurrence tends to be small-patch or linear in spatial pattern, confined to lakes, ponds, oxbows, and slow-moving portions of rivers and streams. In large bodies of water, they are usually restricted to the littoral region where penetration of light is the limiting factor for growth. A variety of rooted or floating aquatic herbaceous species may dominate, including (but not limited to) *Azolla filiculoides, Nuphar polysepala, Polygonum amphibium, Potamogeton foliosus, Potamogeton diversifolius, Potamogeton epihydrus, Potamogeton robbinsii, Ranunculus aquatilis, Ranunculus trichophyllus*, and *Wolffia* spp. Submerged vegetation, such as *Ceratophyllum demersum, Ceratophyllum echinatum, Elodea canadensis, Elodea nuttallii, Myriophyllum hippuroides*, and *Myriophyllum sibiricum*, is often present. These communities occur in water too deep for emergent vegetation. Species composition is often dominated by cosmopolitan species but many regionally characteristic species may also occur. Characteristic western U.S. species include *Azolla filiculoides, Azolla microphylla, Nuphar polysepala, Nymphaea tetragona*, and *Stuckenia striata*.

IVC Geographic Range: This macrogroup consists of freshwater aquatic herbaceous vegetation found throughout the temperate regions of western North America, from the Rocky Mountains, including New Mexico to Alberta, west to California and southern coastal Alaska.

IVC Nations: CA,MX?,US

IVC States/Provinces: AB, AK, AZ, BC, CA, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, SK?, TX, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G544 Western North American Temperate Freshwater Aquatic Vegetation []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2014)

IVC Description Author: G. Kittel and D. Faber-Langendoen

IVC Description Date: 2014-10-15

IVC Acknowledgments: Wetland and limnology scientists everywhere.

G544 Western North American Temperate Freshwater Aquatic Vegetation

[ ]

IVC Colloquial Name: Western North American Temperate Freshwater Aquatic Vegetation
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group consists of freshwater aquatic herbaceous vegetation found throughout the temperate regions of western North America. Elevation ranges from near sea level to 2750 m (9000 feet). They generally do not tolerate freezing or drought. They are small patch in size, confined to lakes, ponds, oxbows, and slow-moving portions of rivers and streams that may become mudflats. These waterbodies may be part of large wetland complexes with emergent vegetation, shallow water pools, as well as large deep water areas. In large bodies of water, they are usually restricted to the littoral region where penetration of light is the limiting factor for growth. A variety of rooted or floating aquatic herbaceous species may dominate, including *Azolla* spp., *Nuphar polysepala, Polygonum* spp., *Potamogeton* spp., *Ranunculus* spp., and *Wolffia* spp. Submerged vegetation, such as *Myriophyllum* spp., *Ceratophyllum* spp., and *Elodea* spp., is often present. These communities occur in water too deep for emergent vegetation, generally between 2-8 m depth.

IVC Dynamics: Aquatic communities succeed as substrates change with sedimentation and accumulation of organic materials (or the reverse), and the amount of nutrients can shift species completely, such as near effluents. Segmented-leaved species can be more tolerant of wave action than entire-leaved species. Species also have differing tolerances to disturbance of wind and wave action.

IVC Environment: *Climate:* Temperate North America, west of the Great Plains. *Soil/substrate/hydrology:* Small patch in size, confined to lakes, ponds, oxbows, and slow-moving portions of rivers and streams. In large bodies of water, they are usually restricted to the littoral region where penetration of light is the limiting factor for growth. Water depth varies from very shallow to the limit of light penetration, usually <4 m depending on the clarity of the water, but ranges from 2 to 8 m in depth. Species differentiate themselves with different depth tolerances, different substrates and nutrient and pH of the water and of the substrates. The amount and depth of organic matter in the sediment are also important. As sediment accumulates, emergent species may appear which compete directly for space/light/nutrients with floating species and floating-rooted species. The amount of wind and wave disturbance also plays a role in aquatic vegetation composition and structure; stands tend to occur on the leeward side of lakes where waves are minimal. The more sheltered the water surface, the more complex the aquatic vegetation may be. Communities changes with the environment along the shoreline, showing zonation: zones of erosion usually have small rosette forms with species such as *Isoetes, Subularia*, and *Ranunculus*. Communities tend to follow the amount and type of sediment rather than the bathymetry. The nutrient status of the lake itself also determines the aquatic vegetation composition. Environmental information compiled from Hutchinson (1975), Viereck et al. (1992), Holland and Keil (1995), Shephard (1995), Boggs (2000), and Boggs et al. (2008a).

DISTRIBUTION

IVC Geographic Range: This group consists of freshwater aquatic herbaceous vegetation found throughout the temperate regions of western North America. In Alaska, temperate regions are only the south-central and southeastern coastal areas (aka the non-boreal/non-arctic regions of the state).

IVC Nations: CA,MX?,US

IVC States/Provinces: AB, AK, AZ, BC, CA, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, SK?, TX, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1741 *Azolla filiculoides* - *Azolla microphylla* Aquatic Vegetation Alliance** [Pacific Mosquito Fern - Mexican Mosquito Fern Aquatic Vegetation Alliance] []
  This is freshwater aquatic herbaceous alliance is dominated by *Azolla filiculoides* and/or *Azolla microphylla* floating on the water's surface and occurs in freshwater habitats with still water. Ponds supporting this alliance can be found in warm climes such as California's Central Valley and cool climes in montane ponds throughout western Canada and the western U.S.
- **A3922 *Brasenia schreberi* Aquatic Vegetation Alliance** [Watershield Aquatic Vegetation Alliance] []
  This alliance includes aquatic floating vegetation where *Brasenia schreberi* is the dominant plant species; it occurs in natural ponds and impoundments. Stands occur in Pacific northwestern U.S. and western Canada.
- **A3923 *Ceratophyllum demersum* Aquatic Vegetation Alliance** [Coon's-tail Aquatic Vegetation Alliance] []
  This fully aquatic herbaceous perennial alliance is dominated by *Ceratophyllum demersum* which forms dense, monotypic submerged beds that do not emerge above the surface of the water. Habitat is low-elevation, low-gradient, eutrophic streams and rivers, ponds, lakes, and sloughs.
- **A2628 *Fontinalis antipyretica* Aquatic Vegetation Alliance** [Aquatic Moss Aquatic Vegetation Alliance] []
  This alliance consists of submerged aquatic herbaceous communities dominated by nonvascular *Fontinalis antipyretica*. These stands occur in seasonally or perennial flooded pools, ponds and sloughs of the northwestern U.S. and western Canada.
- **A3893 *Hippuris vulgaris* - *Ruppia* spp. - *Sparganium* spp. Aquatic Vegetation Alliance** [Common Mare's-tail - Widgeonweed species - Bur-reed species Aquatic Vegetation Alliance] []
  This alliance consists of aquatic plant communities dominated by *Hippuris vulgaris, Ruppia cirrhosa, Ruppia maritima, Sparganium angustifolium, Sparganium eurycarpum*, and/or *Stuckenia filiformis* in any combination. These associations are floating aquatic that are rooted in mud but require a water column for support. Sites are non-tidal, freshwater to slightly brackish, seasonally or permanently flooded marshes, shallow lakes and ponds.
- **A1746 *Isoetes* spp. Aquatic Vegetation Alliance** [Quillwort species Aquatic Vegetation Alliance] []
  This alliance of aquatic submerged beds of herbaceous vegetation is dominated by *Isoetes bolanderi, Isoetes tenella, Isoetes*

howellii, Isoetes nuttallii, or *Isoetes occidentalis*; these reside in the margins of permanent and/or seasonally wet lakes, ponds and streams.

- **A1747 *Lemna minor* - *Wolffia borealis* - *Wolffia columbiana* Aquatic Vegetation Alliance** [Common Duckweed - Northern Watermeal - Columbian Watermeal Aquatic Vegetation Alliance] []
  This alliance of aquatic floating vegetation is dominated by *Lemna minor* or other *Lemna* species, *Wolffia borealis*, and/or *Wolffia columbiana*, often mixed with other Lemnaceae or other aquatic plants found at low elevations (below 200 m [650 feet]) floating at the surface of quiet streams and ponds in the western U.S. and Canada.
- **A3925 *Menyanthes trifoliata* Aquatic Vegetation Alliance** [Buckbean Aquatic Vegetation Alliance] []
  This is an herbaceous wetland and aquatic floating alliance dominated by *Menyanthes trifoliata* with occasional other species such as *Carex arcta, Carex limosa, Carex utriculata, Eleocharis palustris, Nuphar polysepala, Potamogeton* spp., and *Utricularia macrorhiza*. Stands grow where they are submerged through much of the year but may dry to the soil surface during the growing season. This alliance is known throughout the western U.S. and Canada.
- **A1761 *Myriophyllum sibiricum* - *Myriophyllum hippuroides* Aquatic Vegetation Alliance** [Short-spike Water-milfoil - Western Water-milfoil Aquatic Vegetation Alliance] []
  This aquatic floating alliance is known from mountain lakes and ponds and is dominated by *Myriophyllum sibiricum* with as little as 5% surface canopy cover, but more typically it falls in the 40-80% range. Ponds are generally less than 200 square meters in size and no more than 1-2 m deep.
- **A3926 *Nuphar polysepala* Western Aquatic Vegetation Alliance** [Rocky Mountain Pond-lily Western Aquatic Vegetation Alliance] []
  This alliance is composed of floating aquatic herbaceous vegetation dominated by *Nuphar polysepala*, found in ponds, lakes, deeper beaver ponds, and glacial kettle lakes, from sea level to 2410 m (7900 feet) in elevation throughout the western U.S. and western Canada.
- **A3927 *Potamogeton natans* - *Polygonum amphibium* Aquatic Vegetation Alliance** [Floating Pondweed - Water Knotweed Aquatic Vegetation Alliance] []
  This alliance is of aquatic floating vegetation dominated by any of the following species: *Myriophyllum spicatum, Polygonum amphibium, Potamogeton diversifolius, Potamogeton foliosus, Potamogeton natans, Potamogeton richardsonii* , or *Stuckenia filiformis* or a combination of these. Stands occur in permanent ponds throughout the western U.S. and western Canada.
- **A3920 *Ranunculus aquatilis* - *Callitriche palustris* - *Callitriche heterophylla* Aquatic Vegetation Alliance** [Whitewater Crowfoot - Vernal Water-starwort - Greater Water-starwort Aquatic Vegetation Alliance] []
  This aquatic herbaceous alliance consists of floating communities dominated by *Callitriche heterophylla, Callitriche palustris, Ranunculus aquatilis*, and/or *Ranunculus lobbii* found throughout the western U.S. and western Canada in waterbodies that are generally shallow (<0.5 m), poorly oxygenated and nitrogen-rich.
- **A3928 *Sagittaria latifolia* Aquatic Vegetation Alliance** [Broadleaf Arrowhead Aquatic Vegetation Alliance] []
  This aquatic herbaceous alliance of emergent forbs is dominated by *Sagittaria latifolia* occupying seasonal pools and ponds from throughout the western U.S. and western Canada.
- **A3921 *Utricularia macrorhiza* - *Utricularia minor* - *Utricularia ochroleuca* Aquatic Vegetation Alliance** [Common Bladderwort - Lesser Bladderwort - Yellowish-white Bladderwort Aquatic Vegetation Alliance] []
  This aquatic herbaceous alliance is dominated by *Utricularia macrorhiza, Utricularia minor*, or *Utricularia ochroleuca*, on lakes and ponds forming sparse to dense masses of nearly monotypic submerged vegetation. It is found throughout low elevations in the western U.S. and possibly western Canada.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2011)
IVC Description Author: G. Kittel, P. Comer, C. Chappell, K. Boggs
IVC Description Date: 2017-03-29
IVC Acknowledgments:

A1741 Pacific Mosquito Fern - Mexican Mosquito Fern Aquatic Vegetation Alliance

[ ]

Azolla filiculoides - Azolla microphylla Aquatic Vegetation Alliance

Western Mosquito Fern Aquatic Vegetation

IVC Scientific Name: *Azolla filiculoides - Azolla microphylla* Aquatic Vegetation Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This is a widespread, aquatic herbaceous alliance that occurs in freshwater ponds with still water. The vegetation of this alliance is dominated by *Azolla filiculoides* and/or *Azolla microphylla* floating on the water's surface. Other species present may include *Lemna gibba, Lemna minor, Spirodela* spp., *Wolffia borealis*, and other *Wolffia* spp. Emergent plants may be present. Total cover may be continuous, intermittent or open. Stands occur in seasonal and perennial wetlands in ditches, rivers, streams, channels, and ponds from sea level to 2300 m (7545 feet) elevation.

IVC Dynamics: This alliance grows in still ponds that may dry up completely between seasons. *Azolla* spp. require standing water to germinate, and once an individual plant is established, it can quickly spread via asexual reproduction. If the water persists long enough, sexual reproduction produces cysts or spores which can survive drawdown and drying of the substrate.

IVC Environment: This widespread aquatic herbaceous alliance occurs in freshwater habitats with still water. Stands occur in seasonal and perennial wetlands in ditches, rivers, streams, channels, and ponds from sea level to 2300 m. It occurs in warm climes such as the Central Valley of California as well as montane ponds.

DISTRIBUTION

IVC Geographic Range: This alliance is found in lowlands as well as montane ponds in California, Oregon and Washington and is likely to occur in Alaska, British Columbia and Arizona. It is represented in California by a few samples from the Sacramento-San Joaquin River delta (Hickson and Keeler-Wolf 2007) and the San Francisco Bay estuary.

IVC Nations: CA?,US

IVC States/Provinces: AZ?, BC?, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel and M. Schindel

IVC Description Date: 2014-03-14

IVC Acknowledgments:

A3922 Watershield Aquatic Vegetation Alliance

[ ]

Brasenia schreberi Aquatic Vegetation Alliance

Western Watershield Aquatic Vegetation

IVC Scientific Name: *Brasenia schreberi* Aquatic Vegetation Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This aquatic floating alliance has *Brasenia schreberi* as the dominant plant species. Other floating aquatics present include *Nelumbo lutea, Nymphaea odorata*, and *Utricularia* spp., along with submersed aquatics such as *Cabomba caroliniana* and *Ceratophyllum demersum*. Other emergent species may include *Leersia oryzoides, Lemna valdiviana, Juncus effusus, Nymphaea odorata, Spirodela polyrrhiza*, and *Stuckenia pectinata*. It occurs in natural ponds and impoundments, including shallow ponds, ditches, beaver ponds, lake margins, and slow-moving streams.

IVC Dynamics: *Brasenia schreberi* is a perennial floating plant. Plants emerge in spring and may propagate through rhizomes, seeds or winter buds. Oval leaves (4-12 cm long and 3-8 cm wide) float on the water surface. Elongated purple petioles attach to the

center of the leaves. A thick coating of gelatinous slime covers the young stems, buds, and the undersides of young leaves. Flowers are purplish and bloom in mid summer. Narrowly egg-shaped fruits ripen underwater and decay to release seeds. The rhizomes and leaves are used for food and medicinal purposes by Native Americans (Anonymous 2007). The plant may be strongly competitive with other macrophytes through its allelopathic properties (Frodge et al. 1990, Ding et al. 2007).

IVC Environment: This alliance consists of natural ponds and impoundments, including shallow ponds, ditches, beaver ponds, lake margins, and slow-moving streams dominated by *Brasenia schreberi*.

DISTRIBUTION

IVC Geographic Range: Northwestern U.S. and western Canada.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005200 *Brasenia schreberi* Western Aquatic Vegetation** [Watershield Western Aquatic Vegetation] []
  G4? (2011-06-06) BC, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A3923 Coon's-tail Aquatic Vegetation Alliance

[ ]
Ceratophyllum demersum Aquatic Vegetation Alliance
Pacific Northwest Coon's-tail Aquatic Vegetation

IVC Scientific Name: *Ceratophyllum demersum* Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This fully aquatic herbaceous alliance is dominated by *Ceratophyllum demersum* which forms dense, monotypic submerged beds that do not emerge above the surface of the water. Habitat is low-elevation, low-gradient, eutrophic streams and rivers, ponds, lakes, and sloughs. It is widespread in Oregon, Washington, California, British Columbia, and indeed is a worldwide species. However, it has not been well-sampled as a vegetation type and little information is available.

IVC Dynamics: Eutrophic conditions favored by this alliance may be enhanced by enriched runoff in agricultural or urban landscapes. Though a native species, *Ceratophyllum demersum* is a well-known pest in many lakes where rank aquatic vegetation interferes with recreation (Christy 2004).

IVC Environment: Habitat is low-elevation, low-gradient, sheltered eutrophic streams and rivers, ponds, lakes, and sloughs. Ponds are generally less than 2 m deep.

DISTRIBUTION

IVC Geographic Range: This alliance occurs in the western U.S. and western Canada.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, ID, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL004017 *Ceratophyllum demersum* Western Aquatic Vegetation** [Coon's-tail Western Aquatic Vegetation] []
  G5 (2007-02-22) BC, CA, ID, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A2628 Aquatic Moss Aquatic Vegetation Alliance

[ ]
Fontinalis antipyretica Aquatic Vegetation Alliance
Pacific Northwest Aquatic Moss Aquatic Vegetation

IVC Scientific Name: *Fontinalis antipyretica* Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of submerged aquatic herbaceous communities dominated by nonvascular plant *Fontinalis antipyretica* which forms extensive submerged beds in seasonally or perennial flooded pools, ponds and sloughs. It is found throughout the northwestern U.S. and western Canada.
IVC Dynamics: *Fontinalis antipyretica* is tolerant of wet and dry periods. Beds may be up to 1 m (2-3 feet) thick while submerged and condense to 15 cm (6 inches) when dry.
IVC Environment: These stands occur in seasonally or perennial flooded pools, ponds and sloughs. Stands tolerate wetting/submergence as well as seasonal exposure to air. Beds may be up to 1 m (2-3 feet) thick while submerged and condense to 15 cm (6 inches) when dry. They occur in cold, clean freshwater and do not seem to increase under eutrophic conditions (Christy 2004).

DISTRIBUTION

IVC Geographic Range: This alliance is widespread in northwestern Oregon and in Washington, where it is common west of the Cascade Range. It is also known from western Canada.
IVC Nations: CA,US
IVC States/Provinces: BC, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:

CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.S. Reid, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel and M.S. Reid
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A3893 Common Mare's-tail - Widgeonweed species - Bur-reed species Aquatic Vegetation Alliance

[ ]
Hippuris vulgaris - Ruppia spp. - *Sparganium* spp. Aquatic Vegetation Alliance
Mare's-tail - Widgeonweed - Bur-reed Aquatic Vegetation

IVC Scientific Name: *Hippuris vulgaris - Ruppia* spp. - *Sparganium* spp. Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of aquatic communities in shallow water where *Hippuris vulgaris, Ruppia cirrhosa, Ruppia maritima, Sparganium angustifolium, Sparganium eurycarpum*, and/or *Stuckenia filiformis* or any combination of these herbs are dominant. Sites are non-tidal, freshwater to slightly brackish, seasonally or permanently flooded marshes, shallow lakes and ponds. This alliance is restricted to freshwater to brackish non-tidal marshes within low-lying areas of high evaporation where elevations range from sea level to 3700 m. This alliance likely occurs in many parts of lowland and montane elevations of western North America.
IVC Dynamics: This alliance requires extended periods of flooding by fresh or alkaline/saline water. Seasonal flooding is most frequent from late November through June, either from rain or snowmelt.
IVC Environment: This alliance is found in seasonally to permanently shallow ponds with fresh to hypersaline water, occurring on tidal flats, in alkali marshes, mountain parks and meadows, stream oxbows, and glacial basins. Elevations range from sea level to 3170 m.

DISTRIBUTION

IVC Geographic Range: This alliance likely occurs in many parts of lowland and montane elevations of western North America. It is known from California, British Columbia, Washington, Oregon, Idaho, Wyoming and Colorado.
IVC Nations: CA,US
IVC States/Provinces: AK, BC, CA, CO, ID, NV?, OR, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel, M. Schindel, K. Schulz, M. Reid
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A1746 Quillwort species Aquatic Vegetation Alliance

[ ]
Isoetes spp. Aquatic Vegetation Alliance

Californian Quillwort Aquatic Vegetation

IVC Scientific Name: *Isoetes* spp. Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Vegetation of this aquatic herbaceous alliance of submerged beds is dominated by *Isoetes bolanderi, Isoetes tenella, Isoetes howellii, Isoetes nuttallii*, or *Isoetes occidentalis*. Associated species include *Torreyochloa erecta*. It occurs in mountain lakes and flooded lakes through the cismontane of California, in permanently flooded and seasonally flooded margins of lakes, ponds and streams, generally at <1500 m (5000 feet) elevation.

IVC Dynamics: Tolerant of drawdown and re-flooding, but more observation and research information is needed (Sawyer et al. 2009).

IVC Environment: This hydromorphic vegetation type occurs in seasonal to permanent, freshwater wetlands. Water is still or slow-moving. Stands of this alliance are found on stream and lake margins, in vernal pools, ponds, and marshes. Elevational ranges vary from sea level to 1500 m. Seasonal or permanent flooding is required to maintain stands of this alliance. In lower elevational stands of the Central Valley, winter precipitation fills vernal ponds, which retain this water through much of the spring. *Isoetes* spp. form beds on the margins and bottoms of these seasonal wetlands. Permanent waterbodies like streams and lakes support stands along the margins and shallows (Sawyer et al. 2009).

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout California, but may occur in other western states and possibly Alberta, Canada.

IVC Nations: CA?,MX?,US

IVC States/Provinces: CA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3 (2013-09-27)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M. Schindel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel and M. Schindel

IVC Description Date: 2014-03-14

IVC Acknowledgments:

A1747 Common Duckweed - Northern Watermeal - Columbian Watermeal Aquatic Vegetation Alliance

[ ]

Lemna minor - Wolffia borealis - Wolffia columbiana Aquatic Vegetation Alliance

Western Duckweed - Watermeal Aquatic Vegetation

IVC Scientific Name: *Lemna minor - Wolffia borealis - Wolffia columbiana* Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance of floating vegetation is dominated by *Lemna minor* or other *Lemna* species, *Wolffia borealis*, and/or *Wolffia columbiana*. Associated species include *Azolla* spp., *Riccia fluitans, Ricciocarpos natans*, and *Spirodela polyrrhiza*. Biomass can be abundant under eutrophic conditions. Total cover may be continuous, intermittent or open. These small floating plants may float on the water's surface or become stranded and possibly rooted during drawdown periods. Ponds are found at low elevations (below 200 m [650 feet]), and stands are floating on the water surface of quiet streams and ponds.

IVC Dynamics: All of the dominant species can survive stranding on mud but cannot survive complete desiccation. *Lemna* spp. can reproduce asexually by budding from a pouch at the plant's base. These plants may also overwinter as dense, rootless, starch-filled daughter plants. If the water persists long enough, sexual reproduction produces seeds which can survive drawdown and drying of the substrate.

IVC Environment: Stands occur in seasonal and perennial freshwater habitats with still water and saturated soils. Stands occur in ditches, rivers, streams, channels, and ponds from sea level to 2300 m elevation. The standing water habitat is relatively shallow, generally less than 2-4 m (6.6-13.1 feet) and occurs as ponds, lakes, ditches, stock ponds, and backwater sloughs of river and stream channels. Standing water for much or most of the growing season is characteristic. Depth of the water is of no consequence to floating plants; they occur where the wind pushes them.

DISTRIBUTION

IVC Geographic Range: This alliance occurs widely throughout the western U.S. (west of the 100th meridian) and southwestern Canada. It was possibly introduced by migratory waterfowl into southern California.

IVC Nations: CA,US

IVC States/Provinces: AZ, BC, CA, CO, ID, MT, ND, NE, NM, NV, OK, OR, SD, TX, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M. Schindel and M. Pyne, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-03-14

IVC Acknowledgments:

A3925 Buckbean Aquatic Vegetation Alliance

[ ]

Menyanthes trifoliata Aquatic Vegetation Alliance

Western Buckbean Aquatic Vegetation

IVC Scientific Name: *Menyanthes trifoliata* Aquatic Vegetation Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This wetland/aquatic herbaceous alliance can be a monotypic stand of *Menyanthes trifoliata*. Cover ranges from 10-100%. Commonly co-occurring species include *Carex arcta, Carex limosa, Carex utriculata, Eleocharis palustris, Nuphar polysepala, Potamogeton* spp., and *Utricularia macrorhiza*. Stands grow in perennially flooded depressions, on the edges of ponds and lakes. Sites are submerged through much of the year but may dry to the soil surface during the growing season. Water depths are shallow (<1 m). Soils can be silts or organic peats. It is known from Colorado and Wyoming west to California and Alaska.

IVC Dynamics:

IVC Environment: It grows in perennially flooded or saturated depressions, on the edges of ponds and lakes, and occasionally along slackwater areas of low-gradient, slow-moving streams. Sites are submerged through much of the year but may dry to the soil surface during the growing season. Water depths average 10-35 cm. Rootmats 25-75 cm thick can form and anchor to the bottom or float. Soils can be silts or organic peats. Ponds and lakes where this alliance is found are in very low-gradient and wide valleys.

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout the western U.S. and western Canada.
IVC Nations: CA,US
IVC States/Provinces: AK, BC, CA, CO, OR, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL003410 *Menyanthes trifoliata* Aquatic Vegetation** [Buckbean Aquatic Vegetation] []
  G5 (2002-10-01) AK, BC, CA, CO, OR, WA, WY

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A1761 Short-spike Water-milfoil - Western Water-milfoil Aquatic Vegetation Alliance

[ ]
Myriophyllum sibiricum - Myriophyllum hippuroides Aquatic Vegetation Alliance
Western Water-milfoil Aquatic Vegetation

IVC Scientific Name: *Myriophyllum sibiricum - Myriophyllum hippuroides* Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance consists of floating aquatic vegetation dominated by *Myriophyllum sibiricum* sometimes in concentric rings of *Schoenoplectus tabernaemontani, Carex* spp., and *Salix* species. Ponds typically have concentric rings, or zones of vegetation, with *Myriophyllum sibiricum* occupying the deepest portion of relatively shallow ponds. Total canopy coverage on the water surface may be as little as 5%, but more typically it falls in the 40-80% range. It occurs in small ponds typically less than 200 square meters in size and no more than 1-2 m deep. It occurs from sea level to 2600 m (8300 feet) in elevation. Water can be quite saline and the plants heavily encrusted with lime salts.
IVC Dynamics:
IVC Environment: Vegetation types within this alliance generally occur in shallow ponds and along shores of shallow lakes, in eutrophic conditions. The ponds are typically still and shallow (up to 1.5 m or slightly more). Elevations range from 1500 to 2700 m. Nutrient-rich water (which may result from an influx of sewage, livestock waste, etc.) characterizes its environment (Sanderson and Kettler 1996). Surface water (often alkaline) persists throughout the growing season. Soils remain saturated even when the water level drops below the soil surface. Soil texture ranges from loamy to clay loam, and typically a clay lens is located under the pond and pond edges. Due to the anaerobic conditions, peaty soils usually greater than 40 cm form. Mottling occurs within the first 10-15 cm and gleyed soils are very common (Culver and Sanderson 1997).

DISTRIBUTION

IVC Geographic Range: This alliance is known from Alberta and Colorado, and is likely to occur in Montana, Wyoming, Idaho, Oregon, Washington, and California.
IVC Nations: CA,US
IVC States/Provinces: AB, BC, CA?, CO, ID?, MT?, OR, WA, WY?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003331 *Myriophyllum hippuroides* Aquatic Vegetation** [Western Water-milfoil Aquatic Vegetation] []
  G3 (2002-10-01) BC, OR, WA
- **CEGL002000 *Myriophyllum sibiricum* Aquatic Vegetation** [Short-spike Water-milfoil Aquatic Vegetation] []
  GUQ (1996-02-01) AB, CO, WY?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Culver, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A3926 Rocky Mountain Pond-lily Western Aquatic Vegetation Alliance

[ ]
Nuphar polysepala Western Aquatic Vegetation Alliance
Western Pond-lily Aquatic Vegetation

IVC Scientific Name: *Nuphar polysepala* Western Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is composed of floating aquatic herbaceous vegetation where *Nuphar polysepala* is often the only species present. Cover is continuous, intermittent or open. Other aquatic and emergent herbs present may include species of *Carex, Eleocharis, Equisetum, Glyceria, Lemna, Menyanthes, Potamogeton*, and *Typha*. Many of these associates are in shallower, adjacent water. It occurs on permanently flooded ponds, lakes, deeper beaver ponds, and glacial kettle lakes, from sea level to 2410 m (7900 feet) in elevation. Soils are usually organic Histosols, on anoxic muck or peat. Water depths range from 40 to 200 cm (1.25-6.5 feet). Stands can completely fill smaller ponds, or occurrences may be only as large as the water depth allows, and are part of a larger mosaic of other freshwater emergent marsh communities.
IVC Dynamics: Stands have been observed where water levels fluctuate seasonally, leaving *Nuphar* high and dry on exposed mudflats, especially in drought years.
IVC Environment: This aquatic alliance occurs in a variety of shallow ponds and lakes and slow-moving waterbodies such as rivers, millponds, blackwater sloughs, streams, or on shores of deeper waterbodies, including freshwater tidal areas. The water depth is generally greater than 0.5 m and up to 2 m. Stands are permanently to semipermanently flooded. These communities have been found at elevations as low as sea level and as high as 2800 m.

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout the western U.S. and Canada.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, CO, ID, MT, OR, WA, WY?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002001 *Nuphar polysepala* Aquatic Vegetation** [Rocky Mountain Pond-lily Aquatic Vegetation] []
  G5 (1996-02-01) BC, CA, CO, ID, MT, OR, WA, WY?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A3927 Floating Pondweed - Water Knotweed Aquatic Vegetation Alliance

[ ]
Potamogeton natans - Polygonum amphibium Aquatic Vegetation Alliance
Western Floating Pondweed - Knotweed Aquatic Vegetation

IVC Scientific Name: *Potamogeton natans - Polygonum amphibium* Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alliance is of aquatic floating vegetation dominated by *Myriophyllum spicatum, Polygonum amphibium, Potamogeton diversifolius, Potamogeton foliosus, Potamogeton natans, Potamogeton richardsonii* , or *Stuckenia filiformis* or a combination of these. Associated species include *Brasenia schreberi, Nuphar polysepala, Sagittaria cuneata*, and *Utricularia macrorhiza*. They generally all occur in shallow ponds that are either bedrock or sand, filled by snowmelt or summer runoff. Elevation ranges from 100-2530 m (300-8300 feet). Ponds and other waterbodies are permanently wet; however, some may have water levels that vary greatly during the year.
IVC Dynamics:
IVC Environment: This alliance occurs in the permanently inundated, "deep water" zone of glacial ponds in gentle, rolling, glacial terrain. Water is usually 15 to >100 cm deep. Types typically occur in fresh to moderately brackish water (Lesica 1989). The water is generally still, though it may be moving very slowly through beaver ponds, and is typically nutrient-rich (Sanderson and Kettler 1996). The underlying parent material is mixed sedimentary (partly calcareous) glacial till. Pond bottoms are typically composed of mud, organic mud, or mud mixed with gravel and stones (Faber-Langendoen et al. 1997).

DISTRIBUTION

IVC Geographic Range: This alliance is found in ponds and waterbodies throughout the temperate western U.S. and western Canada.
IVC Nations: CA,US
IVC States/Provinces: BC, CA, CO, ID, MT, ND, OR, SD, SK?, UT, WA, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002925 *Potamogeton natans* Aquatic Vegetation** [Floating Pondweed Aquatic Vegetation] []
  G5? (2002-10-28) BC, CA?, CO, ID, OR, WA
- **CEGL002006 *Potamogeton richardsonii - Myriophyllum spicatum* Aquatic Vegetation** [Richardson's Pondweed - Eurasian Water-milfoil Aquatic Vegetation] []
  G2Q (1996-02-01) MT, ND?, SK?
- **CEGL002002 *Polygonum amphibium* Aquatic Vegetation** [Water Knotweed Aquatic Vegetation] []
  G5 (2000-05-01) BC, CA?, CO, ID, MT, OR, SD, UT, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A3920 Whitewater Crowfoot - Vernal Water-starwort - Greater Water-starwort Aquatic Vegetation Alliance

[ ]

Ranunculus aquatilis - Callitriche palustris - Callitriche heterophylla Aquatic Vegetation Alliance

Whitewater Crowfoot - Water-starwort Aquatic Vegetation

IVC Scientific Name: *Ranunculus aquatilis - Callitriche palustris - Callitriche heterophylla* Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This aquatic herbaceous alliance consists of floating communities dominated by *Callitriche heterophylla, Callitriche palustris, Ranunculus aquatilis*, and/or *Ranunculus lobbii*. It is widespread in the western U.S. and western Canada and found in natural ponds, stockponds, ditches and slow-moving streams, at low-elevations (152-580 m [500-1900 feet]). The water at these sites is often poorly oxygenated and nitrogen-rich. Water depths are on average <0.5 m deep. Soils are organic oozes (Sapric Histosols), organic rich loams, silt, sandy loams or sands.
IVC Dynamics: Slow-moving stable waters throughout the growing season allow larger communities to develop.
IVC Environment: Freshwater ponds and other waterbodies, often poorly oxygenated and nitrogen-rich. Water depths are in average <0.5 m deep. Soils are organic oozes (Sapric Histosols), organic rich loams, silt, sandy loams or sands

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout freshwater shallow ponds in the western U.S. and Canada.
IVC Nations: CA,US
IVC States/Provinces: AK?, BC, CA, CO, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003307 *Ranunculus aquatilis* Aquatic Vegetation** [Whitewater Crowfoot Aquatic Vegetation] []
  G5 (2002-10-01) BC, CA?, OR, WA
- **CEGL003301 *Callitriche heterophylla* Aquatic Vegetation** [Greater Water-starwort Aquatic Vegetation] []
  G5 (2002-10-01) AK?, OR, WA

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)
IVC Description Author: G. Kittel and M.S. Reid
IVC Description Date: 2014-03-14
IVC Acknowledgments:

A3928 Broadleaf Arrowhead Aquatic Vegetation Alliance

[ ]

Sagittaria latifolia Aquatic Vegetation Alliance

Western Coastal Broadleaf Arrowhead Aquatic Vegetation

IVC Scientific Name: *Sagittaria latifolia* Aquatic Vegetation Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This aquatic herbaceous alliance is dominated by the emergent forb *Sagittaria latifolia*. Stands are usually diverse with several associated species such as *Bidens cernua, Eleocharis ovata, Eleocharis palustris, Leersia oryzoides, Potamogeton natans, Schoenoplectus tabernaemontani*, or *Sparganium angustifolium*. Stands occur from sea level to 152 m (500 feet) in elevation and are known from western coastal U.S. and British Columbia. The habitat is seasonal pools, ponds, sloughs, and freshwater tidal mudflats.

IVC Dynamics: Stands are flooded early in the season and may dry out as summer progresses, or may remain flooded throughout the growing season; some are irrigated by daily tides. *Sagittaria latifolia* was a well-documented staple food of the Kalapuya and Chinook people and intensively managed (Darby 1996, Boyd 1999). It was probably widespread on floodplains in the Willamette Valley but has become rare because of loss of pond and slough habitats to flood control, agriculture, urban development, and invasion by *Phalaris arundinacea*. The largest populations remaining in the region occur on Sauvie Island.

IVC Environment: Stands occur from sea level to 152 m (500 feet) in elevation in seasonal pools, ponds, sloughs, and freshwater tidal mudflats.

DISTRIBUTION

IVC Geographic Range: This alliance occurs at low elevations of coastal California, Oregon, Washington, and British Columbia.

IVC Nations: CA,US

IVC States/Provinces: BC, CA, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003321 *Sagittaria latifolia* Aquatic Vegetation** [Broadleaf Arrowhead Aquatic Vegetation] []
  G3 (2002-10-01) BC?, CA?, OR, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-03-14

IVC Acknowledgments:

A3921 Common Bladderwort - Lesser Bladderwort - Yellowish-white Bladderwort Aquatic Vegetation Alliance

[ ]

Utricularia macrorhiza - Utricularia minor - Utricularia ochroleuca Aquatic Vegetation Alliance

Western Bladderwort Aquatic Vegetation

IVC Scientific Name: *Utricularia macrorhiza - Utricularia minor - Utricularia ochroleuca* Aquatic Vegetation Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This aquatic herbaceous alliance is dominated by submerged and entirely floating (not rooted in soil) *Utricularia macrorhiza, Utricularia minor*, or *Utricularia ochroleuca*. They form sparse to dense masses of nearly monotypic submerged vegetation. Stands occur in lakes and ponds, usually with perennial water and are found throughout low elevations in the western U.S. and possibly western Canada.

IVC Dynamics:

IVC Environment: Stands occur in lakes and ponds, usually with perennial water. It is not clear if this alliance favors eutrophic conditions or may be enhanced by enriched runoff in agricultural or urban landscapes.

DISTRIBUTION

IVC Geographic Range: This alliance is found throughout low elevations in the western U.S. and possibly western Canada.

IVC Nations: CA?,US

IVC States/Provinces: AK?, BC?, CA?, CO, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL003310 *Utricularia macrorhiza* Aquatic Vegetation** [Common Bladderwort Aquatic Vegetation] []
  G5 (2002-10-01) AK?, BC?, CA?, CO, OR, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2013)

IVC Description Author: G. Kittel

IVC Description Date: 2014-03-14

IVC Acknowledgments:

M871 Boreal Freshwater Aquatic Vegetation

Végétation aquatique d'eau douce des zones arctique et boréale nordique

IVC Colloquial Name: Boreal Freshwater Aquatic Vegetation

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This aquatic floating and rooted vegetation is found in freshwater lakes, ponds and sluggish rivers of the Arctic and Boreal climatic zones of Alaska, Canada and Greenland. It occurs in 10 cm (4 inches) to at least 3 m (10 feet) of freshwater. Dominant species include *Hippuris vulgaris, Isoetes tenella, Limosella aquatica, Potamogeton* spp., *Ranunculus* ssp., and *Sparganium angustifolium*. This macrogroup includes nonvascular cryptogram or moss communities. Emergent species are absent or rare. These species are typical of aquatic habitats, and do not appear to be restricted to arctic or boreal climates.

IVC Geographic Range: This macrogroup is found in the Boreal and Arctic climatic zones of Alaska, Canada and Greenland.

IVC Nations: CA,GL,US

IVC States/Provinces: AB, AK, BC, LB, MB, NB, NF, NS, NT, NU, ON, QC, SK, YT

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G769 North American Boreal Freshwater Aquatic Vegetation []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Alaska Natural Heritage Program Ecologists

IVC Description Author: G. Kittel

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G769 North American Boreal Freshwater Aquatic Vegetation

[ ]

IVC Colloquial Name: North American Boreal Freshwater Aquatic Vegetation

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This aquatic floating and rooted vegetation is found in freshwater lakes, ponds and sluggish rivers of the Arctic and Boreal climatic zones of Alaska, Canada and Greenland. It occurs in 10 cm (4 inches) to at least 3 m (10 feet) of freshwater. Dominant species include *Hippuris vulgaris, Isoetes tenella, Limosella aquatica, Potamogeton* spp., *Ranunculus* ssp., and *Sparganium angustifolium*. This group includes nonvascular cryptogram or moss communities. Emergent species are absent or rare. These species are typical of aquatic habitats, and do not appear to be restricted to arctic or boreal climates.

IVC Dynamics: These aquatic communities in shallow water are eventually replaced by marshes, wet meadows, or bog meadows.

IVC Environment: This group occurs in permanent and seasonally ephemeral bodies of freshwater such as ponds, lakes, slack waters of large rivers within arctic and boreal climatic zones. Water depths range from 10 cm (4 inches) to at least 3 m (10 feet) deep. Substrates are mineral, organic-rich muck, or rock.

DISTRIBUTION

IVC Geographic Range: This group is found in the Boreal and Arctic climatic zones of Alaska, Canada and Greenland.

IVC Nations: CA,GL,US

IVC States/Provinces: AB, AK, BC, LB, MB, NB, NF, NS, NT, NU, ON, QC, SK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association

global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4345 Boreal Mare's-tail - Pondweed Alliance** [Boreal Mare's-tail - Pondweed Alliance] []
- **A4346 Boreal Pondlily Alliance** [Boreal Pondlily Alliance] []
- **A4253 *Lemna* spp. - Mixed Boreal Floating Aquatic Vegetation Alliance** [Duckweed species - Mixed Boreal Floating Aquatic Vegetation Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Alaska Natural Heritage Program Ecologists
IVC Description Author: G. Kittel
IVC Description Date: 2017-03-29
IVC Acknowledgments:

A4345 Boreal Mare's-tail - Pondweed Alliance

[ ]
Boreal Mare's-tail - Pondweed Alliance
Boreal Mare's-tail - Pondweed

IVC Scientific Name: Boreal Mare's-tail - Pondweed Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, LB, MB, NB, NF, NS, NT, NU, ON, QC, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:

IVC Description Date:
IVC Acknowledgments:

A4346 Boreal Pondlily Alliance

[ ]
Boreal Pondlily Alliance
Boreal Pondlily

IVC Scientific Name: Boreal Pondlily Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, LB, MB, NB, NF, NS, NT, NU, ON, QC, SK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4253 Duckweed species - Mixed Boreal Floating Aquatic Vegetation Alliance

[ ]
Lemna spp. - Mixed Boreal Floating Aquatic Vegetation Alliance
Duckweed - Mixed Boreal Floating Aquatic Vegetation

IVC Scientific Name: *Lemna* spp. - Mixed Boreal Floating Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, BC, MB, NT, NU, ON, QC, SK, YT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005452 *Lemna* spp. North American Boreal Aquatic Vegetation** [Duckweed species North America Boreal Aquatic Vegetation] []
  GNR. AB, AK, BC, MB, NT, NU, ON, QC, SK, YT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2020)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

M401 North American Temperate Ruderal Aquatic Vegetation

[ ]

IVC Colloquial Name: North American Temperate Ruderal Aquatic Vegetation
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This ruderal aquatic vegetation occurs in freshwater wetlands of lakes, rivers, and ponds, in areas which are permanently or semipermanently flooded. The dominant growth forms are floating, rooting and submerged aquatic vegetation. The most common species include the exotics *Alternanthera philoxeroides, Egeria densa, Eichhornia crassipes, Ludwigia peploides, Pistia stratiotes*, and *Salvinia molesta*. In cool temperate regions, *Hydrocharis morsus-ranae, Myriophyllum spicatum*, and *Trapa natans* are locally common. These exotic species can spread vigorously and form extensive mats that cover the surface or submersed areas of the water.

IVC Geographic Range: This macrogroup is found in eastern Canada, the eastern, midwestern, and southeastern United States, Texas, eastern Mexico, and the Caribbean.

IVC Nations: CA,MX,US

IVC States/Provinces: AL, AR, CT, DE, FL, GA, IA, IL, KS, KY, LA, MA, ME, MI, MN, MO, MS, NC, ND, NE, NH, NJ, NY, OH, OK, ON, PA, QC, SC, TN, TX, VA, VT, WI, WV

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G595 Eastern North American Ruderal Aquatic Vegetation []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: C. Nordman

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G595 Eastern North American Ruderal Aquatic Vegetation

[ ]

IVC Colloquial Name: Eastern North American Ruderal Aquatic Vegetation
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This ruderal aquatic vegetation occurs in freshwater wetlands of lakes, rivers, and ponds, in areas which are permanently or semipermanently flooded. The dominant growth forms are floating, rooting and submersed aquatic vegetation. The most common species include the exotics *Alternanthera philoxeroides, Eichhornia crassipes, Ludwigia peploides, Pistia stratiotes*, and *Salvinia molesta* in warm-temperate regions. In cool-temperate regions, *Myriophyllum spicatum, Hydrocharis morsus-ranae*, and *Trapa natans* are locally common. These exotic species can spread vigorously and form extensive mats that cover the surface or submersed areas of the water.

IVC Dynamics: In the warm-temperate region, cold temperatures can cause damage to most of these plants, and probably limits their ranges to the north. After flooding events, these plants can establish in new areas where the floodwater has carried them. Many of these plants can also be spread to new areas on the props of boats. Various control methods have been used to reduce nuisance infestations (Gettys et al. 2009).

IVC Environment: *Climate:* This aquatic vegetation occurs in both warm-temperate and tropical areas, which have a humid climate, and in cool-temperate regions. *Soil/substrate/hydrology:* This aquatic vegetation occurs in freshwater wetlands that are permanently or semipermanently flooded. Areas may be impounded, natural lakes, or low-gradient flowing streams and rivers. Often patches of this vegetation will occur in the more slowly flowing sections of rivers and streams.

DISTRIBUTION

IVC Geographic Range: This group is found in eastern Canada, the eastern, midwestern and southeastern United States, and eastern Mexico.

IVC Nations: CA,MX,US

IVC States/Provinces: AL, AR, CT, DE, FL, GA, IA, IL, KS, KY, LA, MA, ME, MI, MN, MO, MS, NC, ND, NE, NH, NJ, NY, OH, OK, ON, PA, QC, SC, TN, TX, VA, VT, WI, WV

IVC Omernik Ecoregions: 8.3.5.65:P, 8.3.6.74:P, 8.3.7.35:P, 8.3.8.33:P, 8.5.1.63:P, 8.5.2.73:P, 8.5.3.75:P, 9.4.7.32:P, 9.5.1.34:P, 9.6.1.31:P, 15.4.1.76:P

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2011-03-15)

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1745 *Hydrilla verticillata - Myriophyllum spicatum* Ruderal Aquatic Vegetation Alliance** [Water-thyme - Eurasian Water-milfoil Ruderal Aquatic Vegetation Alliance] []
  This ruderal aquatic vegetation occurs in freshwater wetlands of lakes, rivers, and pond, and is commonly dominated by the exotics *Egeria densa, Hydrilla verticillata, Hygrophila polysperma, Limnophila sessiliflora, Myriophyllum aquaticum, Myriophyllum spicatum, Najas minor*, and *Potamogeton crispus*, which can spread vigorously and form extensive subsurface mats.
- **A4222 *Trapa natans - Hydrocharis morsus-ranae* Ruderal Aquatic Vegetation Alliance** [Water Chestnut - Common Frogbit Ruderal Aquatic Vegetation Alliance] []
  This ruderal floating aquatic vegetation occurs in cool temperate freshwater wetlands of lakes, rivers, and ponds commonly dominated by the exotics *Hydrocharis morsus-ranae*, and *Trapa natans*, which can spread vigorously and form extensive surface or subsurface mats.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: T.L. Morris (1974)

IVC Description Author: C. Nordman and J. Drake

IVC Description Date: 2015-05-07

IVC Acknowledgments:

A1745 Water-thyme - Eurasian Water-milfoil Ruderal Aquatic Vegetation Alliance

[ ]

Hydrilla verticillata - Myriophyllum spicatum Ruderal Aquatic Vegetation Alliance

Ruderal Water-thyme - Eurasian Water-milfoil Aquatic Vegetation

IVC Scientific Name: *Hydrilla verticillata - Myriophyllum spicatum* Ruderal Aquatic Vegetation Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This ruderal aquatic vegetation occurs in freshwater wetlands of lakes, rivers, and ponds, in areas which are permanently or semipermanently flooded. The dominant growth form is submersed aquatic plants. The most common species include the exotics *Egeria densa, Hydrilla verticillata, Myriophyllum aquaticum, Myriophyllum spicatum, Najas minor*, and *Potamogeton crispus*. These exotic species can spread vigorously and form extensive growth in submersed areas of the water, often reaching the surface.

IVC Dynamics: *Hydrilla verticillata* is an invasive alien species. Since its introduction, it has rapidly spread across the southeastern United States, its spread into man-made lakes being exacerbated by the transport of propagules on boat propellers. It produces vegetative propagules known as turions, which can resist desiccation for long periods of time. Because these plants grow submersed in water, they get some protection from very cold air temperatures during winter months. After flooding events, these plants can establish in new areas where the floodwater has carried them. Many of these plants can also be spread to new areas on the props of boats. Various control methods have been used to reduce nuisance infestations (Gettys et al. 2009).

IVC Environment: *Climate:* This aquatic vegetation occurs in both warm-temperate areas, which have a humid climate, and in cool-temperate regions. *Soil/substrate/hydrology:* This aquatic vegetation occurs in freshwater wetlands that are permanently or semipermanently flooded. Areas may be impounded, natural lakes, or low-gradient flowing streams and rivers. Often patches of this vegetation will occur in the more slowly flowing sections of rivers and streams.

DISTRIBUTION

IVC Geographic Range: This alliance is found in eastern Canada, eastern, midwestern and southeastern United States, Texas, and eastern Mexico.
IVC Nations: CA,MX,US
IVC States/Provinces: AL, CT, DE, FL, GA, IA, IL, KS, KY, LA, MA, ME, MI, MN, MO, MS, NC, ND, NE, NH, NJ, NY, OH, OK, ON, PA, QC, SC, TN, TX, VA, VT, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2013-09-27)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: A.S. Weakley, in Faber-Langendoen et al. (2013)
IVC Description Author: A.S. Weakley, J. Drake and C.W. Nordman
IVC Description Date: 2016-01-18
IVC Acknowledgments:

A4222 Water Chestnut - Common Frogbit Ruderal Aquatic Vegetation Alliance

[ ]
Trapa natans - Hydrocharis morsus-ranae Ruderal Aquatic Vegetation Alliance
Ruderal Water Chestnut - Common Frogbit Aquatic Vegetation

IVC Scientific Name: *Trapa natans - Hydrocharis morsus-ranae* Ruderal Aquatic Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This ruderal aquatic vegetation occurs in cool temperate freshwater wetlands of lakes, rivers, and ponds, in areas which are permanently or semipermanently flooded. The dominant growth form is floating aquatic vegetation. The most common species include the exotics *Hydrocharis morsus-ranae*, and *Trapa natans*. These exotic species can spread vigorously and form extensive mats that cover the surface or submersed areas of the water.
IVC Dynamics: After flooding events, these plants can establish in new areas where the floodwater has carried them. Many of these plants can also be spread to new areas on the props of boats. Various control methods have been used to reduce nuisance infestations (Gettys et al. 2009).
IVC Environment: *Climate:* This aquatic vegetation occurs in cool-temperate regions. *Soil/substrate/hydrology:* This aquatic vegetation occurs in freshwater wetlands that are permanently or semipermanently flooded. Areas may be impounded, natural lakes, or low-gradient flowing streams and rivers. Often patches of this vegetation will occur in the more slowly flowing sections of rivers and streams.

DISTRIBUTION

IVC Geographic Range: This alliance is found in eastern Canada, northeastern, and midwestern United States.
IVC Nations: CA,US
IVC States/Provinces: CT, DE, IA, IL, MA, ME, MI, MN, MO, ND, NE, NH, NJ, NY, OH, ON, PA, QC, VA, VT, WI, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (ruderal) (2016-01-18)

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: C.W. Nordman, in Faber-Langendoen et al. (2016)
IVC Description Author: C.W. Nordman
IVC Description Date: 2016-01-18
IVC Acknowledgments:

6. OPEN ROCK VEGETATION

Tropical, temperate, and boreal habitats are characterized or dominated by plant growth forms, such as *lichen, bryophyte, alga*, or *fern*, that have structural adaptations for living on stable rock surfaces or on unstable rocky substrates, such as cliffs, talus, scree, pavement, cobble, lava or boulderfields, and with associated mesomorphic grass, shrub and tree growth forms.

6.B. Temperate & Boreal Open Rock Vegetation

Rocky habitats (such as cliffs, talus, scree, pavement, cobbles, recent lava flows, or large rock outcrops) characterized by temperate, including Mediterranean, and boreal lithomorphic and lithophilic growth forms, including saxicolous *lichens, bryophytes, algae*, and/or *ferns* and other pteridophytes. Tree growth forms typically have <10% cover, are very sparse; woody growth forms, when present, include cold-deciduous broad-leaved and needle-leaved trees and shrubs. Vegetation found on temperate and boreal rocky habitats (such as cliffs, talus, recent lava flows, or rock outcrops) at low to moderate elevations at mid-latitudes from 23°to 70°N or S latitude around the globe that are characterized by nonvascular plant growth forms that have structural adaptations for living on these habitats.

6.B.1. Temperate & Boreal Cliff, Scree & Other Rock Vegetation

Vegetation in temperate and boreal habitats found in rocky or rocklike habitats (such as cliffs, talus, scree, pavement, cobbles, lava, boulderfields, or badlands) at low elevations at mid-latitudes around the globe characterized by nonvascular plant growth forms that have structural adaptations for living on stable rock surfaces or in unstable rocky substrates. A sparse cover of vascular mesomorphic growth forms, including needle-leaved and cold-deciduous broad-leaved woody plants, may be present.

Macrogroups in Canada:

- **M111 Eastern North American Cliff & Rock Vegetation [Végétation rupestre et de falaises de l'est de l'Amérique du Nord]**
  This type encompasses vegetation of eastern temperate North America found on somewhat to strongly vertical cliffs, talus slopes, and erosional bluffs and characterized by sparse and patchy vascular vegetation and often high nonvascular and fern cover.
- **M116 Great Plains Cliff, Scree & Rock Vegetation [Végétation rupestre, de falaises et de pierriers des Grandes Plaines]**
  This macrogroup is found throughout the Great Plains on cliffs, bluffs, and rock outcrops, with vegetation comprised of sparse, rocky vegetation and sparse to abundant lichens.
- **M115 Great Plains Badlands Vegetation [Végétation des bad-lands des Grandes Plaines]**
  This badlands macrogroup is found in the northern Great Plains where erodible parent material is dissected into dry, sparsely vegetated, generally steep slopes, usually above rivers or perennial or intermittent streams. The dominant vegetation is a mix of shrubs, forbs, and grasses with each dominating some areas.
- **M887 Western North American Cliff, Scree & Rock Vegetation [Végétation rupestre, de falaises et de pierriers de l'ouest de l'Amérique du Nord]**
  This sparsely vegetated rock outcrop and cliff face macrogroup is found in temperate and boreal climates, on the Alaska peninsula and Aleutian Islands, boreal Alaska and Yukon Territory, the Coast Mountains of British Columbia, in Washington and northwestern Oregon. Stands include patchy vegetated fractures in the rock surface and less steep or more stable slopes that are composed of scattered trees and/or shrubs. Mosses or lichens may be very dense, well-developed and display cover well over 10%.
- **M895 North American Boreal Cliff, Scree & Rock Vegetation []**

M111 Eastern North American Cliff & Rock Vegetation

Végétation rupestre et de falaises de l'est de l'Amérique du Nord

IVC Colloquial Name: Eastern North American Cliff & Rock Vegetation

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This type encompasses vegetation of eastern temperate and boreal North American cliffs, talus slopes and erosional bluffs characterized by often sparse and patchy vascular vegetation and often high nonvascular cover. It ranges from the East Coast west to the Ouachitas and upper Great Lakes and through central and eastern boreal Canada. Vegetation structure varies widely, and may include scattered small trees such as *Betula papyrifera, Juniperus virginiana, Picea glauca, Pinus banksiana, Pinus strobus, Thuja occidentalis*, and *Quercus* spp. Other commonly encountered species may include *Asplenium* spp., *Cystopteris fragilis, Danthonia spicata, Dasiphora fruticosa ssp. floribunda, Deschampsia cespitosa, Dryopteris marginalis, Hydrangea arborescens, Parthenocissus quinquefolia, Polypodium virginianum, Ribes* spp., *Rubus pubescens, Sibbaldiopsis tridentata*, and *Toxicodendron radicans*. Characteristic foliose and fruticose macrolichen genera include *Cladonia, Lasallia, Stereocaulon*, and *Umbilicaria*. Crustose lichens are also common. Substrates include all lithologies from acidic granites to circumneutral basalts to calcareous limestones, with concomitant floristic variation. These cliffs are prone to harsh climatic conditions; frequent disturbances include drought stress and wind and storm damage. Most of the substrate is dry and exposed, but small (occasionally large) areas of seepage are often present. The vegetation is patchy and sparse overall, except in some wet, or seepy, areas where the rocks are often densely or moderately covered with bryophytes or algae. Outside of the glaciated regions and the Appalachian Mountains, this vegetation is primarily limited to river gorges and bluffs. A specialized habitat within this macrogroup is the vertical walls of limestone sinkholes. Vegetation occurring on shoreline examples seems to be mostly restricted to areas protected from wave action, ice-scour, and wind.

IVC Geographic Range: This type ranges in the boreal region from eastern to central Canada, and in the temperate region from New England and adjacent Canada west to the Great Lakes and northern Minnesota, south through the Appalachians and Piedmont (occasional in the Atlantic Coastal Plain), and west across the Cumberland Plateau and Interior Low Plateau to the Ozarks.

IVC Nations: CA,MX?,US

IVC States/Provinces: AB?, AL, AR, CT, FL, GA, IA, IL, IN, KS, KY, LA, MA, MB, MD, ME, MI, MN, MO, MS, NB, NC, NE, NH, NJ, NS, NY, OH, OK, ON, PA, QC, RI, SC, SD, SK?, TN, TX, VA, VT, WI, WV

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G840 Appalachian Cliff & Rock Vegetation []**
- **G841 Central Midwest-Interior Cliff & Rock Vegetation []**
- **G340 Northeastern Erosional Bluff Vegetation []**
- **G839 Laurentian-Acadian-Great Lakes Cliff & Rock Vegetation []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: S. Gawler, D. Faber-Langendoen, and S. Menard, in Faber-Langendoen et al. (2014)

IVC Description Author: S. Gawler, S. Menard, L. Sneddon, D. Faber-Langendoen

IVC Description Date: 2016-01-08

IVC Acknowledgments:

G840 Appalachian Cliff & Rock Vegetation

[ ]

IVC Colloquial Name: Appalachian Cliff & Rock Vegetation

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group includes vegetation of acidic and alkaline dry to wet igneous, metamorphic, and sedimentary rock outcrops and cliffs in the Central and Southern Appalachian and Piedmont regions.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This group includes vegetation of outcrops and cliffs throughout the Appalachian region.
IVC Nations: CA,US
IVC States/Provinces: AL, AR, CT, FL, GA, KY, MA, MD, ME, MS, NB, NC, NH, NJ, NS, NY, OH, PA, SC, TN, TX, VA, VT, WV
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G3? (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G3 rank that was calculated from component association global ranks, and a G4 rank that was calculated from closely related ecological system global ranks. A rank of G3G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2016)
IVC Description Author: D. Faber-Langendoen and M. Pyne
IVC Description Date: 2016-01-13
IVC Acknowledgments:

G841 Central Midwest-Interior Cliff & Rock Vegetation

[ ]

IVC Colloquial Name: Central Midwest-Interior Cliff & Rock Vegetation
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This type is found on alkaline and acidic cliffs in the Midwest and Interior Highlands. Acidic cliff examples may be found on igneous, metamorphic, sandstone and shale bedrock. Trees are few and stunted, if present at all; characteristic woody plants include *Juniperus virginiana, Pinus echinata, Quercus marilandica*, and *Ulmus alata*. Herbaceous species include *Arabis missouriensis, Arisaema triphyllum, Asplenium bradleyi, Asplenium trichomanes, Chasmanthium latifolium, Cheilanthes lanosa, Coreopsis lanceolata, Danthonia spicata, Dryopteris goldieana, Dryopteris marginalis, Lechea tenuifolia, Mitella diphylla, Mitchella repens, Opuntia humifusa, Polygonum tenue, Polypodium virginianum, Sporobolus clandestinus*, and *Symphyotrichum oblongifolium*. Lichens include *Cladonia caroliniana, Pleopsidium chlorophanum*, and *Xanthoparmelia* spp., and mosses of the genera *Polytrichum* and *Thuidium* are often present.

Alkaline cliffs in the central Midwest include those on limestone, dolostone, maderate and basic igneous rock substrates. Characteristic nonvascular and fern species need to be described. Herbaceous and shrub species from the unglaciated portion of the range include *Aquilegia canadensis, Arabis lyrata, Campanula rotundifolia, Cornus canadensis, Cystopteris bulbifera, Dasiphora fruticosa ssp. floribunda, Galium triflorum, Physocarpus opulifolius, Solidago sciaphila*, and *Zigadenus elegans*. This vegetation occurs on near-vertical rockfaces on variable aspects. Moisture conditions are also variable and are affected by the degree of shading, presence of seepage, and other factors.

In the Ozarks and Interior Low Plateau regions, a variety of seepage-fed cliffs are characterized by *Hydrangea arborescens* with seepage indicators such as *Impatiens pallida*. Overhanging tree species providing shade vary with location and rock chemistry. Associated shrubs may include *Staphylea trifolia, Physocarpus opulifolius, Hypericum prolificum*, and others. Herbaceous species are widely variable, and may include *Aquilegia canadensis, Cystopteris protrusa, Deschampsia flexuosa,*

Dodecatheon meadia, Dryopteris marginalis, Heuchera americana var. hirsuticaulis, Parthenocissus quinquefolia, Pilea pumila, Polymnia canadensis, Toxicodendron radicans ssp. negundo, and many others.

IVC Dynamics:

IVC Environment: This type is found on alkaline and acidic cliffs in the Midwest and Interior Highlands. Acidic cliff examples may be found on igneous, metamorphic, sandstone and shale bedrock. Alkaline cliffs in the central Midwest include those on limestone, dolostone, maderate and basic igneous rock substrates.

DISTRIBUTION

IVC Geographic Range: This group occurs in the central Midwest and Interior Highlands of the U.S. and in southern Ontario and southern Quebec, Canada.

IVC Nations: CA,US

IVC States/Provinces: AL?, AR, IA, IL, IN, KS, KY, MB, MI?, MN, MO, MS?, NE, OH, OK, ON, QC, SD, TN, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G4 rank that was calculated from closely related ecological system global ranks. A rank of G4 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3998 Central Midwest-Interior Alkaline Cliff Alliance** [Central Midwest-Interior Alkaline Cliff Alliance] []
  Alkaline cliffs in the Midwest, including limestone, dolostone, maderate and basic igneous rock substrates. Characteristic nonvascular and fern species need to be described.
- **A4225 Central Midwest-Interior Alkaline Talus & Rock Outcrop Alliance** [Central Midwest-Interior Alkaline Talus & Rock Outcrop Alliance] []
- **A4374 *Schizachyrium scoparium* - *Selaginella rupestris* Rock Outcrop Alliance** [Little Bluestem - Rock Spikemoss Rock Outcrop Alliance] []

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2016)

IVC Description Author: D. Faber-Langendoen, S. Menard and L. Sneddon

IVC Description Date: 2017-02-28

IVC Acknowledgments:

A3998 Central Midwest-Interior Alkaline Cliff Alliance

[ ]

Central Midwest-Interior Alkaline Cliff Alliance

Central Midwest-Interior Alkaline Cliff

IVC Scientific Name: Central Midwest-Interior Alkaline Cliff Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Alkaline cliffs in the central Midwest and Interior Highlands, including limestone, dolostone, maderate and basic igneous rock substrates. Characteristic nonvascular and fern species need to be described. Herbaceous and shrub species from the unglaciated portion of the range include *Aquilegia canadensis, Arabis lyrata, Campanula rotundifolia, Cornus canadensis, Cystopteris bulbifera, Dasiphora fruticosa ssp. floribunda, Galium triflorum, Physocarpus opulifolius, Solidago sciaphila*, and *Zigadenus elegans*. This vegetation occurs on near-vertical rockfaces on variable aspects. Moisture conditions are also variable and are affected by the degree of shading, presence of seepage, and other factors.

IVC Dynamics:

IVC Environment: This vegetation occurs on near-vertical rockfaces on variable aspects. Moisture conditions are also variable and are affected by the degree of shading, presence of seepage, and other factors.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the central midwestern and Interior Highlands region of the U.S. outside the climatic influence of the Great Lakes. It also occurs in southern Ontario and southern Quebec, Canada.

IVC Nations: CA,US

IVC States/Provinces: AR, IA, IL, IN, KS, KY, MN, MO, OH, OK, ON, QC, TN, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002291 Central Midwest-Interior Limestone - Dolostone Dry Cliff Sparse Vegetation** [Central Midwest-Interior Limestone - Dolostone Dry Cliff Sparse Vegetation] []
  G4G5 (2000-03-02) IA, IL, IN, KS, MN, MO, OH, ON
- **CEGL002292 Central Midwest-Interior Limestone - Dolostone Moist Cliff Vegetation** [Central Midwest-Interior Limestone - Dolostone Moist Cliff Vegetation] []
  G4G5 (2000-03-02) IA, IL, IN, KS, KY, MN, MO, OH, ON, TN, WI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)

IVC Description Author: S. Menard and L. Sneddon

IVC Description Date: 2017-02-27

IVC Acknowledgments:

A4225 Central Midwest-Interior Alkaline Talus & Rock Outcrop Alliance

[ ]

Central Midwest-Interior Alkaline Talus & Rock Outcrop Alliance

Midwest Alkaline Talus & Rock Outcrop

IVC Scientific Name: Central Midwest-Interior Alkaline Talus & Rock Outcrop Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept:

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range:

IVC Nations: CA,US

IVC States/Provinces: AR, IA, IL, MN, MO, OK, ON, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002308 Central Midwest-Interior Limestone - Dolostone Talus Vegetation** [Central Midwest-Interior Limestone - Dolostone Talus Vegetation] []
  G4G5 (2000-03-03) AR, IA, IL, MN, MO, OK, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2016)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4374 Little Bluestem - Rock Spikemoss Rock Outcrop Alliance

[ ]
Schizachyrium scoparium - Selaginella rupestris Rock Outcrop Alliance
Central Midwest Rock Outcrop Alliance

IVC Scientific Name: *Schizachyrium scoparium - Selaginella rupestris* Rock Outcrop Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: MB, MN, SD, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002298 Quartzite - Granite Rock Outcrop Sparse Vegetation** [Quartzite - Granite Rock Outcrop Sparse Vegetation] []
  G3? (1996-10-03) MB, MN, SD

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2021c)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G340 Northeastern Erosional Bluff Vegetation

[ ]

IVC Colloquial Name: Northeastern Erosional Bluff Vegetation
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group encompasses sparse vascular or nonvascular vegetation on steep, unconsolidated substrates in temperate eastern North America. The two main substrate types are talus slopes and erosional bluffs. Vegetation varies with substrate character and chemistry. Open talus features sparse vascular vegetation with *Dryopteris marginalis, Parthenocissus quinquefolia, Polypodium* spp., *Ribes* spp., *Toxicodendron radicans*, or *Toxicodendron rydbergii* characteristic, and/or areas dominated by macrolichens. Characteristic foliose and fruticose macrolichen genera include *Umbilicaria, Lasallia, Cladonia*, and *Stereocaulon*. Crustose lichens are also common. Scattered small trees may be present, including *Juniperus virginiana*. Vegetation on erosional bluffs is sparse and highly variable. Species in these habitats tolerate disturbance, and can include *Carex scoparia, Comptonia peregrina, Danthonia spicata, Dichanthelium depauperatum, Equisetum arvense, Equisetum hyemale, Impatiens capensis, Oenothera biennis, Polygonella articulata, Schizachyrium scoparium, Solidago nemoralis*, and non-native weeds including *Tussilago farfara*.

IVC Dynamics: The open character of the vegetation on talus and boulderfields is maintained by exposure to wind, temperature fluctuations, and movement of unstable substrate downslope. Freeze-thaw cycles allow water to permeate bedrock above cliffs, resulting in fracturing of rock that accumulates on and at the base of the slope. Frequent natural disturbance caused by soil slumping of unstable unconsolidated sediments is characteristic of erosional bluffs. Additional processes here include wave action, flood scour, ice-scour, and exposure to storms.

IVC Environment: *Climate:* North-temperate. *Soil/substrate/hydrology:* The unconsolidated substrate contributes to spatially and temporally variable vegetation. On talus, small pockets among the rocks provide rooting substrates; on bluffs, plants have more rooting sites available, but they are subject to erosion or slumping.

DISTRIBUTION

IVC Geographic Range: This group ranges from New England and adjacent Canada west to the Great Lakes and northern Minnesota, south through the Appalachians and Piedmont (occasional in the Atlantic Coastal Plain), and west across the Cumberland Plateau and Interior Low Plateau to the Ozarks.

IVC Nations: CA,US

IVC States/Provinces: AR, CT, GA, IA, IL, IN, KY, MA, MB, MD, ME, MI, MN, MO, MS, NB, NC, NH, NJ, NS, NY, OH, OK, ON, PA, QC, RI, SC, TN, TX, VA, VT, WI, WV

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3992 Eastern North American Erosional Bluff Alliance** [Eastern North American Erosional Bluff Alliance] []
  This alliance comprises sparse vegetation of eroding unconsolidated sediments of steep bluffs along rivers and lakes in the midwestern and northeastern U.S.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: S.C. Gawler, D. Faber-Langendoen, and S.E. Menard, in Faber-Langendoen et al. (2011)

IVC Description Author: S.C. Gawler and L.A. Sneddon

IVC Description Date: 2015-05-06

IVC Acknowledgments:

A3992 Eastern North American Erosional Bluff Alliance

[ ]

Eastern North American Erosional Bluff Alliance

Eastern North American Erosional Bluff

IVC Scientific Name: Eastern North American Erosional Bluff Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance comprises sparse vegetation of eroding unconsolidated sediments of steep bluffs, currently housing two broadly defined and discontinuously distributed associations. Substrates include glacial sediments of eroding coastal cliffs in the Northeast, as well as loess and shale of deep ravines or valleys in the Midwest.

IVC Dynamics: Erosional bluffs are by definition actively changing as a result of flood and wave scour. The substrate slumps as bare sediment is exposed to rain, wind, and sheetflow from upslope.

IVC Environment: Erosional bluffs comprise exposed alluvial sediments on bare channel walls, as well as unconsolidated sediments exposed by wave action and overland sheetflow. The substrate varies depending on the surface eroded, usually sand, silt, clay, loam, or even buried peat.

DISTRIBUTION

IVC Geographic Range: This alliance ranges from the Midwest to the Atlantic Coast, including Canada.

IVC Nations: CA,US

IVC States/Provinces: CT, IL, IN, MA, MB, MD, ME, MI, MN, MO, NH, NS?, NY, OH, ON, PA, QC?, RI, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002584 Laurentian-Northeast Eroding Bluff Sparse Vegetation** [Laurentian-Northeast Eroding Bluff Sparse Vegetation] []
  Stands consist of steep-sloped to near-vertical exposures of eroded unconsolidated material (glacial drift, clay) or weak rock (shale) in the upper Midwest and northeastern United States and adjacent Canada. GNR. MA, MB, MD, ME, MI, MN, NH, NY, OH, ON, VT, WI
- **CEGL002315 Midwest Eroding Bluff Sparse Vegetation** [Midwest Eroding Bluff Sparse Vegetation] []
  This sparsely vegetated bluff community is found in deeply cut ravines or valleys, especially adjacent to streams or rivers. Stands consist of vertical exposures of eroded unconsolidated material (glacial drift, loess), or weak rock (shale). GNR. IL, IN, MI, MO, NY, OH, ON
- **CEGL006618 North Atlantic Maritime Erosional Bluff Sparse Vegetation** [North Atlantic Maritime Erosional Bluff Sparse Vegetation] []
  This community includes steep erosional bluffs with sparse vegetation on the North Atlantic Coast. GNR. CT, MA, ME, NH, NS?, NY, RI

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: E.H. Thompson and E.R. Sorenson (2000)

IVC Description Author: L. Sneddon

IVC Description Date: 2014-12-18

IVC Acknowledgments:

G839 Laurentian-Acadian-Great Lakes Cliff & Rock Vegetation

[ ]

IVC Colloquial Name: Laurentian-Acadian-Great Lakes Cliff & Rock Vegetation

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This structurally and floristically variable group is found in the Great Lakes region of the U.S. and Canada, and northern New England on both alkaline and acidic cliffs. Overall, vegetation varies from sparse nonvascular vegetation to open-treed or shrubby communities. Acidic cliffs include igneous, metamorphic, or sedimentary rock. Woody acidic cliff species may include *Juniperus communis, Amelanchier* spp., stunted individuals of *Betula papyrifera, Picea rubens, Pinus banksiana, Pinus resinosa, Pinus strobus*, and *Quercus rubra*. Shrubs may include *Alnus viridis ssp. crispa, Arctostaphylos uva-ursi, Diervilla lonicera, Juniperus communis, Physocarpus opulifolius*, and *Vaccinium angustifolium*. Common herbs include *Athyrium filix-femina, Campanula rotundifolia, Cystopteris fragilis, Danthonia spicata, Deschampsia cespitosa, Dryopteris carthusiana, Dryopteris fragrans, Dryopteris marginalis, Euthamia graminifolia, Fragaria virginiana, Phegopteris connectilis, Poa compressa, Polypodium appalachianum, Rubus pubescens*, and *Sibbaldiopsis tridentata*. Cliff faces include acidic igneous or metamorphic rock (gneiss, schist, granite, and quartzite). Soils are largely absent, confined to cracks and crevices. Extensive cliff formations occur on the shores of the Great Lakes and other large waterbodies; inland locations often support extensive talus slopes at their bases as a result of weathering and rockslides.

Alkaline cliff vegetation varies from sparse nonvascular vegetation to open-treed or shrubby communities. Nonvascular alkaline cliff plants (lichens, mosses, and liverworts) are common on the exposed cliff face, but vascular plant cover is sparse and patchy, confined to cracks or between boulders at the base of the slope where thin soils accumulate beneath talus. Overhanging trees from the ridgetop may include *Acer saccharum, Thuja occidentalis*, and *Abies balsamea*, and stunted individuals of *Betula papyrifera* may occur on the cliff face. Other woody plants may include *Shepherdia canadensis, Diervilla lonicera, Acer spicatum*, and others. Common herbs may include *Asplenium trichomanes, Geranium robertianum, Maianthemum canadense, Pellaea glabella, Polypodium virginianum, Pteridium aquilinum*, and *Trientalis borealis*. The bedrock may consist of alkaline igneous, metamorphic, or sedimentary rocks. Alkaline rocky cliffs are predominantly dolostone when associated with the Niagaran Escarpment along the northern Lake Michigan and Lake Huron shorelines, perhaps best developed on Drummond Island and adjacent Ontario islands. Alkaline basalts characterize these systems along portions of the Lake Superior shoreline, with a generally distinguishable flora from those on dolostone.

IVC Dynamics:

IVC Environment: Cliff faces include acidic igneous or metamorphic rock (gneiss, schist, granite, and quartzite). Soils are largely absent, confined to cracks and crevices. Extensive cliff formations occur on the shores of the Great Lakes and other large waterbodies; inland locations often support extensive talus slopes at their bases as a result of weathering and rockslides. The bedrock may consist of alkaline igneous, metamorphic, or sedimentary rocks. Alkaline rocky cliffs are predominantly dolostone when associated with the Niagaran Escarpment along the northern Lake Michigan and Lake Huron shorelines, perhaps best developed on Drummond Island and adjacent Ontario islands. Alkaline basalts characterize these systems along portions of the Lake Superior shoreline, with a generally distinguishable flora from those on dolostone.

DISTRIBUTION

IVC Geographic Range: This structurally and floristically variable group is found in the Great Lakes region of the U.S. and Canada, and northern New England on both alkaline and acidic cliffs.

IVC Nations: CA,US

IVC States/Provinces: MA, MB, ME, MI, MN, NB, NH, NS, NY, OH, ON, QC, VT, WI

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4226 Laurentian-Acadian Acidic Talus Alliance** [Laurentian-Acadian Acidic Talus Alliance] []
  This acidic talus type occurs across the Laurentian and Acadian-Northern Appalachian regions, from Northwestern Ontario and Minnesota to Maine and the Maritime provinces.

- **A4223 Laurentian-Acadian Alkaline Talus Alliance** [Laurentian-Acadian Alkaline Talus Alliance] []
  This alkaline talus type occurs across the Laurentian and Acadian-Northern Appalachian regions, from northwestern Ontario and Minnesota to Maine and the Maritime provinces.
- **A4007 Laurentian-Acadian-Great Lakes Acidic Cliff Alliance** [Laurentian-Acadian-Great Lakes Acidic Cliff Alliance] []
  This structurally and floristically variable alliance is found in the Great Lakes region of the U.S. and Canada, and northern New England on cliffs of acidic igneous, metamorphic, or sedimentary rock.
- **A4006 Laurentian-Acadian-Great Lakes Alkaline Cliff Alliance** [Laurentian-Acadian-Great Lakes Alkaline Cliff Alliance] []
  This alliance is found in the Great Lakes region of the U.S. and Canada east to northern New England where exposed bedrock dominates the cliff face. The bedrock may consist of alkaline igneous, metamorphic, or sedimentary rocks. Overall, vegetation varies from sparse nonvascular vegetation to open-treed or shrubby communities.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2016)
IVC Description Author: D. Faber-Langendoen, M. Pyne, S. Menard, L. Sneddon
IVC Description Date: 2016-01-13
IVC Acknowledgments:

A4226 Laurentian-Acadian Acidic Talus Alliance

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Laurentian-Acadian Acidic Talus Alliance
Laurentian-Acadian Acidic Talus

IVC Scientific Name: Laurentian-Acadian Acidic Talus Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This acidic talus type occurs across the Laurentian and Acadian-Northern Appalachian regions. This type occurs on steep-sided knobs, in river gorges, along lakeshores, and in other settings with sheer bedrock exposures. Lichens and mosses are the dominant life forms, with vascular plants sparse or patchy because of scarcity of soil. Often, cliffs and talus slopes are associated with one another because talus slopes are composed of rock fractured either from cliffs or from exposed bedrock on steep hillsides. In Open Talus that is made from quartzite, gneiss, or granite, the spaces between the rocks are large and can form deep caverns, that contain their own biota of interest. Shale talus is made from smaller, flatter rock fragments. Shale talus is inherently less stable than open talus made from large rock fragments, and this difference, along with the differences in the size of the rock fragments and the chemical nature of the rock, correlates with differences in soils and vegetation. Further characterization of this type is needed.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This acidic talus type occurs across the Laurentian and Acadian-Northern Appalachian regions, from Northwestern Ontario and Minnesota to Maine and the Maritime provinces.
IVC Nations: CA,US
IVC States/Provinces: MB, ME, MI, MN, NB, NH, NS, NY, ON, QC?, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005252 *Acer spicatum* - *Alnus viridis* - *Picea glauca* / *Polypodium virginianum* Talus Shrubland** [Mountain Maple - Green Alder - White Spruce / Rock Polypody Talus Shrubland] []
  GNR. MI, ON
- **CEGL005247 Laurentian Dry & Moist Acidic Talus Vegetation** [Laurentian Dry & Moist Acidic Talus Vegetation] []
  GNR. MI, MN, ON, WI
- **CEGL002409 Laurentian Granite - Metamorphic Talus Vegetation** [Laurentian Granite - Metamorphic Talus Vegetation] []
  G4G5 (1997-07-08) MI, MN, ON, QC?, WI
- **CEGL005202 Laurentian Sandstone Talus Vegetation** [Laurentian Sandstone Talus Vegetation] []
  G4G5 (1997-07-08) MI, ON, QC?, WI?
- **CEGL006534 *Polypodium (virginianum, appalachianum)* / Lichens Nonvascular Vegetation** [(Rock Polypody, Appalachian Polypody) / Lichens Nonvascular Vegetation] []
  GNR. ME, NB, NH, NS, NY, VT
- **CEGL002575 Shale Talus Sparse Vegetation** [Shale Talus Sparse Vegetation] []
  GNR. MB
- **CEGL005243 Subboreal Glaciere Talus Sparse Vegetation** [Subboreal Glaciere Talus Sparse Vegetation] []
  G2G3 (2000-03-24) MI?, ON, WI

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2016)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

A4223 Laurentian-Acadian Alkaline Talus Alliance

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Laurentian-Acadian Alkaline Talus Alliance
Laurentian-Acadian Alkaline Talus

IVC Scientific Name: Laurentian-Acadian Alkaline Talus Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This alkaline talus type occurs across the Laurentian and Acadian-Northern Appalachian regions. This type occurs on steep-sided knobs, in river gorges, along lakeshores, and in other settings with sheer bedrock exposures. Lichens and mosses are the dominant life forms, with vascular plants sparse or patchy because of scarcity of soil. Often, cliffs and talus slopes are associated with one another because talus slopes are composed of rock fractured either from cliffs or from exposed bedrock on steep hillsides. In open talus that is made from blocky limestone or dolostone, the spaces between the rocks are large and can form deep caverns that contain their own biota of interest. Further characterization of this type is needed.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alkaline talus type occurs across the Laurentian and Acadian-Northern Appalachian regions, from northwestern Ontario and Minnesota to Maine and the Maritime provinces.
IVC Nations: CA,US
IVC States/Provinces: MI, MN, ON, QC, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005144 Mixed Forb Alkaline Talus Vegetation** [Mixed Forb Alkaline Talus Vegetation] []
  This open herbaceous limestone talus type is found in the Laurentian-Acadian region. Vegetation cover varies from open to closed. GNR. MI, ON, VT, WI?
- **CEGL005067 *Acer spicatum* - *Cornus rugosa* Alkaline Talus Vegetation** [Mountain Maple - Roundleaf Dogwood Alkaline Talus Vegetation] []
  This shrubby limestone talus type is found in the Laurentian-Acadian region. Vegetation cover varies from open to closed, with *Acer spicatum* and *Cornus rugosa* among a number of shrubs that can occur. GNR. MI, ON, WI?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2016)
IVC Description Author: D. Faber-Langendoen
IVC Description Date:
IVC Acknowledgments:

A4007 Laurentian-Acadian-Great Lakes Acidic Cliff Alliance

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Laurentian-Acadian-Great Lakes Acidic Cliff Alliance
Laurentian-Acadian-Great Lakes Acidic Cliff

IVC Scientific Name: Laurentian-Acadian-Great Lakes Acidic Cliff Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This acidic cliff alliance of the Great Lakes and New England portion of the U.S. and adjacent Canada occurs on acidic igneous, metamorphic, or sedimentary rock. Vegetation varies from sparse nonvascular vegetation to open-treed or shrubby communities. Vascular vegetation is sparse and largely confined to crevices. Woody species may include *Juniperus communis, Amelanchier* spp., stunted individuals of *Betula papyrifera, Picea rubens, Pinus banksiana, Pinus resinosa, Pinus strobus*, and *Quercus rubra*. Shrubs may include *Alnus viridis ssp. crispa, Arctostaphylos uva-ursi, Diervilla lonicera, Juniperus communis, Physocarpus opulifolius*, and *Vaccinium angustifolium*. Common herbs include *Athyrium filix-femina, Campanula rotundifolia, Cystopteris fragilis, Danthonia spicata, Deschampsia cespitosa, Dryopteris carthusiana, Dryopteris fragrans, Dryopteris marginalis, Euthamia graminifolia, Fragaria virginiana, Phegopteris connectilis, Poa compressa, Polypodium appalachianum, Rubus pubescens*, and *Sibbaldiopsis tridentata*.
IVC Dynamics: Cliffs are exposed to near-constant erosion, caused by strong winds and ice, as well as strong wave action where they front lakes, fracturing rock that forms talus slopes at their bases. The vertical structure prevents soil development and limits vascular plant growth. Areas of seepage are common.
IVC Environment: These cliff faces occupy acidic igneous or metamorphic rock (gneiss, schist, granite, and quartzite). Soils are largely absent, confined to cracks and crevices. Extensive cliff formations occur on the shores of the Great Lakes and other large waterbodies; inland locations often support extensive talus slopes at their bases as a result of weathering and rockslides.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Great Lakes and northern New England region of the U.S. and Canada.
IVC Nations: CA,US
IVC States/Provinces: ME, MI, MN, NH, NY, OH, ON, QC, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002300 Eastern Boreal & Laurentian Dry Acidic Cliff Vegetation** [Eastern Boreal & Laurentian Dry Acidic Cliff Vegetation] []
  GNR. MI, MN, ON, WI
- **CEGL005191 Great Lakes Basalt - Diabase Cliff Sparse Vegetation** [Great Lakes Basalt - Diabase Cliff Sparse Vegetation] []
  GNR. MI, MN, ON, WI
- **CEGL005244 Granite - Metamorphic Great Lakes Shore Cliff Sparse Vegetation** [Granite - Metamorphic Great Lakes Shore Cliff Sparse Vegetation] []
  GNR. MI, MN, ON
- **CEGL002503 Great Lakes Sandstone Cliff Sparse Vegetation** [Great Lakes Sandstone Cliff Sparse Vegetation] []
  G4G5 (1996-10-03) MI, ON, WI
- **CEGL006528 *Polypodium (virginianum, appalachianum)* Cliff Sparse Vegetation** [(Rock Polypody, Appalachian Polypody) Cliff Sparse Vegetation] []
  GNR. ME, NH, NY, VT

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.A. Kost et al. (2007)
IVC Description Author: S. Menard and L. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

A4006 Laurentian-Acadian-Great Lakes Alkaline Cliff Alliance

[ ]
Laurentian-Acadian-Great Lakes Alkaline Cliff Alliance
Laurentian-Acadian-Great Lakes Alkaline Cliff

IVC Scientific Name: Laurentian-Acadian-Great Lakes Alkaline Cliff Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Overall, vegetation varies from sparse nonvascular vegetation to open-treed or shrubby communities. Nonvascular plants (lichens, mosses, and liverworts) are common on the exposed cliff face, but vascular plant cover is sparse and patchy, confined to cracks or between boulders at the base of the slope where thin soils accumulate beneath talus. Overhanging trees from the ridgetop may include *Acer saccharum, Thuja occidentalis*, and *Abies balsamea*, and stunted individuals of *Betula papyrifera* may occur on the cliff face. Other woody plants may include *Shepherdia canadensis, Diervilla lonicera, Acer spicatum*, and others. Common herbs may include *Asplenium trichomanes, Geranium robertianum, Maianthemum canadense, Pellaea glabella, Polypodium virginianum, Pteridium aquilinum*, and *Trientalis borealis*. This alliance is found in the Great Lakes region of the U.S. and Canada east to northern New England where exposed bedrock dominates the cliff face. The bedrock may consist of alkaline igneous, metamorphic, or sedimentary rocks. Alkaline rocky cliffs are predominantly dolostone when associated with the Niagaran Escarpment along the northern Lake Michigan and Lake Huron shorelines, perhaps best developed on Drummond Island and adjacent Ontario islands. Alkaline basalts characterize these systems along portions of the Lake Superior shoreline, with a generally distinguishable flora from those on dolostone.

IVC Dynamics:

IVC Environment: The bedrock may consist of alkaline igneous, metamorphic, or sedimentary rocks. Alkaline rocky cliffs are predominantly dolostone when associated with the Niagaran Escarpment along the northern Lake Michigan and Lake Huron shorelines, perhaps best developed on Drummond Island and adjacent Ontario islands. Alkaline basalts characterize these systems along portions of the Lake Superior shoreline, with a generally distinguishable flora from those on dolostone.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the Great Lakes region of the U.S. and Canada.
IVC Nations: CA,US
IVC States/Provinces: MA, ME, MI, MN, NH, NY, ON, QC, VT, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005143 Low Mixed Forb Cliff Rim Seep Vegetation** [Low Mixed Forb Cliff Rim Seep Vegetation] []
  GNR. ON
- **CEGL005066 *Juniperus communis* Carbonate Cliff Shrubland** [Common Juniper Carbonate Cliff Shrubland] []
  GNR. ON, QC
- **CEGL005251 *Acer spicatum - Thuja occidentalis - Betula papyrifera / Taxus canadensis* Alkaline Cliff Scrub** [Mountain Maple - Northern White-cedar - Paper Birch / Canada Yew Alkaline Cliff Scrub] []
  GNR. MI, MN, ON, WI
- **CEGL002504 Great Lakes Limestone - Dolostone Cliff Sparse Vegetation** [Great Lakes Limestone - Dolostone Cliff Sparse Vegetation] []
  G4G5 (1996-10-03) MI, ON, VT, WI
- **CEGL006527 *Pellaea atropurpurea* Cliff Sparse Vegetation** [Purple Cliffbrake Cliff Sparse Vegetation] []
  GNR. MA, NH, NY, QC, VT
- **CEGL002451 *Thuja occidentalis* Limestone Cliff** [Northern White-cedar Limestone Cliff] []
  G3 (2000-04-11) MI, NY, ON, VT, WI
- **CEGL005070 *Cornus rugosa* Carbonate Cliff Shrubland** [Roundleaf Dogwood Carbonate Cliff Shrubland] []
  GNR. ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2013)
IVC Description Author: S. Menard and L. Sneddon
IVC Description Date: 2014-12-18
IVC Acknowledgments:

M116 Great Plains Cliff, Scree & Rock Vegetation

Végétation rupestre, de falaises et de pierriers des Grandes Plaines

IVC Colloquial Name: Great Plains Cliff, Scree & Rock Vegetation

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup consists of cliffs, bluffs, and rock outcrops in the Great Plains from the U.S.-Canadian border area south to Texas. It is defined by having sparse vascular vegetation, cryptograms and an abundance of exposed bedrock. The bedrock exposure can be vertical, sloping, or horizontal along rivers, at the tops of buttes, in dry canyons, or, rarely, large, low bedrock outcrops. The bedrock is usually sedimentary (sandstone, limestone, shale, gypsum, siltstone), but granite, rhyolite and (rarely) quartzite also occur. Vegetation is generally sparse except where soil accumulates in pockets or ledges. Dominant species vary greatly depending on geology of the bedrock, climate, aspect, slope, and slope position. Lichens predominate on exposed rock. Common vascular species found in this macrogroup are able to tolerate the dry to xeric conditions and poor soil development. These include *Bouteloua eriopoda* (in the southwest), *Bouteloua gracilis, Bouteloua hirsuta, Bouteloua rigidiseta, Cercocarpus montanus, Erioneuron pilosum, Juniperus* spp., *Opuntia* spp., *Rhus trilobata*, and *Vulpia octoflora*. Cryptogams, especially lichen species, need to be described.

IVC Geographic Range: This macrogroup is found in the Great Plains from southern Canadian Great Plains south to northern Texas, and from the Rocky Mountain foothills to southwestern Minnesota, eastern Kansas and possibly northwestern Iowa and Missouri.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, IA?, KS, MB, MN, MO?, MT, ND, NE, NM, OK, SD, SK?, TX, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G567 Great Plains Cliff, Scree & Rock Vegetation []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: J. Drake, D. Faber-Langendoen and B. Hoagland

IVC Description Date: 2016-01-14

IVC Acknowledgments:

G567 Great Plains Cliff, Scree & Rock Vegetation

[ ]

IVC Colloquial Name: Great Plains Cliff, Scree & Rock Vegetation

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is composed of cliffs, bluffs, and rock outcrops in the Great Plains from the U.S.-Canadian border area south to Texas. It is defined by having sparse vegetation and the abundance of exposed bedrock. The bedrock exposure can be vertical, sloping, or horizontal along rivers, at the tops of buttes, in dry canyons, or, rarely, large, low bedrock outcrops. The bedrock is usually sedimentary (sandstone, limestone, shale, gypsum, siltstone), but an area of quartzite outcrops in southwestern Minnesota is included in this group. Vegetation is generally sparse except where soil accumulates in pockets or ledges. Dominant species vary greatly depending on geology of the bedrock, climate, aspect, slope, and slope position. Common species are able to tolerate the dry to xeric conditions and poor soil development found in this group. These include *Bouteloua eriopoda* (in the southwest), *Bouteloua gracilis, Cercocarpus montanus, Juniperus* spp., *Opuntia* spp., and *Rhus trilobata*.

IVC Dynamics: Drought and erosion, both from wind and water, are important in maintaining sites in this group.

IVC Environment: Sites in this group have significant exposure of bedrock. The bedrock can be vertical, sloping, or horizontal along rivers, at the tops of buttes, in dry canyons, or, rarely, large, low bedrock outcrops. The bedrock is usually sedimentary

(sandstone, limestone, shale, gypsum, siltstone), but an area of quartzite outcrops in southwestern Minnesota is included in this group. Soil development is usually limited to cracks, ledges, or depressions in the bedrock.

DISTRIBUTION

IVC Geographic Range: This group is found in the Great Plains from near the U.S.-Canadian border south to northern Texas and from the Rocky Mountain foothills to southwestern Minnesota, eastern Kansas and possibly northwestern Iowa and Missouri. The granitic, igneous, and metamorphic formations in the Black Hills and nearby are not included in this group.

IVC Nations: CA,US

IVC States/Provinces: CO, IA?, KS, MB, MN, MO?, MT, ND, NE, NM, OK, SD, TX, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3982 Great Plains Acidic Rock Outcrop Alliance** [Great Plains Acidic Rock Outcrop Alliance] []
  This alliance consists of sparsely vegetated, flat to moderately sloping outcrops of acidic bedrock in the central and northern Great Plains.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: S. Menard and K. Kindscher, in Faber-Langendoen et al. (2011)

IVC Description Author: J. Drake

IVC Description Date: 2015-05-08

IVC Acknowledgments:

A3982 Great Plains Acidic Rock Outcrop Alliance

[ ]

Great Plains Acidic Rock Outcrop Alliance

Great Plains Acidic Rock Outcrop

IVC Scientific Name: Great Plains Acidic Rock Outcrop Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance consists of outcrops of acidic bedrock in the central and northern Great Plains. Species vary widely across the range of this alliance but typically consist of Great Plains taxa that can tolerate the shallow, dry soils. Total vegetation cover is sparse across the outcrops but can be moderate or even dense in small pockets where soil accumulates. Substrate varies from granite and quartzite (in Minnesota) to siltstone, sandstone, shale, and even pockets of gypsum. The outcrops are generally flat to moderately sloping but soil development is limited to cracks or depressions.

IVC Dynamics: The general lack of soil and sloping nature of many sites create very harsh conditions for plant growth and maintain stands of this alliance. Fire does not carry through this alliance, so shrubs and trees can persist, if they can find pockets of soil and survive the generally xeric conditions. In Minnesota, where precipitation is higher and evaporation lower, rain can collect in small depressions on generally flat outcrops and may allow the formation of ephemeral wetlands (Minnesota DNR 2010).

IVC Environment: This alliance occurs where acidic bedrock is exposed in flat to moderately sloping outcrops. This can be irregularly eroded escarpments or ravines or even ridgetops. The substrate is usually sandstone but can be siltstone. Slopes are not steep over entire stands but there is little to no soil development. Soil that does develop or accumulate is on gently sloping or flat ledges and in cracks. These are small and localized.

DISTRIBUTION

IVC Geographic Range: This alliance is found from the central Great Plains in Kansas and Nebraska to southwestern Minnesota, southern Manitoba, and eastern Wyoming.
IVC Nations: CA,US
IVC States/Provinces: KS, MB, MN, ND, NE, SD, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2019-01-24
IVC Acknowledgments:

M115 Great Plains Badlands Vegetation

Végétation des bad-lands des Grandes Plaines

IVC Colloquial Name: Great Plains Badlands Vegetation

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This macrogroup includes badlands vegetation in the northern Great Plains of the United States and Canada. Vegetation cover is typically sparse but can be moderate in limited areas with shallower slopes. The dominant vegetation is a mix of shrubs, forbs, and grasses with each dominating some areas. There is typically zonation of vegetation from the top of a slope to the bottom with different groups of species most common in certain zones. Typical species found in Great Plains badlands are the shrubs *Artemisia cana, Artemisia longifolia, Artemisia tridentata, Atriplex* spp., *Eriogonum flavum, Eriogonum pauciflorum, Gutierrezia sarothrae, Juniperus horizontalis*, and *Sarcobatus vermiculatus*. Forbs include *Iva axillaris*, among others. Graminoids, though uncommon, include *Pseudoroegneria spicata*, and, in saline seepages, *Distichlis spicata*. Examples are found on slopes above rivers or streams, with erodible clay and poorly consolidated shale interspersed with sandstone, lignite lenses, and occasional scoria outcrops.

IVC Geographic Range: This macrogroup is found in the northern Great Plains region of the United States and Canada with some extensive examples in western North Dakota, southwestern South Dakota, southeastern Montana, southern Alberta and Saskatchewan.

IVC Nations: CA,US

IVC States/Provinces: AB, CO, MB?, MT, ND, NE, SD, SK, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G566 Great Plains Badlands Vegetation []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Faber-Langendoen et al. (2014)

IVC Description Author: J. Drake

IVC Description Date: 2014-10-15

IVC Acknowledgments:

G566 Great Plains Badlands Vegetation

[ ]

IVC Colloquial Name: Great Plains Badlands Vegetation

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group includes badlands vegetation in the Northern Great Plains of the United States and Canada. Examples are found on slopes of easily erodible clay and poorly consolidated shale interspersed with sandstone, lignite lenses, and occasional scoria outcrops. Vegetation cover is typically sparse but can be moderate in small areas with shallower slopes. The dominant vegetation is a mix of shrubs, forbs and grasses with each dominating some areas. There is typically zonation of vegetation from the top of a slope to the bottom with different groups of species most common in certain zones. Typical species found in Great Plains badlands are *Sarcobatus vermiculatus, Atriplex* spp., *Artemisia longifolia, Artemisia tridentata, Gutierrezia sarothrae, Eriogonum pauciflorum*, and *Pseudoroegneria spicata*.

IVC Dynamics: Examples of this group are affected by erosion and drought.

IVC Environment: A combination of factors, such as elevation, rainfall, carving action of streams and parent material, can contribute to the development of this group. Sites that harbor it are primarily a type of mature dissection with finely textured drainage patterns and steep slopes. This group contains extremely dry and easily erodible, consolidated clayey soils with bands of

sandstone or isolated consolidates. This group is found within an arid to semi-arid climate with infrequent, but torrential, rains that cause erosion.

DISTRIBUTION

IVC Geographic Range: This group is found in the Northern Great Plains region of the United States and Canada with some of the best developed examples in western North Dakota, southwestern South Dakota, and southeastern Montana.
IVC Nations: CA,US
IVC States/Provinces: AB, CO, MB?, MT, ND, NE, SD, SK, WY
IVC Omernik Ecoregions: 6.2.10.17:P, 9.3.1.42:P, 9.3.3.43:P, 9.3.4.44:P, 9.4.1.25:P, 10.1.4.18:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G5 rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A1874 *Artemisia longifolia* Badlands Alliance** [Longleaf Wormwood Badlands Alliance] []
  This vegetation is known from badlands in the northwestern Great Plains on moderately to steeply sloping acid-shale barrens and clay with sparse to moderate cover by forbs, especially *Artemisia longifolia* with *Eriogonum pauciflorum* sometimes codominating.
- **A3979 *Eriogonum pauciflorum - Gutierrezia sarothrae* Badlands Alliance** [Few-flower Buckwheat - Broom Snakeweed Badlands Alliance] []
  This alliance contains sparsely vegetated, forb-dominated communities on badland landscapes in the northwestern Great Plains on clays, shales, and poorly consolidated sandstones or conglomerates or on the colluvial slopes at the base of such slopes. Rapid erosion prevents the development of soils and this along with the arid climate limit vegetation development to 1-10% cover. Consistent species in this alliance are *Eriogonum pauciflorum* and *Gutierrezia sarothrae*.

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: S. Menard and K. Kindscher, in Faber-Langendoen et al. (2011)
IVC Description Author: J. Drake
IVC Description Date: 2011-01-03
IVC Acknowledgments:

A1874 Longleaf Wormwood Badlands Alliance

[ ]
Artemisia longifolia Badlands Alliance
Longleaf Wormwood Badlands

IVC Scientific Name: *Artemisia longifolia* Badlands Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This vegetation is known from badlands in the northwestern Great Plains on acid-shale barrens and clay slopes. The vegetation layer is usually sparse (<10% cover) but may range up to 20%. It is less than 1 m tall and is dominated by the perennial forb *Artemisia longifolia* with *Eriogonum pauciflorum* sometimes codominating. Scattered graminoids and other forbs are also typically present and may include *Achnatherum hymenoides, Calamagrostis montanensis, Calamovilfa longifolia, Gutierrezia sarothrae, Schizachyrium scoparium, Solidago missouriensis, Stellaria media*, and *Thermopsis rhombifolia*. Scattered *Rosa arkansana* shrubs are often present. Stands occur on dry scree slopes, as well as acid-shale barrens. Sites are common on

moderate to steep, highly eroded slopes with southern and western aspects. Substrates may be deep but are poorly developed, fine-textured soils.

IVC Dynamics:

IVC Environment: Stands included in this minor alliance are found in the northwestern Great Plains on acid-shale barrens. This vegetation is known from badlands in the northwestern Great Plains. Elevation in Montana is approximately 1000 m. The climate is semi-arid, temperate continental. Mean annual precipitation is approximately 32 cm. Two-thirds of the annual precipitation occurs in the spring and early summer. Stands occur on dry scree slopes and acid-shale barrens. Sites are common on moderate to steep, highly eroded slopes with southern and western aspects. Substrate may be deep, but are poorly develop, fine-textured soils derived from acidic marine shales (pH <5). Because of a large coarse fraction of shale fragments, these soils may be better drained than expected (DeVelice et al. 1995).

DISTRIBUTION

IVC Geographic Range: Stands in this sparsely vegetated alliance occur in badlands in the northwestern Great Plains in Montana, Wyoming, North Dakota, and South Dakota, and adjacent Canada.

IVC Nations: CA,US

IVC States/Provinces: AB, MT, ND, SD, SK?, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL001521 *Artemisia longifolia - Calamovilfa longifolia* Sparse Vegetation** [Longleaf Wormwood - Prairie Sandreed Sparse Vegetation] []
  G3G4 (2000-12-18) AB, MT, SK?

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: K.A. Schulz, in Faber-Langendoen et al. (2013)

IVC Description Author: J. Drake

IVC Description Date: 2014-01-08

IVC Acknowledgments:

A3979 Few-flower Buckwheat - Broom Snakeweed Badlands Alliance

[ ]

Eriogonum pauciflorum - Gutierrezia sarothrae Badlands Alliance

Few-flower Buckwheat - Broom Snakeweed Badlands

IVC Scientific Name: *Eriogonum pauciflorum - Gutierrezia sarothrae* Badlands Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This alliance contains sparsely vegetated, forb-dominated communities on badland landscapes in the northwestern Great Plains. Total vegetation cover is generally nearly absent to sparse (1-10% cover). Consistent species in this alliance are *Eriogonum pauciflorum* and *Gutierrezia sarothrae*. Other species possible are *Atriplex argentea, Cryptantha thyrsiflora, Opuntia polyacantha*, and the forb *Grindelia squarrosa*. *Atriplex canescens* dwarf-shrubs may be observed throughout the type but are typically short-statured and scattered in distribution. These communities occur on clays, shales, and poorly consolidated sandstones or conglomerates or on the colluvial slopes at the base of such slopes, all of which are easily eroded by wind and water. The rapid erosion prevents the development of soils and this along with the arid climate limit vegetation development.

IVC Dynamics:

IVC Environment: Stands of this alliance occur on clays, shales, and poorly consolidated sandstones or conglomerates or on the colluvial slopes at the base of such slopes, all of which are easily eroded by wind and water. The rapid erosion prevents the development of soils and this along with the arid climate limit vegetation development. Slopes are usually moderate.

DISTRIBUTION

IVC Geographic Range: This alliance is found in the northwestern Great Plains of the United States and adjacent Canada.
IVC Nations: CA,US
IVC States/Provinces: CO?, MT, ND, NE, SD, SK, WY
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002050 Eroding Great Plains Badlands Sparse Vegetation** [Eroding Great Plains Badlands Sparse Vegetation] [] G4G5 (1996-10-03) ND, NE, SD, SK?

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: J. Drake, in Faber-Langendoen et al. (2013)
IVC Description Author: J. Drake
IVC Description Date: 2014-01-08
IVC Acknowledgments:

M887 Western North American Cliff, Scree & Rock Vegetation

Végétation rupestre, de falaises et de pierriers de l'ouest de l'Amérique du Nord

IVC Colloquial Name: Western North American Cliff, Scree & Rock Vegetation

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:

IVC Concept: This type is found throughout temperate and boreal western North America and consists of sparsely vegetated rock outcrops and cliff faces found on the Alaska peninsula, Aleutian Islands, Alaskan boreal region, Coast Mountains of British Columbia, the Rocky Mountain Cordillera, Cascades, Sierra Nevada and other ranges tall enough to have a temperate or boreal climate. The vegetation is highly variable and is typically sparse cover of vascular species with sparse to dense cover of lichens, mosses or other nonvascular organisms. Characteristic species include trees from the surrounding landscape, such as *Abies concolor, Abies lasiocarpa, Abies magnifica, Pinus albicaulis, Pinus contorta, Pinus flexilis, Pinus monticola, Pinus ponderosa, Pseudotsuga menziesii* (not in Alaska), *Populus tremuloides, Tsuga mertensiana*, or *Pinus edulis, Pinus monophylla, Juniperus* spp., and *Cercocarpus ledifolius* at lower elevations. Common shrubs species may include *Amelanchier alnifolia, Arctostaphylos nevadensis, Holodiscus* spp., *Jamesia americana, Juniperus communis, Ledum glandulosum, Mahonia repens, Physocarpus* spp., *Ribes* spp., *Rosa woodsii*, or *Rhus trilobata*. Potential herbaceous species are numerous and may include sparse cover of *Aspidotis densa, Festuca viridula, Poa curtifolia*, and *Pseudoroegneria spicata*. Characteristic nonvascular species information is not available. Stands occur on moderate to steep slopes, cliff faces, narrow canyons, and rock outcrops. In general these are the dry, sparsely vegetated sites. Substrates are often unstable scree and talus that typically occur below cliff faces.

IVC Geographic Range: This macrogroup is located throughout temperate and boreal western North America on rock outcrops and cliff faces found on the Alaska peninsula, Aleutian Islands and Alaskan boreal, Coast Mountains of British Columbia, the Rocky Mountain Cordillera, Cascades, Sierra Nevada and other ranges tall enough to have a temperate climate.

IVC Nations: CA,MX,US

IVC States/Provinces: AB, AK, AZ, BC, BCN, CA, CO, ID, MT, NM, NV, OR, SD, UT, WA, WY

ADDITIONAL INFORMATION

CNVC Status: Provisional

CNVC Classification Comments:

Groups in Canada:

- **G565 Rocky Mountain Cliff, Scree & Rock Vegetation []**
- **G573 Southern Vancouverian Cliff, Scree & Rock Vegetation []**
- **G318 North Vancouverian Montane Bedrock, Cliff & Talus Vegetation []**

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M. Reid, in Faber-Langendoen et al. (2014)

IVC Description Author: K.A. Schulz and G. Kittel

IVC Description Date: 2017-03-29

IVC Acknowledgments:

G565 Rocky Mountain Cliff, Scree & Rock Vegetation

[ ]

IVC Colloquial Name: Rocky Mountain Cliff, Scree & Rock Vegetation

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group consists of barren and sparsely vegetated rock outcrops and cliff faces located throughout the Rocky Mountains and northeastern Cascade Range in North America. These sparsely vegetated surfaces (generally <10% plant cover) are found from foothill to subalpine elevations on steep cliff faces, narrow canyons, and smaller rock outcrops of various igneous (intrusives), sedimentary, and metamorphic bedrock types. It also occurs on unstable scree and talus slopes that can occur below cliff faces. In general these are the dry, sparsely vegetated places. The biota reflects what is surrounding them, unless it is an extreme parent material. There is often very high cover of nonvascular lichens and, in wetter places, mosses.

There may be small patches of dense vascular vegetation and can include scattered trees and/or shrubs. Characteristic trees include species from the surrounding landscape, such as *Pseudotsuga menziesii, Pinus ponderosa, Pinus flexilis, Populus tremuloides, Abies concolor, Abies lasiocarpa*, or *Pinus edulis* and *Juniperus* spp. at lower elevations. There may be scattered shrubs present, such as species of *Holodiscus, Ribes, Physocarpus, Rosa, Juniperus*, and *Jamesia americana, Mahonia repens, Rhus trilobata*, or *Amelanchier alnifolia*. Soil development is limited, as is herbaceous cover. Characteristic nonvascular species information is not available

IVC Dynamics:

IVC Environment: *Climate:* Temperate. *Soil/substrate/hydrology:* Foothill to subalpine elevations on steep cliff faces, narrow canyons, and smaller rock outcrops of various igneous (intrusives), sedimentary, and metamorphic bedrock types. Also included are unstable scree and talus slopes that typically occur below cliff faces. In general these are the dry, sparsely vegetated places. Soil development is limited. Environmental information compiled from Hess and Wasser (1982), Andrews and Righter (1992), Ecosystem Working Group (1998), and Larson et al. (2000).

DISTRIBUTION

IVC Geographic Range: This group is located throughout the Rocky Mountain, including the isolated island ranges of central Montana, and northeastern Cascade Ranges in North America.

IVC Nations: CA,US

IVC States/Provinces: AB, AZ, BC, CO, ID, MT, NM, NV, OR, SD, UT, WA, WY

IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.5.77:P, 6.2.8.9:P, 6.2.9.11:P, 6.2.10.17:P, 6.2.13.19:P, 6.2.14.21:P, 6.2.15.16:P, 9.3.1.42:P, 9.3.3.43:P, 9.4.3.26:P, 10.1.2.10:P, 10.1.3.80:P, 10.1.4.18:P, 10.1.5.13:P, 10.1.6.20:P, 10.1.7.22:P, 10.2.1.14:P, 10.2.4.24:P, 13.1.1.23:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a G4 rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3741 *Aquilegia flavescens - Phacelia hastata* Cliff, Scree & Rock Alliance** [Yellow Columbine - Silverleaf Phacelia Cliff, Scree & Rock Alliance] []
  Sparse cliff, scree and rock outcrop vegetation of the northern Rocky Mountains. The most common dominants include *Aquilegia flavescens, Penstemon ellipticus, Phacelia hastata* and *Senecio megacephalus*.
- **A4146 *Sullivantia hapemanii - Mimulus* spp. Wet Rock Alliance** [Hapeman's Coolwort - Monkeyflower species Wet Rock Alliance] []
  These are seepage areas along vertical rockfaces, vertical to sloped rockwalls at the base of waterfalls, and large rocks and boulders kept wet by spray from nearby turbulent waterflow (e.g., cascading streamflow or churning of plunge pools at the base of waterfalls). They have a water regime ranging from seasonally to perennially wet but a minimum duration of wetness is needed to maintain these communities. This alliance is found in montane to alpine regions of the Rocky Mountain cordillera, from southern New Mexico north into Montana, Idaho, northeast Washington, Alberta and British Columbia, and west into the lower elevations and mountain ranges within the Intermountain West region.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: G. Kittel, in Faber-Langendoen et al. (2011)

IVC Description Author: G. Kittel and M.S. Reid

IVC Description Date: 2010-12-21

IVC Acknowledgments:

A3741 Yellow Columbine - Silverleaf Phacelia Cliff, Scree & Rock Alliance

[ ]

Aquilegia flavescens - Phacelia hastata Cliff, Scree & Rock Alliance

Yellow Columbine - Silverleaf Phacelia Cliff, Scree & Rock

IVC Scientific Name: *Aquilegia flavescens - Phacelia hastata* Cliff, Scree & Rock Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: Sparse cliff, scree and rock outcrop vegetation of the northern Rocky Mountains. Structurally, vegetation is very open and characterized by the dominance of forbs, the most important species including *Aquilegia flavescens, Phacelia hastata, Penstemon ellipticus*, and *Senecio megacephalus*. Associated herbaceous species may include *Achillea millefolium, Aquilegia flavescens, Arenaria capillaris, Arnica x diversifolia, Castilleja miniata, Chamerion angustifolium, Cirsium hookerianum, Epilobium anagallidifolium, Galium boreale, Minuartia nuttallii, Phacelia sericea, Potentilla diversifolia, Sedum lanceolatum, Senecio megacephalus, Stellaria americana, Symphyotrichum foliaceum*, and *Valeriana sitchensis*. This subalpine to alpine community occurs from 1800 to 2400 m on steep to very steep (45-80%) talus slopes and scree fields spanning a range of exposures from east to primarily southwest (facing prevailing winds).

IVC Dynamics:

IVC Environment: The climate regime of this alliance is continental, with long, cold winters and short summers with frequent afternoon thunderstorms. Strong westerly winds are common in the winter. Stands occur between 1800 and 2400 m elevation on all aspects of gentle to very steep (45-80%) talus slopes and scree fields. The ground is covered with small- to large-sized boulders that are snow-covered in winter. The boulders provide protection from the wind and an increased moisture supply to the vegetation. Precipitation that falls on the boulders concentrates in the crevices between the rocks creating mesic microsites suitable for the vegetation in the alliance. Stands also occur among the krummholz, where the stunted trees may provide similar sheltered sites. Soils are young and poorly developed due to low soil temperature, low soil moisture during the summer, and a short growing season.

DISTRIBUTION

IVC Geographic Range: This alliance is currently only known from Waterton - Glacier National International Peace Park in Alberta and Montana.

IVC Nations: CA,US

IVC States/Provinces: AB, MT

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005901 *Phacelia hastata - (Penstemon ellipticus)* Sparse Vegetation** [Silverleaf Phacelia - (Rocky Ledge Penstemon) Sparse Vegetation] []
  G2G3 (2004-01-22) AB, MT
- **CEGL005899 *Aquilegia flavescens - Senecio megacephalus* Sparse Vegetation** [Yellow Columbine - Rocky Ragwort Sparse Vegetation] []
  G2G3 (2004-01-21) AB?, MT

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: M. Damm, in Faber-Langendoen et al. (2013)

IVC Description Author: M.E. Hall

IVC Description Date: 2014-09-26

IVC Acknowledgments:

A4146 Hapeman's Coolwort - Monkeyflower species Wet Rock Alliance

[ ]

Sullivantia hapemanii - Mimulus spp. Wet Rock Alliance

Rocky Mountain-Great Basin Wet Cliff & Spray Zone

IVC Scientific Name: *Sullivantia hapemanii - Mimulus* spp. Wet Rock Alliance

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: These are seepage areas along vertical rockfaces, vertical to sloped rockwalls at the base of waterfalls, and large rocks and boulders kept wet by spray from nearby turbulent waterflow (e.g., cascading streamflow or churning of plunge pools at the base of waterfalls). They have a water regime ranging from seasonally to perennially wet but a minimum duration of wetness is needed to maintain these communities. Generally they are freshwater but water chemistry and pH can vary according to local bedrock. These are wet surfaces that range from nearly unvegetated to supporting mats of mosses and liverworts that in turn may support vascular plants and invertebrates. These areas are sometimes called "hanging gardens," or "vertical wetlands." This alliance is found in montane to alpine regions of the Rocky Mountain cordillera, from southern New Mexico north into Montana, Idaho, northeast Washington, Alberta and British Columbia, and west into the lower elevations and mountain ranges within the Intermountain West region.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance is found in montane to alpine regions of the Rocky Mountain cordillera, from southern New Mexico north into Montana, Idaho, northeast Washington, Alberta and British Columbia, and west into the lower elevations and mountain ranges within the Intermountain West region.

IVC Nations: CA,US

IVC States/Provinces: AB, BC, CO, ID, MT, NM, NV, UT, WA, WY

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005509 *Sullivantia hapemanii - Mimulus* spp. Wet Rock Vegetation** [Hapeman's Coolwort - Monkeyflower species Wet Rock Vegetation] []
  GNR. AB, BC, CO, ID, MT, NM, NV, UT, WA, WY

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Rocchio, in Faber-Langendoen et al. (2014)

IVC Description Author: J. Rocchio

IVC Description Date: 2014-12-13

IVC Acknowledgments:

G573 Southern Vancouverian Cliff, Scree & Rock Vegetation

[ ]

IVC Colloquial Name: Southern Vancouverian Cliff, Scree & Rock Vegetation

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group is known from the Wenatchee Mountains in the east Cascades, subalpine elevations throughout the Sierra Nevada, and Klamath Mountains. Sites include steep slopes, steep cliff faces, narrow canyons, and rock outcrops. Substrates include thin rocky, ultramafic (peridotite, serpentinite) soils in the Cascades, and unstable scree below cliff faces in the Sierra Nevada and Klamath Range. Parent materials are derived from various igneous, sedimentary, and metamorphic bedrock. Vegetation is highly variable and typically sparse and scattered, varying from areas dominated by mosses and lichens to occasional closed forests in the Cascades. Species in the Cascades may include *Pseudotsuga menziesii, Pinus ponderosa*, and *Pinus monticola* trees with a sparse ground cover with *Aspidotis densa, Arctostaphylos nevadensis*, and *Pseudoroegneria spicata* at low-elevation sites. Higher elevations have *Pinus contorta var. latifolia, Pinus albicaulis, Abies lasiocarpa*, and *Tsuga mertensiana* with *Juniperus communis, Ledum glandulosum, Vaccinium scoparium, Poa curtifolia*, and *Festuca viridula*. Scattered vegetation in the Sierra Nevada and Klamath Mountains may include *Abies magnifica, Pseudotsuga menziesii, Pinus contorta var. murrayana, Pinus ponderosa, Pinus jeffreyi, Populus tremuloides*, or *Pinus monophylla, Juniperus osteosperma*, and *Cercocarpus ledifolius* at lower elevations. There may be shrubs, including species of *Arctostaphylos* or *Ceanothus*. Soil development is limited as is herbaceous cover.

IVC Dynamics: Poor soil development, high levels of exposure and steep sites impede the establishment of species from surrounding communities and maintain occurrences of this group.

IVC Environment: This group is known from the Wenatchee Mountains in the east Cascades, subalpine elevations throughout the Sierra Nevada, and Klamath Mountains. Sites include steep slopes, steep cliff faces, narrow canyons, and rock outcrops. *Soil/substrate/hydrology:* Substrates include thin rocky, ultramafic (peridotite, serpentinite) soils in the Cascades, and unstable scree below cliff faces in the Sierra Nevada and Klamath Mountains. Parent materials are derived from various igneous, sedimentary, and metamorphic bedrock. Soil development is limited.

DISTRIBUTION

IVC Geographic Range: This group is known from the Wenatchee Mountains in the east Cascades, subalpine elevations throughout the Sierra Nevada, and Klamath Mountains.

IVC Nations: CA,US

IVC States/Provinces: CA, OR, WA

IVC Omernik Ecoregions: 6.2.7.4:P, 6.2.8.9:P, 6.2.11.78:P, 6.2.12.5:P, 10.1.5.13:P, 11.1.1a.6:P, 11.1.2.7:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: R. Crawford and T. Keeler-Wolf, in Faber-Langendoen et al. (2011)

IVC Description Author: M.E. Hall

IVC Description Date: 2013-09-09

IVC Acknowledgments: D. Meidinger, J. Sawyer

G318 North Vancouverian Montane Bedrock, Cliff & Talus Vegetation

[ ]

IVC Colloquial Name: North Vancouverian Montane Bedrock, Cliff & Talus Vegetation

View on NatureServe Explorer

OVERVIEW

CNVC Concept:

IVC Concept: This group consists of sparsely vegetated rock outcrops and cliff faces where fractures in the rock surface and colluvial slopes may be occupied by small patches of dense vegetation, typically scattered trees and/or shrubs. This group is found on the Alaska Peninsula and Aleutian Islands, Coast Mountains of British Columbia, as well as in the Cascade Range in Washington and Oregon, south to just inside northern California. Characteristic trees include *Abies* spp., *Callitropsis nootkatensis, Pseudotsuga menziesii* (not in Alaska), *Thuja plicata*, or *Tsuga* spp. There may be scattered shrubs present, such as *Acer circinatum, Alnus viridis*, and *Ribes* spp. Soil development is limited as is herbaceous cover. Mosses or lichens may be very dense, well-developed and display cover well over 10%. Substrates include active volcanic areas dominated by ash, pyroclastic deposits, lava, landslides and other exposed bare mineral and rock of various igneous, sedimentary, and metamorphic bedrock types. Periodic eruptions and earthquakes are the primary processes maintaining a primarily barren environment. Decades of inactivity slowly provide opportunity for vegetation development as primary successional stages. Elevation ranges from foothill to subalpine, and includes steep cliff faces, narrow canyons, larger rock outcrops, unstable scree and talus slopes. The dominant process is the extreme growing conditions created by exposed rock or unstable slopes, with drought becoming more of an issue in the southern part of the range. Alaskan montane rock and talus is not drought-limited.

IVC Dynamics:

IVC Environment: *Soil/substrate/hydrology:* Substrates include active volcanic areas dominated by ash, pyroclastic deposits, lava, landslides and other exposed bare mineral and rock of various igneous, sedimentary, and metamorphic bedrock types. Periodic eruptions and earthquakes are the primary processes maintaining a primarily barren environment. Decades of inactivity slowly provide opportunity for vegetation development. Elevation ranges from foothill to subalpine and includes steep cliff faces, narrow canyons, larger rock outcrops, stable scree and talus slopes. The dominant process is substrate drought, especially farther south in its distribution, and other extreme growing conditions created by exposed rock or unstable slopes typically associated with steep slopes. Soil development is limited.

DISTRIBUTION

IVC Geographic Range: This group consists of sparsely vegetated rock outcrops and cliff faces found on the Alaska Peninsula and Aleutian Islands, Coast Mountains of British Columbia, as well as in the Cascade Range of Washington and Oregon, south to just inside northern California (Mount Lassen and Mount Shasta, but does not include the Sierra Nevada or Klamath Mountains).

IVC Nations: CA,US

IVC States/Provinces: AK, BC, CA, OR, WA

IVC Omernik Ecoregions: 6.2.5.77:P, 6.2.7.4:P, 6.2.8.9:P, 7.1.7.2:P, 7.1.8.1:P, 7.1.9.3:P

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a G5 rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A3779 North Pacific Nonvascular Rock Vegetation Alliance** [North Pacific Nonvascular Rock Vegetation Alliance] []
  Barren and sparsely vegetated landscapes (generally <10% vascular plant cover) of steep cliff faces, narrow canyons, and larger rock outcrops of northern California to southeastern Alaska.
- **A4145 *Sullivantia oregana - Adiantum pedatum* Wet Rock Alliance** [Oregon Coolwort - Northern Maidenhair Wet Rock Alliance] []
  These are seepage areas along vertical rockfaces, vertical to sloped rockwalls at the base of waterfalls, and large rocks and boulders kept wet by spray from nearby turbulent waterflow (e.g., cascading streamflow or churning of plunge pools at the base of waterfalls). They have a water regime ranging from seasonally to perennially wet but a minimum duration of wetness is needed to maintain these communities. This alliance is found in western Washington and Oregon, and likely extends north along coastal British Columbia into southeastern Alaska and potentially south along the northern California coast.

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: Crawford et al., in Faber-Langendoen et al. (2011)

IVC Description Author: R. Crawford, G. Kittel, M.S. Reid, C. Cadrin

IVC Description Date: 2015-11-09
IVC Acknowledgments: C. Cadrin

A3779 North Pacific Nonvascular Rock Vegetation Alliance

[ ]
North Pacific Nonvascular Rock Vegetation Alliance
North Pacific Nonvascular Rock Vegetation

IVC Scientific Name: North Pacific Nonvascular Rock Vegetation Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Barren and sparsely vegetated landscapes (generally <10% vascular plant cover) of steep cliff faces, narrow canyons, and larger rock outcrops of northern California to southeastern Alaska.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance occurs from northern California to southeastern Alaska.
IVC Nations: CA,US
IVC States/Provinces: AK, BC, CA, OR, WA
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: M.E. Hall, in Faber-Langendoen et al. (2013)
IVC Description Author: M.E. Hall
IVC Description Date: 2014-09-26
IVC Acknowledgments:

A4145 Oregon Coolwort - Northern Maidenhair Wet Rock Alliance

[ ]
Sullivantia oregana - Adiantum pedatum Wet Rock Alliance
North Pacific Wet Cliff & Spray Zone

IVC Scientific Name: *Sullivantia oregana - Adiantum pedatum* Wet Rock Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: These are seepage areas along vertical rockfaces, vertical to sloped rockwalls at the base of waterfalls, and large rocks and boulders kept wet by spray from nearby turbulent waterflow (e.g., cascading streamflow or churning of plunge pools at the base of waterfalls). They have a water regime ranging from seasonally to perennially wet but a minimum duration of wetness is needed to maintain these communities. Generally, they are freshwater but water chemistry and pH can vary according to local bedrock. These are wet surfaces that range from nearly unvegetated to supporting mats of mosses and liverworts that in turn may support vascular plants and invertebrates. These areas are sometimes called "hanging gardens," or "vertical wetlands." This

alliances is found in western Washington and Oregon, and likely extends north along coastal British Columbia into southeastern Alaska and potentially south along the northern California coast.

IVC Dynamics:

IVC Environment:

DISTRIBUTION

IVC Geographic Range: This alliance is found in western Washington and Oregon, and likely extends north along coastal British Columbia into southeastern Alaska and potentially south along the northern California coast.

IVC Nations: CA?,US

IVC States/Provinces: BC?, CA?, OR, WA

IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL005508 *Sullivantia oregana - Adiantum pedatum* Wet Rock Vegetation** [Oregon Coolwort - Northern Maidenhair Wet Rock Vegetation] []
  GNR. BC?, CA?, OR, WA

AUTHORSHIP

CNVC Concept Author:

CNVC Concept Date:

CNVC Description Author:

CNVC Description Date:

IVC Primary Concept Source: J. Rocchio, in Faber-Langendoen et al. (2014)

IVC Description Author: J. Rocchio

IVC Description Date: 2014-12-13

IVC Acknowledgments:

M895 North American Boreal Cliff, Scree & Rock Vegetation

[ ]

IVC Colloquial Name: North American Boreal Cliff, Scree & Rock Vegetation
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:
IVC Concept:
IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, AK, LB, MB, MI, MN, NF, ON, QC, SK, WI, YT

ADDITIONAL INFORMATION

CNVC Status: Provisional
CNVC Classification Comments:
Groups in Canada:
- **G822 Western Boreal Cliff, Scree & Rock Vegetation []**
- **G823 Eastern Boreal Cliff, Scree & Rock Vegetation []**

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: Faber-Langendoen et al. (2019a)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

G822 Western Boreal Cliff, Scree & Rock Vegetation

[ ]

IVC Colloquial Name: Western Boreal Cliff, Scree & Rock Vegetation
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This sparsely vegetated rock outcrop and cliff face macrogroup is found in the boreal regions of Alaska and adjacent Yukon of. Stands include patchy vegetated fractures in the rock surface and less steep or more stable slopes that are composed of scattered trees and/or shrubs. Trees species include *Pinus contorta, Tsuga* spp., and *Picea mariana*. Mosses or lichens may be very dense, well-developed and display cover well over 10%.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This sparsely vegetated rock outcrop and cliff face macrogroup is found in the boreal regions of Alaska and adjacent Yukon Territory.
IVC Nations: CA,US
IVC States/Provinces: AK, YT
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional

CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2015)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2017-03-29
IVC Acknowledgments:

G823 Eastern Boreal Cliff, Scree & Rock Vegetation

[ ]

IVC Colloquial Name: Eastern Boreal Cliff, Scree & Rock Vegetation
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: This sparsely vegetated rock outcrop and cliff face macrogroup is found in the boreal regions of central and eastern Canada. Stands include patchy vegetated fractures in the rock surface and less steep or more stable slopes that are composed of scattered trees and/or shrubs. Mosses or lichens may be very dense, well-developed and display cover well over 10%.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range: This sparsely vegetated rock outcrop and cliff face macrogroup is found in the boreal regions of central and eastern Canada.
IVC Nations: CA,US
IVC States/Provinces: AB, LB, MB, MI, MN, NF, ON, QC, SK, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: G4G5 (2022-01-26) The assigned rank is preliminary and uses the methodology described in Faber-Langendoen et al. (2022). Briefly, a preliminary rank was calculated based on two sources, a rank that was calculated from component association global ranks, and a GNR rank that was calculated from closely related ecological system global ranks. A rank of G5 was assigned by NatureServe staff and Network program ecologists using these calculated ranks combined with expert knowledge of the type across its range. A range rank was then assigned to account for uncertainty in the rank assignment process.

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **A4230 Eastern Boreal Acidic Cliff Alliance** [Eastern Boreal Acidic Cliff Alliance] []
- **A4227 Eastern Boreal Acidic Talus Alliance** [Eastern Boreal Acidic Talus Alliance] []
- **A4231 Eastern Boreal Alkaline Cliff Alliance** [Eastern Boreal Alkaline Cliff Alliance] []
- **A4224 Eastern Boreal Alkaline Talus Alliance** [Eastern Boreal Alkaline Talus Alliance] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2015)
IVC Description Author: D. Faber-Langendoen
IVC Description Date: 2016-01-11

IVC Acknowledgments:

A4230 Eastern Boreal Acidic Cliff Alliance

[ ]
Eastern Boreal Acidic Cliff Alliance
Eastern Boreal Acidic Cliff

IVC Scientific Name: Eastern Boreal Acidic Cliff Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, LB, MB?, MI, MN, NF, ON, QC, SK, WI?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CEGL002564 Boreal Inland Acidic Cliff Sparse Vegetation** [Boreal Inland Acidic Cliff Sparse Vegetation] []
  GNR. MB, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2016)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4227 Eastern Boreal Acidic Talus Alliance

[ ]
Eastern Boreal Acidic Talus Alliance
Eastern Boreal Acidic Talus

IVC Scientific Name: Eastern Boreal Acidic Talus Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US

IVC States/Provinces: LB, MB?, MI, MN, NF, ON, QC?, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2016)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

A4231 Eastern Boreal Alkaline Cliff Alliance

[ ]
Eastern Boreal Alkaline Cliff Alliance
Eastern Boreal Alkaline Cliff

IVC Scientific Name: Eastern Boreal Alkaline Cliff Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: AB, LB, MB?, MI, MN, NF, ON, QC, SK, WI?
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CEGL002565 Boreal Inland Alkaline Cliff Sparse Vegetation** [Boreal Inland Alkaline Cliff Sparse Vegetation] [] GNR. MB, ON

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2016)
IVC Description Author:
IVC Description Date:

IVC Acknowledgments:

A4224 Eastern Boreal Alkaline Talus Alliance

[ ]
Eastern Boreal Alkaline Talus Alliance
Eastern Boreal Alkaline Talus

IVC Scientific Name: Eastern Boreal Alkaline Talus Alliance
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces: LB, MB?, MI, MN, NF, ON, QC, WI
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNR

CLASSIFICATION REVIEW

CNVC Status: Provisional
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source: D. Faber-Langendoen, in Faber-Langendoen et al. (2016)
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

7. AGRICULTURAL & DEVELOPED VEGETATION

Vegetation of agricultural lands, including row crops, intensive pastures, orchards, vineyards, plowed or harvested fallow fields, rice paddies, and farm ponds, and vegetation of developed lands, including urban, suburban and rural cities and villages, typically lawns, parks, horticultural gardens, golf courses, and urban ponds.

7.A. Woody Agricultural Vegetation

Agricultural crops dominated by shrub and tree vegetation, including orchards, vineyards, woody berry crops, intensive (often short-rotation) forest plantations, various agroforestry woody crops, and woody wetland crops, such as cranberries.

7.A.2. Forest Plantation & Agroforestry

Agricultural crops dominated by intensive (often short-rotation) forest plantations and various agroforestry woody crops.

Macrogroups in Canada:

- **CGR007 Temperate & Boreal Plantation []**

CGR007 Temperate & Boreal Plantation

[ ]

IVC Colloquial Name: Temperate & Boreal Plantation
View on NatureServe Explorer

DESCRIPTION

CNVC Concept:
IVC Concept:
IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces:

ADDITIONAL INFORMATION

CNVC Status:
CNVC Classification Comments:
Groups in Canada:

- **CSG005 Eastern North American Temperate Forest Plantation []**
- **CSG007 Western North American Temperate Forest Plantation []**
- **CSG006 North American Boreal Forest Plantation []**

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CSG005 Eastern North American Temperate Forest Plantation

[ ]

IVC Colloquial Name: Eastern North American Temperate Forest Plantation
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces:
IVC Omernik Ecoregions: 5.2.1.50:P, 5.2.2.49:P, 5.3.1.58:P, 5.3.3.62:P, 8.1.1.83:P, 8.1.3.60:P, 8.1.4.51:P, 8.1.5.52:P, 8.1.6.56:P, 8.1.7.59:P, 8.1.8.82:P, 8.1.10.61:P, 8.2.1.53:P, 8.2.2.57:P, 8.2.3.54:P, 8.2.4.55:P, 8.3.1.64:P, 8.3.2.72:P, 8.3.3.71:P, 8.3.4.45:P, 8.3.5.65:P, 8.3.6.74:P, 8.3.7.35:P, 8.3.8.33:P, 8.4.1.67:P, 8.4.2.69:P, 8.4.3.70:P, 8.4.4.66:P, 8.4.5.39:P, 8.4.6.38:P, 8.4.7.37:P, 8.4.8.36:P, 8.4.9.68:P, 8.5.1.63:P, 8.5.2.73:P, 8.5.3.75:P, 8.5.4.84:P, 9.2.2.48:P, 9.2.3.47:P, 9.2.4.40:P, 9.4.7.32:P, 9.5.1.34:P, 9.6.1.31:P, 15.4.1.76:P

CONSERVATION RANKING

IVC Rank: GNA (cultural) (2013-12-20)

CLASSIFICATION REVIEW

CNVC Status:
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

- **CTY009 Native Northern Pine Plantation Cultural Type** [Native Northern Pine Plantation Cultural Type] []
- **CTY010 Native Northern Spruce-Fir Plantation Cultural Type** [Native Northern Spruce-Fir Plantation Cultural Type] []
- **CTY014 Exotic Northern Conifer Plantation Cultural Type** [Exotic Northern Conifer Plantation Cultural Type] []
- **CTY016 Native Northern Hardwood Plantation Cultural Type** [Native Northern Hardwood Plantation Cultural Type] []

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CTY014 Exotic Northern Conifer Plantation Cultural Type

[ ]
Exotic Northern Conifer Plantation Cultural Type
Exotic Northern Conifer Plantation

IVC Scientific Name: Exotic Northern Conifer Plantation Cultural Type
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Exotic northern conifers exceed native conifers (native *Pinus* spp. <50% cover).
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (cultural) (2015-01-15)

CLASSIFICATION REVIEW

CNVC Status:
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CST007183 Exotic Miscellaneous Northern Conifer Forest Plantation** [Exotic Miscellaneous Northern Conifer Forest Plantation] []
  GNA (2017-08-28)

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CTY016 Native Northern Hardwood Plantation Cultural Type

[ ]
Native Northern Hardwood Plantation Cultural Type
Native Northern Hardwood Plantation

IVC Scientific Name: Native Northern Hardwood Plantation Cultural Type
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Conifers <25%, and native hardwood cover exceeds exotic hardwood cover.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (cultural) (2015-01-15)

CLASSIFICATION REVIEW

CNVC Status:
CNVC Classification Comments:

HIERARCHY

Associations in Canada:
- **CST007190 *Robinia pseudoacacia* Forest Plantation** [Black Locust Forest Plantation] []
  GNA (2017-08-28)
- **CST007188 *Juglans nigra* Forest Plantation** [Black Walnut Forest Plantation] []
  GNA (2017-08-28)
- **CST007193 Native Miscellaneous Northern Hardwood Forest Plantation** [Native Miscellaneous Northern Hardwood Forest Plantation] []
  GNA (2017-08-28)

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CTY009 Native Northern Pine Plantation Cultural Type

[ ]
Native Northern Pine Plantation Cultural Type
Native Northern Pine Plantation

IVC Scientific Name: Native Northern Pine Plantation Cultural Type
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Native pines exceed other conifers (native *Pinus* spp. ≥50% cover); tree composition typically dominated by *Pinus banksiana, Pinus resinosa, Pinus strobus*, but other native *Pinus* spp. are also possible.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (cultural) (2015-01-15)

CLASSIFICATION REVIEW

CNVC Status:
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CST007178 *Pinus strobus* Forest Plantation** [Eastern White Pine Forest Plantation] []
  GNA (2000-08-08) CT, DE, GA, IN, KY, MD, NC, NH, NJ, NY, OH, PA, SC, TN, VA, VT, WV
- **CST007161 *Pinus banksiana* Forest Plantation** [Jack Pine Forest Plantation] []
  GNA (2017-08-25)
- **CST006902 Native Miscellaneous Northern Pine Forest Plantation** [Native Miscellaneous Northern Pine Forest Plantation] []
  GNA (2017-07-28) CT, DE, IA, IL, IN, KY, MA, MD, ME, MI, MN, NB, NH, NJ, NS, NY, OH, ON, PA, PE, QC, RI, VA, VT, WI, WV

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CTY010 Native Northern Spruce-Fir Plantation Cultural Type

[ ]
Native Northern Spruce-Fir Plantation Cultural Type
Native Northern Spruce-Fir Plantation

IVC Scientific Name: Native Northern Spruce-Fir Plantation Cultural Type
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept: Native non-pine conifers exceed native pines (native *Pinus* spp. <50% cover); tree composition typically dominated by *Abies balsamea, Larix laricina, Picea glauca, Picea rubens*, and *Picea mariana*.
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (cultural) (2015-01-15)

CLASSIFICATION REVIEW

CNVC Status:
CNVC Classification Comments:

HIERARCHY

Associations in Canada:

- **CST007182 *Abies balsamea* Forest Plantation** [Balsam Fir Forest Plantation] []
  GNA (2017-08-25) WV
- **CST007164 *Picea glauca* Forest Plantation** [White Spruce Forest Plantation] []
  GNA (2017-08-25)

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CSG007 Western North American Temperate Forest Plantation

[ ]

IVC Colloquial Name: Western North American Temperate Forest Plantation
View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces:
IVC Omernik Ecoregions: 6.2.3.15:P, 6.2.4.41:P, 6.2.7.4:P, 6.2.10.17:P, 6.2.11.78:P, 6.2.12.5:P, 6.2.15.16:P, 7.1.8.1:P, 11.1.1a.6:P

CONSERVATION RANKING

IVC Rank: GNA (cultural) (2013-12-20)

CLASSIFICATION REVIEW

CNVC Status:
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

CSG006 North American Boreal Forest Plantation

[ ]

IVC Colloquial Name: North American Boreal Forest Plantation

View on NatureServe Explorer

OVERVIEW

CNVC Concept:
IVC Concept:
IVC Dynamics:
IVC Environment:

DISTRIBUTION

IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces:
IVC Omernik Ecoregions:

CONSERVATION RANKING

IVC Rank: GNA (cultural) (2013-12-20)

CLASSIFICATION REVIEW

CNVC Status:
CNVC Classification Comments:

HIERARCHY

Alliances in Canada:

AUTHORSHIP

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

7.C. Herbaceous & Woody Developed Vegetation

Vegetation includes closely cropped vegetation such as lawns, gardens, sports fields, and golf courses, as well as vegetation growing in urban materials, such as pavement, from dry lands to emergent wetlands. Tree canopy varies from 0 to 100% (e.g., open to shaded lawns and gardens).

7.C.1. Lawn, Garden & Recreational Vegetation

Vegetation includes closely cropped vegetation such as lawns, gardens, sports fields, and golf courses, as well as gardens. Tree canopy varies from 0 to 100% (e.g., open to shaded lawns and gardens).

Macrogroups in Canada:

- **CGR033 Cool-Season Lawn []**

CGR033 Cool-Season Lawn

[ ]

IVC Colloquial Name: Cool-Season Lawn

View on NatureServe Explorer

DESCRIPTION

CNVC Concept:
IVC Concept:
IVC Geographic Range:
IVC Nations: CA,US
IVC States/Provinces:

ADDITIONAL INFORMATION

CNVC Status:
CNVC Classification Comments:
Groups in Canada:

CNVC Concept Author:
CNVC Concept Date:
CNVC Description Author:
CNVC Description Date:
IVC Primary Concept Source:
IVC Description Author:
IVC Description Date:
IVC Acknowledgments:

ACKNOWLEDGEMENTS

We acknowledge the longstanding contribution of many participants in the Canadian National Vegetation Classification (CNVC), since its inception in 2000. The partners involved its development consisted of representatives from all active provincial/ territorial ecological classification programs, some provincial/ territorial/ regional conservation data centres (CDCs), NatureServe (US) and NatureServe Canada, and two federal government agencies (NRCan – CFS and Parks Canada). From 2000 – 2017 the effort was led by Natural Resources Canada, Canadian Forest Service, under the direction of Ken Baldwin. (2019), Table 1) provides a list of participants who contributed during those years, including the main partner organizations and their primary representatives who have contributed to the work over the years. In addition, the CNVC Technical Committee has overseen governance of the CNVC. The Technical Committee comprised individuals with expertise in ecological classification from across Canada and successfully guided CNVC development through 2018.

In 2018, NatureServe Canada assumed primary responsibility for maintaining the CNVC, and we thank Patrick Henry, Executive Director for his ongoing support. The CNVC Technical Committee has continued to guide CNVC development, as is currently co-chaired by Nadele Flynn and Don Faber-Langendoen.

The work contained in this publication represents a synthesis of a vast and extensive set of vegetation ecology experts, too many to catalogue here on an individual basis. We acknowledge the authorship of all CNVC types presented here within each of the descriptions.

This report is a first draft of a status report on Canada's vegetation that we intend to have peer reviewed throughout Canada. We look forward to the contributions from many experts across the provinces and territories.