



Canadian National Vegetation Classification (CNVC) Classification nationale de la végétation du Canada

<http://cnvc-cnvc.ca>

Vancouverian Flooded & Swamp Forest

Macrogroup M035

Forêts inondées et marécageuses de la région floristique de Vancouver

Temperate Flooded & Swamp Forest

D193 Vancouverian Flooded & Swamp Forest

M035 Vancouverian Flooded & Swamp Forest

D195 Rocky Mountain-Great Basin Montane Flooded & Swamp Forest

M034 Rocky Mountain-Great Basin Montane Riparian & Swamp Forest

Temperate to Polar Bog & Fen

D029 North American Bog & Fen

M063 North Pacific Bog & Fen



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.



Floodplain gravel bar with low and middle 'benches' dominated by red alder (*Alnus rubra*). Nimpkish River, British Columbia.

Source: Emily Cameron



Red alder (*Alnus rubra*) dominated floodplain stand. Understory includes salmonberry (*Rubus spectabilis*), red elderberry (*Sambucus racemosa*) and western sword fern (*Polystichum munitum*). Tsable River, BC.

Source: British Columbia Ministry of Forests, Lands, Natural Resources Operations and Rural Development



Vancouverian Flooded & Swamp Forest

Macrogroup M035

Forêts inondées et marécageuses de la région floristique de Vancouver

Vegetation

Physiognomy and Structure

M035 includes floodplain, estuarine and swamp forests on sites that are influenced by high subsurface water levels. Forest canopies can be evergreen coniferous, cold-deciduous broad-leaved ("hardwood") or a conifer-hardwood mixture. Vertical structure varies from multi-storied stands with trees of multiple ages, to even-aged stands with a single-storied canopy. Dense understory vegetation is characteristic of these stands, usually dominated by broad-leaved shrubs, tree regeneration, ferns and forbs. The moss layer can be well developed under conifer canopies, especially in swamps.

Floristics

M035 flooded and swamp forests vary in floristic composition depending on local site properties and disturbance history. At low elevations, sites that have experienced recent disturbance (e.g., flooding or anthropogenic disturbance) are typically dominated by cold-deciduous broad-leaved trees. The main tree species on riparian sites that experience frequent flooding and sediment deposition is *Alnus rubra*. *Populus trichocarpa* is also common on floodplains of larger mainland rivers, often in association with *A. rubra*, although it is less common on Vancouver Island and Haida Gwaii. Near the coast, stands of *Salix sitchensis* or *Malus fusca* develop on floodplains at the transition between freshwater and brackish conditions, or in depressional swamps. In southern portions of the range, *Acer macrophyllum* occurs in both swamps and on floodplains following disturbance.

Conifer species are more prevalent on relatively undisturbed sites, especially in swamps and on less frequently flooded riparian 'benches'. *Thuja plicata* and *Tsuga heterophylla* are late seral species that are often the dominant tree species in swamps. In cooler moister climates, including higher elevations and hypermaritime areas, *Callitropsis nootkatensis*, *Abies amabilis* and *Tsuga mertensiana* are often abundant in swamps, although *A. amabilis* is absent from Haida Gwaii. *Picea sitchensis* occurs in swamps, on stabilized floodplain sites and in estuarine areas. *Abies grandis* occurs in southern portions of the range, primarily in swamps. *Pinus contorta* var. *contorta* is occasionally found in nutrient-poor swamps; its primary occurrence is in coastal bogs, described in M063 [North Pacific Bog & Fen].

Floodplain forests are characterized by dense understories of cold-deciduous broad-leaved shrubs, especially *Rubus spectabilis*. Other common shrubs include *Sambucus racemosa*, *Cornus stolonifera*, *Rubus parviflorus*, *Oplonanax horridus* and *Ribes bracteosum*. Herbs include *Athyrium filix-femina*, *Tiarella trifoliata*, *Polystichum munitum*, *Trautvetteria carolinensis* and *Maianthemum dilatatum*. Because of heavy broadleaf litterfall in most floodplain forests, combined with regular sedimentation on some sites, there is typically little moss development on the forest floor.

The understories of M035 swamp forests are characterized by *Lysichiton americanum*. Sedges (*Carex* spp.) and ferns (especially *Polystichum munitum*) are often abundant in the herb layer, as well as *Rubus spectabilis* and sometimes *Vaccinium ovalifolium* [see Comments] and *Gaultheria shallon* in the shrub layer. Other common swamp understory species include *Vaccinium parvifolium*, *Menziesia ferruginea*, *Blechnum spicant*, *Athyrium filix-femina*, *Tiarella trifoliata*, *Coptis asplenifolia* and *Maianthemum dilatatum*. *Rhizomnium glabrescens*, *Rhytidiadelphus loreus*, *Hylocomium splendens*, *Eurhynchium praelongum* and *Sphagnum girgensohnii* are typical species in the moss layer of swamp forests.

Dynamics

Riparian forests of M035 are subject to the floodplain dynamics of rivers that occur in areas of high precipitation and/or snowmelt, including erosion of banks, removal of established vegetation, channelization, scouring and sediment deposition. Some rivers are characterized by wide shifting riverbeds. Vegetation succession on floodplains is typically initiated by establishment of seedlings of *Salix* spp., *Alnus rubra* and/or *Populus trichocarpa*, usually on freshly deposited mineral sediment. These actively flooded 'low benches' are continually being formed and modified by accretion and erosion; they are frequently flooded and also strongly influenced by subsurface seepage. As these sites become more stable (i.e., elevated above the water table and less frequently flooded), conifer species can seed into the early seral hardwood stands if there is an available seed supply from surrounding areas. These 'middle benches' are generally characterized by mixed hardwood-conifer stands. Eventually, on the most stable sites where flooding is rare, productive conifer stands develop (these communities are not included in M035, but are described as part of M024 [Vancouverian Coastal Rainforest]).

Wetlands (i.e., swamps) are generally stable ecosystems that are maintained by persistently high water tables. Local hydrology is the main ecological determinant of vegetation characteristics. Any changes to water chemistry or level of the long-term water table will affect soil nutrient status, degree of aeration and temperature in the rooting zone, and thus influence overall species composition and tree productivity. A rise or drop in the water table (either by anthropogenic activities or natural causes [e.g., beaver dams]) can result in changes to the vegetation community. A higher water table can result in tree mortality and transition to open wetland vegetation. A drop in the water table can reverse some of these effects and sometimes promote the development of more productive treed vegetation (e.g., as described in M024).

Fire is not a significant disturbance factor in forests of M035.



Vancouverian Flooded & Swamp Forest

Macrogroup M035

Forêts inondées et marécageuses de la région floristique de Vancouver

Environment

Climate

In Canada, M035 develops at low to high elevations along the Pacific coast of southern and central British Columbia where mild, wet Pacific air masses provide moderated temperatures and high precipitation. In general terms, the climate is maritime temperate, with cool summers, mild winters and high annual precipitation, the majority of which falls in autumn and winter. However, local climates grade from very wet and hypermaritime on Haida Gwaii and the outer mainland coast through maritime climates on Vancouver Island and most of the windward Coast Mountains to a continental-influenced subarctic climate in the easternmost portions of the mainland range.

Mean annual precipitation is generally high, averaging >2200 mm (varying from approximately 1000 to 7000 mm). Rain shadow effects from the Queen Charlotte Ranges, the Vancouver Island Ranges, the Olympic Mountains and, in some places, the Coast Mountains create great variability in precipitation patterns across the Canadian range of M035, accounting for the lower values in the continuum. At low to mid-elevations, the majority of total precipitation falls as rain, and snow is only a minor proportion; at higher elevations, between 20% and 70% of total precipitation falls as snow and a deep, late-melting snowpack is characteristic. In the hypermaritime zone along the immediate coast, frequent fog and low clouds during warmer months produce a uniformly wet and mild climate, with fog drip often contributing significant additional site moisture. Away from the coast, the climate is still relatively mild but with typically lower overall precipitation and greater temperature extremes. Mean annual temperature varies from approximately 1° to 10° C, depending mostly on latitude and elevation. Throughout the Canadian range, growing degree days above 5° C (GDD) vary between <1000 at higher elevations and approximately 2200 at sea level. Frozen soils are uncommon in winter, which is important for the survival of many of the coastal plant species.

Physiography, Geology, Topography and Soils

M035 forests are found in the westernmost Cordillera of North America. In Canada, they occur in the windward portions of the Coast Mountains in British Columbia (BC), including the Pacific Ranges, the Kitimat Ranges and the Boundary Ranges. M035 also occurs in the insular mountains of Vancouver Island and Haida Gwaii, as well as their adjoining coastal lowlands. A minor portion of the range occurs in the Cascade Mountains of southwestern BC and the St. Elias Mountains of northern BC. Topography is highly diverse, varying from relatively level lowlands to offshore islands to moderately hilly and mountainous terrain. M035 forests occur from sea level to elevations as high as 1600 mASL.

The geology of the Canadian west coast is varied. The Coast, Cascade and St. Elias Mountains are primarily crystalline igneous and metamorphic rocks. The Vancouver Island and Queen Charlotte Ranges, as well as the coastal lowlands, comprise mostly folded and faulted volcanic and sedimentary Tertiary rocks. All of these areas have been glaciated numerous times and glacial till blankets most of the overall area, along with colluvial materials on steep mountainous slopes. In the valleys and coastal lowlands, where communities of M035 occur, fluvial, glaciofluvial and marine parent materials predominate.

M035 forests develop in wetlands and in riparian and estuarine areas on sites with permanently saturated soils or seasonal water table fluctuations. Floodplain communities occur along large and small permanent streams, but are most prevalent on the lower reaches and estuaries of larger rivers. These locations typically experience frequent flooding, shifting channels and significant sediment deposition. Through much of the range, significant flooding occurs during winter rains that are often associated with 'rain on snow' events at higher elevations. Snowmelt contributes subsurface moisture to floodplain areas and may also flood lower watershed reaches. Sediment and dissolved materials carried by inflowing water can make flooded sites relatively nutrient-rich. Soils are poorly to moderately developed, mostly Regosols, because of ongoing deposition of silty and sandy alluvium.

Swamps are mostly small in size, typically occurring in small landscape depressions or on poorly-drained level areas. Organic matter accumulation sometimes occurs in swamps with poorer nutrient status. Swamp soils are often Gleysols with a peaty surface layer, but sometimes Organic soils develop.



Canadian National Vegetation Classification (CNVC) Classification nationale de la végétation du Canada

<http://cnvc-cnvc.ca>

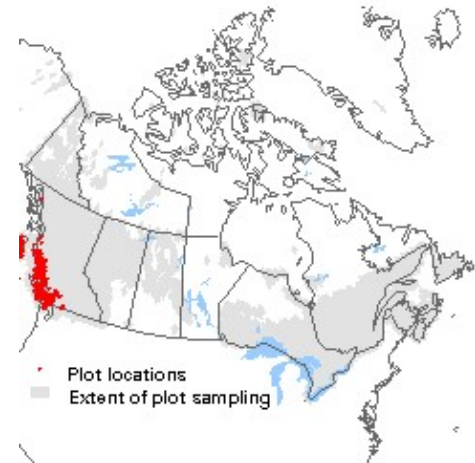
Vancouverian Flooded & Swamp Forest

Macrogroup M035

Forêts inondées et marécageuses de la région floristique de Vancouver

Distribution and Geographic Range

In Canada, M035 occurs at all elevations below treeline along the Pacific coast of British Columbia, including Haida Gwaii and Vancouver Island. On the mainland, these forests and woodlands occur mainly on the windward side of the Coast Mountains, extending to the leeward side at lower elevations in some of the major river valleys. The Canadian range lies in the central portion of the global range of western North American maritime temperate, flooded and swamp forests, extending from the Gulf of Alaska to northern California and lying within 60-120 km of the Pacific coast.



Related Concepts

M035 includes forests on sites influenced by high subsurface water levels that have been described in provincial publications for the Coastal Western Hemlock, the Mountain Hemlock and the Coastal Douglas-Fir biogeoclimatic zones in British Columbia.

USNVC M035 [Vancouverian Flooded & Swamp Forest] describes the rangewide characteristics of maritime temperate, flooded and swamp forests in western North America. This CNVC factsheet describes the Canadian expression of this vegetation.

Upland forests and woodlands within the range of M024 are described by M024 [Vancouverian Coastal Rainforest], M025 [Vancouverian Subalpine – High Montane Forest] and M886 [Southern Vancouverian Dry Foothill Forest & Woodland].

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.



Canadian National Vegetation Classification (CNVC) Classification nationale de la végétation du Canada

<http://cnvc-cnvc.ca>

Vancouverian Flooded & Swamp Forest

Macrogroup M035

Forêts inondées et marécageuses de la région floristique de Vancouver

Source Information

Number of Source Plots for M035: 470 (BECMaster ecosystem plot database [VPro13/MSAccess 2010 format]).

Information Sources (data):

Biogeoclimatic Ecosystem Classification Program of British Columbia. 2011. BECMaster ecosystem plot database [VPro13/MSAccess 2010 format]. W.H. MacKenzie, (ed.) B.C. Min. For., Lands, and Nat. Res. Ops., Smithers, BC. Available: www.for.gov.bc.ca/hre/becweb/resources/informationrequests (accessed: January 2020). (470 plots)

Concept Authors: D. Meidinger, K. Baldwin, USNVC

Description Authors: D. Meidinger, K. Baldwin

Date of Concept: April, 2015

Date of Description: February, 2020

References

- Banner, A.; MacKenzie, W.H.; Pojar, J.; MacKinnon, A; S.C., Saunders.; Klassen, H. 2014. A field guide to ecosystem classification and identification for Haida Gwaii. Prov. B.C., Victoria, BC. Land Manage. Handb. 68.
- Banner, A.; MacKenzie, W.; Haeussler, S.; Thomson, S.; Pojar, J.; Trowbridge, R. 1993. A field guide to site identification and interpretation for the Prince Rupert Forest Region. B.C. Min. For., Res. Branch, Victoria, BC. Land Manage. Handb. No. 26.
- Bostock, H.S. 1970. Physiographic subdivisions of Canada. Geol. Surv. Can. Econ. Geol. Rep. No. 1. Pages 10-30 in: R.J.W. Douglas (ed.) Geology and economic minerals of Canada. Geol. Surv. Can., Ottawa, ON.
- Brouillet, L.; Coursol, F.; Meades, S.J.; Favreau, M.; Anions, M.; Bélisle, P.; Desmet, P. 2010+. VASCAN, the database of vascular plants of Canada. Available: <http://data.canadensys.net/vascan/search> (accessed: September 2015).
- Church, M.; Ryder, J.M. 2010. Physiography of British Columbia. Pages 17-45 in R.G. Pike, T.E. Redding, R.D. Moore, R.D. Winker and K.D. Bladon eds. Compendium of forest hydrology and geomorphology in British Columbia. B.C. Min. For. Range, For. Sci. Prog. and FORREX Forum for Res. and Ext. in Nat. Resour., Victoria and Kamloops, BC.
- Ecological Stratification Working Group. 1995. A national ecological framework for Canada. Agric. and Agri-Food Can., Res. Branch, Centre Land and Biol. Resour. Res., and Environ. Can., State of Environ. Direct., Ecozone Analysis Branch, Ottawa/Hull, ON/QC.
- Ecoregions Working Group. 1989. Ecoclimatic regions of Canada. W. Strong and S.C. Zoltai (compilers). Sustain. Dev. Branch, Can. Wildlife Serv., Conserv. and Prot., Environ. Can., Ottawa, ON. ELC Series No. 23.
- Environment Canada. 2015. Canadian climate normals, 1961-1990. Gov. Canada, Available: http://climate.weather.gc.ca/climate_normals/index_e.html (accessed: January 29, 2015).
- Flora of North America Editorial Committee. 2007+. Flora of North America north of Mexico, vols 27, 28, 29. Oxford University Press, New York and Oxford. Available: <http://www.mobot.org/plantscience/bfna/BFNAmenu.htm> (accessed: November, 2015).
- Franklin, J.; Dyrness, C.T. 1973. Natural vegetation of Oregon and Washington. U.S. Dept. Agric., For. Serv., Pac. NW For. & Range Exp. Stn., Portland, OR, US. General Technical Report PNW 8.
- Green, R.N.; Klinka, K. 1994. A Field Guide for Site Identification and Interpretation for the Vancouver Forest Region. B.C. Min. For., Res. Branch, Victoria, BC. Land Manage. Handb. No. 28.
- Hare, F.K.; Hay, J.E. 1974. The climate of Canada and Alaska. Vol. 11, pages 49-192 in: R.A. Bryson and F.K. Hare (eds.) World survey of climatology. Elsevier Scientific Publishing Company, Amsterdam, The Netherlands.
- Kittel, G.; Meidinger, D. 2014. Macrogroup Detail Report: M035 Vancouverian Flooded & Swamp Forest Macrogroup [15 Oct 2014]. United States National Vegetation Classification. Fed. Geogr. Data Comm., Washington DC, US.
- Li, T.; Hélie, R. (compilers). 2014. Ecozones of Canada / Écozones du Canada [map]. Canadian Council on Ecological Areas / Conseil Canadien des Aires Écologiques, CA. Scale 1:25,000,000.



Canadian National Vegetation Classification (CNVC) Classification nationale de la végétation du Canada

<http://cnvc-cnvc.ca>

Vancouverian Flooded & Swamp Forest

Macrogroup M035

Forêts inondées et marécageuses de la région floristique de Vancouver

References (cont'd)

MacKenzie, W.H. 2015. Climate summaries for biogeoclimatic zones and subzones. BC Min. For., Lands and Nat. Resour. Op., Research Branch. Smithers, BC. Unpublished data.

MacKenzie, W.H.; Moran, J.R. 2004. Wetlands of British Columbia: A guide to identification. B.C. Min. For., Res. Branch, Victoria, BC. Land Manage. Handb. No. 52.

Meidinger, D.; Pojar, J. (eds.). 1991. Ecosystems of British Columbia. B.C. Min. For., Research Branch, BC. Spec. Rep. Series No. 6.

Soil Classification Working Group. 1998. The Canadian system of soil classification. NRC Research Press, Ottawa, ON. Agric. and Agri-Food Can. Pub. 1646.

USNVC [United States National Vegetation Classification] Database. 2016. United States National Vegetation Classification Database Ver. 2.0. Fed. Geogr. Data Comm., Veg. Subcomm., Washington DC, US. Available: <http://usnvc.org> (accessed: March 10, 2016).

Viereck, L.A.; Dyrness, C.T.; Batten, A.R.; Wenzlick, K.J. 1992. The Alaska vegetation classification. U.S. Dept. Agric., For. Serv., Pac. NW For. & Range Exp. Stn., Portland, OR, US. Gen. Tech. Rep. PNW-GTR-286.

The information contained in this factsheet is based on data and expert knowledge that is current to the date of description. As new information becomes available, the factsheet will be updated.

Suggested Citation: Meidinger, D.; Baldwin, K. Vancouverian Flooded & Swamp Forest [online]. Sault Ste. Marie, Ontario, Canada: Canadian National Vegetation Classification. February, 2020; generated 31-March-2020; cited **ENTER DATE ACCESSED**. 7 p. Canadian National Vegetation Classification Macrogroup: M035. Available from <http://cnvc-cnvc.ca>. System Requirements: Adobe Acrobat Reader v. 7.0 or higher. ISSN 1916-3266.



Canadian National Vegetation Classification (CNVC) Classification nationale de la végétation du Canada

<http://cnvc-cnvc.ca>

Vancouverian Flooded & Swamp Forest

Macrogroup M035

Forêts inondées et marécageuses de la région floristique de Vancouver

Comparison of Vegetation Characteristics for Vancouverian and Rocky Mountain Wet Forest Macrogroups

Lifeform	Species Name	n=526	n=470	n=872	Species Common Name
		M063 Pacific Bog & Fen	M035 Vancouverian	M034 Rocky Mountain	
Tree	<i>Pinus contorta</i> var. <i>contorta</i>	■■■			shore pine
	<i>Callitropsis nootkatensis</i>	■■■	***		yellow-cypress
	<i>Tsuga heterophylla</i>	■■■	■■■		western hemlock
	<i>Thuja plicata</i>	■■■	■■■■		western red cedar
	<i>Alnus rubra</i>		■■■■		red alder
	<i>Picea sitchensis</i>		■■■		Sitka spruce
	<i>Acer macrophyllum</i>		**		big-leaved maple
	<i>Populus trichocarpa</i>		***	***	black cottonwood
	<i>Picea engelmannia</i> + <i>P. glauca</i> + hybrids			■■■■	Engelmann, white & hybrid spruces
	<i>Abies lasiocarpa</i>			■■■	subalpine fir
Shrub	<i>Vaccinium uliginosum</i>	**			bog bilberry
	<i>Myrica gale</i>	■■■			sweet gale
	<i>Rhododendron groenlandicum</i>	■■■			common Labrador tea
	<i>Gaultheria shallon</i>	■■■	**		salal
	<i>Rubus spectabilis</i>		■■■		salmonberry
	<i>Lonicera involucrata</i>			■■	bracted honeysuckle
	<i>Ribes lacustre</i>			■■	bristly black currant
	<i>Rosa acicularis</i>			■	prickly rose
	<i>Alnus incana</i> ssp. <i>tenuifolia</i>			***	mountain alder
Herb/ Dwarf Shrub	<i>Trichophorum cespitosum</i>	***			tufted clubrush
	<i>Vaccinium oxycoccos</i>	■■			small cranberry
	<i>Empetrum nigrum</i>	■■			black crowberry
	<i>Kalmia microphylla</i>	■■			western bog laurel
	<i>Blechnum spicant</i>	**	■		deer fern
	<i>Lysichiton americanus</i>	**	■■■		yellow skunk cabbage
	<i>Polystichum munitum</i>		■■■		western sword fern
	<i>Carex</i> spp.	■■■■	■■■	■■■	sedges
	<i>Athyrium filix-femina</i>		■■	**	common lady fern
	<i>Tiarella trifoliata</i>		■	*	three-leaved foamflower
	<i>Equisetum arvense</i> + <i>E. pratense</i> + <i>E. sylvaticum</i>			■■■■	horsetails
	<i>Mitella nuda</i>			■	naked mitrewort
	<i>Petasites frigidus</i>			■	arctic sweet coltsfoot
	<i>Rubus pubescens</i>			■■	dwarf raspberry
<i>Gymnocarpium dryopteris</i>			**	common oak fern	
Moss/Lichen	<i>Cladina</i> spp.	■■■			reindeer lichens
	<i>Rhytidiadelphus loreus</i>	**	■■■		lanky moss
	<i>Sphagnum</i> spp.	■■■■■	■■■	***	peat mosses
	<i>Hylocomium splendens</i>	**	■■■	***	stairstep moss
	<i>Eurhynchium praelongum</i>		***		slender beaked moss
	<i>Mniaceae</i>		■■■	■■■■	leafy mosses
	<i>Brachythecium</i> spp.			■■■	ragged mosses
	<i>Pleurozium schreberi</i>	**		■■■	red-stemmed feathermoss
	<i>Aulacomnium palustre</i>			***	glow moss

Legend

Constancy: Black bar >= 50%
Grey bar >= 30%
Asterisk >= 20%

Cover: 5 bars >= 25%
4 bars >= 10%
3 bars >= 3%

2 bars >= 1%
1 bar < 1%