



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

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## Vancouverian Subalpine – High Montane Forest Forêts subalpines et des montagnes de haute altitude de la région floristique de Vancouver

Macrogroup M025

### Cool Temperate Forest & Woodland

#### D192 Vancouverian Forest & Woodland

M886 Southern Vancouverian Dry Foothill Forest & Woodland

M024 Vancouverian Coastal Rainforest

#### **M025 Vancouverian Subalpine – High Montane Forest**

##### **CM025a Typic Vancouverian High Montane & Subalpine Forest**

G0245 North Pacific Mountain Hemlock – Pacific Silver Fir Forest & Tree Island

##### **CM025b Hypermaritime Vancouverian High Montane & Subalpine Forest**



### Concept

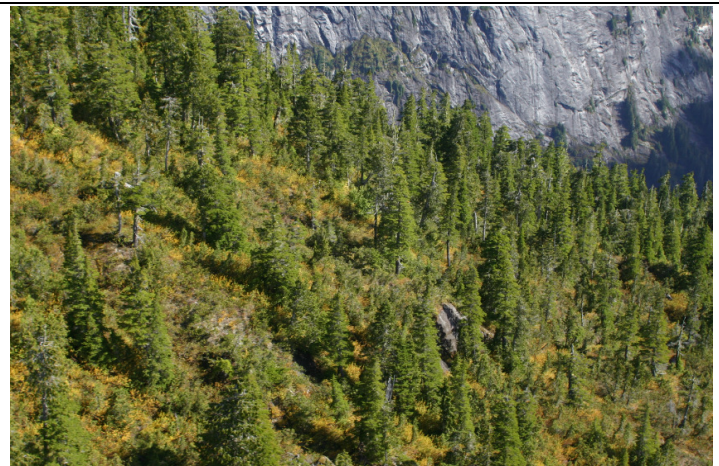
M025 describes the maritime, temperate subalpine and high montane treed vegetation of western North America. The Canadian expression includes high-elevation forests and woodlands of the southern and central British Columbia (BC) coast. Most of the closed forests comprise multi-aged stands of old, medium 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.



Mountain hemlock (*Tsuga mertensiana*) dominated forests and woodlands on the central coast of British Columbia (Great Bear Rainforest). Note open stand structure and patchy distribution on shallow, exposed sites. Source: W. MacKenzie, British Columbia Forest Service



Open mountain hemlock (*Tsuga mertensiana*) stand with dense shrub understory dominated by copperbush (*Elliottia pyroliflora*). Near Kemano, British Columbia. Source: W. MacKenzie, British Columbia Forest Service



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#### Vegetation

##### Physiognomy and Structure

M025 includes upland high-elevation forests and woodlands comprising evergreen conifer tree species. Stands of M025 are generally of mixed conifer tree species composition and vary from tall (>30 m) closed canopy forests at lower elevations to very open, short-statured woodlands at higher elevations or on very dry sites. Deep heavy, long-lying snowpacks are characteristic of the M025 environment, creating distinct growth patterns and stand structures in these forests and woodlands. Tree stems typically have a “snowcreek” at the base, the result of downslope creep of the snowpack; as well, since epiphytic lichens only occur above the level of the snowpack, tree stems within a stand have a distinct line at the bottom of epiphyte growth that indicates average snow depth. With increased elevation, as well as depth and seasonal longevity of the snowpack, stands become more open and patchy, often occurring as tree islands or ribbons in a matrix of graminoid patches, meadows, heaths or shrublands. At treeline, microsites determine tree distribution and the forest/woodland patches are found where snow melts earliest, while areas with the latest lying snow contain sedge, heath or meadow vegetation. At higher elevations, deep long-lying snowpacks often create “elfinwood” stands of stunted, scrubby trees; where tree stems emerge above the snowpack, they develop characteristic “krummholtz” growth forms, including “flags” and branches on the downwind side, in response to physical damage by blowing snow and ice crystals. Understory structure varies from dense to sparse, and is typically dominated by ericaceous low and dwarf shrubs and conifer regeneration. Most closed forests in M025 have a well-developed bryophyte layer on the forest floor. In the Canadian range, broad-scale disturbances (especially fire) are rare in these forests; windthrow, avalanches and mass soil movement are the main stand-replacement disturbance modalities. Otherwise, gap replacement of single or small groups of trees is the common regeneration process. Overall, stands tend to be old and uneven aged; taller stands can be structurally diverse and multi-storied. Subalpine and montane riparian and wetland forests and woodlands within the range of M025 are described by M035 [Vancouverian Flooded & Swamp Forest].

##### Floristics

Throughout the Canadian range of M025, the characteristic tree species is *Tsuga mertensiana*. Its most common canopy associates are *Abies amabilis* (except on Haida Gwaii), *Callitropsis nootkatensis* (in edaphically and/or climatically moister areas) and *T. heterophylla* (at lower elevations). *Abies lasiocarpa* can dominate stands on Vancouver Island and in the eastern portion of the mainland range, particularly at the highest elevations. On Haida Gwaii, *Picea sitchensis* is often codominant in these forests. In hypermaritime areas (CM025b [Hypermaritime Vancouverian High Montane & Subalpine Forest]), *C. nootkatensis* and *Pinus contorta* var. *contorta* often form scrubby forests and woodlands on both dry and wet sites. In the eastern portion of the range, *Picea engelmannii* and *Pinus albicaulis* occur sporadically on sites with a continental climate influence – the latter on dry open sites. *Pinus monticola* is less frequent in M025 forests than it was historically due to the invasive pathogen white pine blister rust (*Cronartium ribicola*).

*T. mertensiana*, *A. amabilis*, *C. nootkatensis* and *T. heterophylla* are wide-ranging late seral species that can re-colonize sites following stand-replacing disturbance, invade existing early or mid-seral stands by seeding in from surrounding areas, and also maintain themselves within stands where they are already established. Seeds of these species are able to germinate and survive on seedbeds of mineral soil, litter, moss, thick humus and dead wood substrate as long as moisture is sufficient. All of these species are tolerant of the acidic, nutrient-poor soils and humus that are common in these wet cool forests. They are shade tolerant, so seedlings persist under closed canopies for many years and are able to respond to release after long periods of suppression. Once in the main canopy, they dominate uneven-aged stands. *T. mertensiana*, *C. nootkatensis* and *T. heterophylla* are also able to regenerate vegetatively; *A. amabilis* only reproduces by seed. These are medium to large-sized, relatively long-lived species that survive as mature trees for hundreds of years in the absence of disturbance. All species are intolerant of freezing in the rooting layer and are dependent on a deep snowpack to insulate upper soil layers. They are correspondingly tolerant of burial, frost and slope creep associated with deep snowpacks. *T. mertensiana* and *C. nootkatensis* are the most cold tolerant of these species, and constitute the (often scrubby) tree composition at elevational treeline where they often form low patches around parent trees by layering under the snowpack.

*Picea sitchensis* is a long-lived early seral species that prefers well-drained moist, rich sites in areas with moderate to high input of rainfall or fog. It is a common co-dominant canopy species in hypermaritime areas (CM025b), especially on Haida Gwaii. Seedling survival is best on moist mineral soil seedbeds or on rotting logs in unshaded areas; *P. sitchensis* can also reproduce vegetatively on wetter sites by layering. Once established in the canopy, individuals of *P. sitchensis* can survive as mature trees for hundreds of years.

*Pinus contorta* var. *contorta* is an early seral species that usually occurs in extreme habitats, typically on very wet sites, on poor coarse-textured soils or on exposed bedrock with shallow soils, where it reproduces by seed from non-serotinous cones. Upland site occurrences of this species are included in M025 (mostly M025b [Hypermaritime Vancouverian High Montane & Subalpine Forest]; wetland occurrences are described in M035 [Vancouverian Flooded & Swamp Forest].



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#### Floristics (cont'd)

Most of the main understory species are widely distributed throughout the Canadian range of M025. Ericaceous shrubs dominate in the acidic and nutrient poor soils associated with much of this vegetation. *Vaccinium ovalifolium* (see Comments) is the most common and abundant shrub, especially in CM025a [Typic Vancouverian High Montane & Subalpine Forest]. *V. membranaceum* and *Rhododendron albiflorum* occur primarily at higher elevations and in the eastern portion of the range where the climate has continental influences. *V. parvifolium* is most common in the hypermaritime areas of CM025b. *Menziesia ferruginea* occurs commonly in the more productive forests. *Elliottia pyroliflora* is found on drier site conditions in CM025a.

*Rubus pedatus*, *Streptopus* spp. and *Cornus canadensis* are common herb/dwarf shrub indicators of circum-mesic sites. On moist sites *Veratrum viride*, *Tiarella trifoliata*, *Neottia* spp., *Valeriana sitchensis* and *Nephrophyllidium crista-galli* are typical forb species, along with the ferns *Blechnum spicant*, *Gymnocarpium dryopteris* and *Athyrium filix-femina*. *Calamagrostis nutkaensis* and *Coptis asplenifolia* are important herb species in hypermaritime climates (CM025b), especially on Haida Gwaii. Various heath species are particularly common near elevational treeline in “parkland” forest patches: *Phyllodoce empetriformis* and *Cassiope mertensiana* are the most common species throughout the Canadian range; *Harrimanella stelleriana* and *Empetrum nigrum* in hypermaritime areas (CM025b), the latter primarily in northwestern British Columbia; *Phyllodoce glanduliflora* and *Cassiope lycopodioides* on Haida Gwaii.

Bryophytes dominate the forest floor of these forests. *Rhytidiopsis robusta* and *Dicranum* spp. occur frequently throughout the Canadian range. *Hylocomium splendens* and *Pleurozium schreberi* are common associates. In moist areas, *Rhytidiadelphus loreus* and leafy mosses (*Mnium* spp., *Plagiomnium* spp., *Rhizomnium* spp.) are often abundant. Liverworts, such as *Scapania bolanderi*, *Barbilophozia floerkei* and *Pellia neesiana*, are also well represented in these forests.

#### Dynamics

Environmental site characteristics, plant species autecology, seed/propagule availability, and disturbance history (i.e., type, severity and frequency) influence secondary succession trends within the forests of M025. Windthrow, slope failures, avalanches, pathogens and insect infestations are the most widespread forms of natural disturbance throughout the range of M025. Forest harvesting occurs in some areas, but these are generally not highly productive stands. Stand-replacing fire plays a relatively minor role in the disturbance regime of M025 forests in the Canadian range.

Most of the Canadian range of M025 consists of forests in moist to wet, snowy climates that rarely burn (i.e., fire cycle >500 yr), potentially resulting in very old stands (in some cases >1000 years old). The scarcity of young, even-aged stands indicates the rarity of large-scale disturbances. Moderate-scale natural disturbances can be caused by windthrow, avalanches or mass soil movement. In the absence of stand-replacing events, dynamics are more gradual through the process of gap dynamics. Within mature and old forests, small canopy gaps result from the death of single trees or small groups of trees due to diseases, insects or small-scale windthrow. Although stands may appear to be single-storied in the canopy, trees of the same size can vary considerably in age. Although fire is rare in the Canadian range due to the cool and wet climate, it can occur on warm aspects or in areas of southern British Columbia with drier climates. On Haida Gwaii, heavy browsing by introduced coastal black-tailed deer is modifying the understory of forest stands.

At high elevations, stands are patchy and scrubby, typically comprising multiple age classes. In snowier areas, scrubby forest/woodland patches are common on slopes (especially cool aspects) and ridges, even at moderate elevations. Trees characteristically grow in clumped tree islands where soil conditions are better, snowmelt is earlier, and some protection is offered by established vegetation. Taller forests occur where the snow is not as deep or is more stable. Heavy snow and deep snowpacks cause tree damage by snow creep and avalanching.

A variety of diseases and insects are endemic to these forests. Typically, mortality is limited to individual or small groups of trees within stands and major outbreaks are uncommon at the high elevations where M025 occurs. Hemlock dwarf mistletoe (*Arceuthobium tsugense*) affects both *Tsuga heterophylla* and *T. mertensiana*. At lower elevations, laminated root rot (*Phellinus weirii*), rust-red stringy rot (*Echinodontium tinctorium*) and annosus root disease (*Heterobasidion annosum*) affect the *Tsuga* spp. Western hemlock looper (*Lambdina fiscellaria lugubrosa*) can be a serious defoliator of *T. heterophylla* and *Abies amabilis*. *A. amabilis* is susceptible to attack by the invasive insect balsam woolly adelgid (*Adelges piceae*).



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**Environment**

**Climate**

In Canada, M025 develops at high elevations along the Pacific coast of southern and central British Columbia where mild, wet Pacific air masses provide high precipitation and relatively moderate temperatures. In general terms, the climate is maritime temperate, with short cool summers, rainy autumns, and long cool snowy winters. However, local climates grade from very wet and hypermaritime on Haida Gwaii and the outer mainland coast (described by M025b [Hypermaritime Vancouverian High Montane & Subalpine Forest]) 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 high, often exceeding 2500 mm (varying between approximately 2000 and 7000 mm). Between 20% and 70% of total precipitation falls as snow, depending on location; a deep and late-melting snowpack is characteristic of the M025 range. Maximum snowpack depth in late winter varies from as little as 50 cm at lower elevations of the hypermaritime areas to >300 cm in wet subalpine climates. The snowpack insulates soils from freezing, which is important for the survival of the major tree species. However, heavy snow buries smaller vegetation, including regenerating trees, which must be resilient to being bent, crushed and frozen under the snowpack and adapted to the short growing season created by late-melting snow. Mean annual temperatures vary from approximately 1° to 5° C and the growing season is short, averaging <1100 growing degree days above 5° C (GDD).

**Physiography, Geology, Topography and Soils**

M025 occurs in the westernmost Cordillera of North America. In Canada, it occupies the windward portions of the Coast mountains in British Columbia (BC), including the Pacific Ranges, the Kitimat Ranges and the Boundary Ranges. It also occurs in the insular mountains of Vancouver Island and Haida Gwaii. A minor portion of the range occurs in the Cascade Mountains of southwestern BC and the St. Elias Mountains of northern BC. In the southern portion of the Canadian range, M025 forests and woodlands occur between approximately 900 mASL and 1600 mASL. In the northern Canadian range, elevations are mostly between 800 mASL and 1800 mASL, but can be as low as 400 mASL in valleys with pronounced cold air drainage. Elevations are lower on Haida Gwaii and in the mainland hypermaritime zone (M025b [Hypermaritime Vancouverian High Montane & Subalpine Forest]), ranging from 500 mASL to 900 mASL. In southern BC, the lower elevation of M025 forests on the western side of the Coast Mountains is approximately 900 mASL, whereas on the eastern (leeward) side it is about 1200 mASL (due to snowpack effects).

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. These areas have been glaciated numerous times and the most prevalent parent material is glacial till. Due to the steep, mountainous slopes, often with bedrock exposures, colluvium is also common. Parent material textures vary considerably but are mostly coarse- to medium-textured with moderate to high coarse fragments. Although geologically young, the soils are generally well developed. Due to the wet and cool climate, organic matter tends to accumulate. The predominant soil forming processes are podzolization and mor humus formation. Soils are mostly Podzols, with some Folisols; Gleysols occur on moist, poorly drained sites. The mor humus is often compacted by a heavy snowload.



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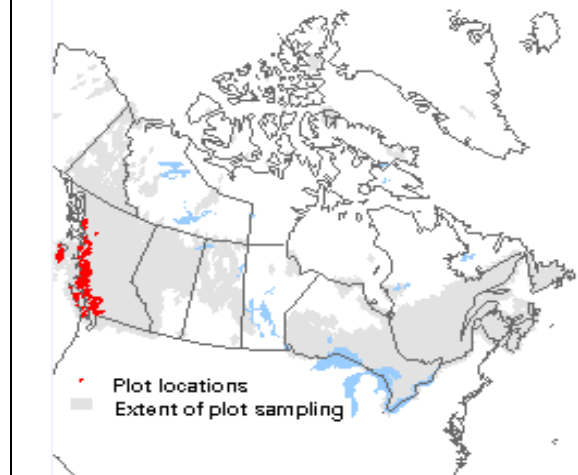
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### Distribution and Geographic Range

In Canada, M025 includes high elevation forests along the Pacific coast of British Columbia, including Haida Gwaii and Vancouver Island. On the mainland, these forests occur mostly on the windward side of the Coast Mountains. The Canadian range lies in the northern portion of the global range of western North American maritime temperate, subalpine and high montane forests and woodlands, which extends from southeastern Alaska to Baja California, Mexico.



### Related Concepts

M025 includes upland forests and woodlands that have been described in provincial publications for the Mountain Hemlock biogeoclimatic zone in British Columbia.

USNVC M025 [Vancouverian Subalpine – High Montane Forest] describes the rangewide characteristics of high elevation maritime temperate subalpine and high montane forests and woodlands of western North America. This CNVC factsheet describes the Canadian expression of this vegetation, which includes conditions treated in USNVC Group G245 [North Pacific Mountain Hemlock – Silver Fir Forest & Tree Island Group].

Riparian and wetland forests and woodlands within the range of M025 are described by M035 [Vancouverian Flooded & Swamp Forest].

### 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.



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#### Source Information

**Number of Source Plots for M025:** 418 (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/information-requests](http://www.for.gov.bc.ca/hre/becweb/resources/information-requests) (accessed: June 2015). (418 plots)

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**Description Authors:** D. Meidinger and K. Baldwin

**Date of Concept:** April, 2015

**Date of Description:** August, 2017

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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.

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

<http://cnvc-cnvc.ca>

## Vancouverian Subalpine – High Montane Forest

Macrogroup M025

Forêts subalpines et des montagnes de haute altitude de la région floristique de Vancouver

### Comparison of Vegetation Characteristics for Vancouverian Forest Macrogroups

Lifeform	Species Name	n=735	n=6322	n=418	Species Common Name
		M886 Dry Vancouverian	M024 Rainforest	M025 Subalpine	
Tree	<i>Quercus garryana</i> var. <i>garryana</i>	****			Garry oak
	<i>Abies grandis</i>	****			grand fir
	<i>Arbutus menziesii</i>	■ ■ ■ ■			Pacific arbutus
	<i>Thuja plicata</i>	■ ■ ■ ■	■ ■ ■ ■		western red cedar
	<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>	■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■		coast Douglas-fir
	<i>Picea sitchensis</i>		****		Sitka spruce
	<i>Tsuga heterophylla</i>		■ ■ ■ ■ ■ ■	■ ■ ■ ■	western hemlock
	<i>Abies amabilis</i>		■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■	Pacific silver fir
	<i>Tsuga mertensiana</i>			■ ■ ■ ■ ■ ■	mountain hemlock
	<i>Callitropsis nootkatensis</i>			■ ■ ■ ■	yellow-cypress
Shrub	<i>Symphoricarpos albus</i>	***			thin-leaved snowberry
	<i>Lonicera hispidula</i> + <i>L. ciliosa</i>	***			pink & orange honeysuckles
	<i>Rosa gymnocarpa</i>	■ ■			dwarf woodland rose
	<i>Holodiscus discolor</i>	■ ■ ■ ■			oceanspray
	<i>Berberis nervosa</i>	■ ■ ■ ■			Cascade barberry
	<i>Gaultheria shallon</i>	■ ■ ■ ■	■ ■ ■ ■		salal
	<i>Vaccinium parvifolium</i>	**	■ ■ ■	**	red huckleberry
	<i>Rubus spectabilis</i>		■ ■ ■		salmonberry
	<i>Vaccinium ovalifolium</i>		■ ■ ■ ■	■ ■ ■ ■ ■ ■	oval-leaved blueberry
	<i>Menziesia ferruginea</i>		■ ■ ■	■ ■ ■	false azalea
	<i>Vaccinium membranaceum</i>			■ ■ ■ ■	mountain huckleberry
	<i>Sorbus sitchensis</i>			■ ■	Sitka mountain-ash
	<i>Elliottia pyroliflora</i>			***	copperbush
Herb/ Dwarf Shrub	<i>Pteridium aquilinum</i>	***			bracken fern
	<i>Rubus ursinus</i>	■ ■			Pacific trailing blackberry
	<i>Polystichum munitum</i>	■ ■	■ ■ ■ ■		western sword fern
	<i>Dryopteris expansa</i>		■ ■ ■ ■		spreading wood fern
	<i>Athyrium filix-femina</i>		***		common lady fern
	<i>Tiarella trifoliata</i>		■ ■ ■ ■	***	three-leaved foamflower
	<i>Blechnum spicant</i>		■ ■ ■ ■	■ ■	deer fern
	<i>Cornus canadensis</i>		■ ■ ■ ■	■ ■	bunchberry
	<i>Rubus pedatus</i>		***	■ ■ ■ ■	five-leaved dwarf bramble
	<i>Streptopus</i> spp.		**	■ ■ ■ ■	twistedstalks
	<i>Neottia cordata</i> + <i>N. banksiana</i>		**	*	twayblades
	<i>Veratrum viride</i>			■ ■	green false hellebore
	<i>Phyllodoce empetriformis</i>			***	pink mountain heather
	<i>Coptis aspleniifolia</i>			**	fern-leaved goldthread
<i>Nephrophyllidium crista-galli</i>			***	deer cabbage	
Moss/Lichen	<i>Rhytidiadelphus triquetrus</i>	****			electrified cat's-tail moss
	<i>Kindbergia oregana</i>	■ ■ ■ ■	■ ■ ■ ■		Oregon beaked moss
	<i>Hylacomium splendens</i>	■ ■ ■ ■	■ ■ ■ ■	****	stairstep moss
	<i>Buckiella undulata</i>		■ ■ ■ ■		flat moss
	<i>Mniaceae</i>		■ ■ ■ ■	■ ■ ■ ■	leafy mosses
	<i>Rhytidiadelphus loreus</i>		■ ■ ■ ■	■ ■ ■ ■ ■ ■	lanky moss
	<i>Rhytidiopsis robusta</i>			■ ■ ■ ■ ■ ■	pipecleaner 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%





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

<http://cnvc-cnvc.ca>

## Vancouverian Subalpine – High Montane Forest

Macrogroup M025

Forêts subalpines et des montagnes de haute altitude de la région floristique de Vancouver

### Comparison of Vegetation Characteristics for Macrogroup Subtypes in M025

Lifeform	Species Name	n=353		n=65	
		CM025a Typic	CM025b Hypermaritime	CM025a Typic	CM025b Hypermaritime
Tree	<i>Abies amabilis</i>	■■■■■			
	<i>Tsuga heterophylla</i>	■■■■■		■■■■■	
	<i>Tsuga mertensiana</i>	■■■■■		■■■■■	
	<i>Callitropsis nootkatensis</i>	■■■■■		■■■■■	
	<i>Picea sitchensis</i>			■■■■■	
	<i>Pinus contorta</i> var. <i>contorta</i>			****	
Shrub	<i>Rhododendron albiflorum</i>	***			
	<i>Elliottia pyroliflora</i>	■■■■■			
	<i>Sorbus sitchensis</i>	■■			
	<i>Vaccinium membranaceum</i>	■■■■■			
	<i>Menziesia ferruginea</i>	■■■		**	
	<i>Vaccinium ovalifolium</i>	■■■■■		■■■■■	
	<i>Vaccinium parvifolium</i>			■■	
Herb/ Dwarf Shrub	<i>Gymnocarpium dryopteris</i>	***			
	<i>Clintonia uniflora</i>	***			
	<i>Phyllodoce empetriformis</i>	■■■■■			
	<i>Tiarella trifoliata</i>	***		*	
	<i>Cornus canadensis</i>	■■		■	
	<i>Rubus pedatus</i>	■■■		■■	
	<i>Streptopus</i> spp.	■■■■■		■■	
	<i>Veratrum viride</i>	■■		■■■	
	<i>Blechnum spicant</i>	***		■■	
	<i>Neottia cordata</i> + <i>N. banksiana</i>	*		■■	
	<i>Coptis asplenifolia</i>			■■	
	<i>Calamagrostis nutkaensis</i>			■■■■■	
	<i>Moneses uniflora</i>			■	
	<i>Nephrophyllidium crista-galli</i>			■■	
	<i>Huperzia haleakalae</i>			■	
<i>Harrimanella stelleriana</i>			***		
Moss/Lichen	<i>Barbilophozia floerkei</i>	***			
	<i>Rhytidiopsis robusta</i>	■■■■■		****	
	<i>Dicranum</i> spp.	■■■■■		■■■	
	<i>Mniaceae</i>	■■■■■		■■■■■	
	<i>Rhytidiadelphus loreus</i>	■■■■■		■■■■■	
	<i>Hylocomium splendens</i>	****		■■■	
	<i>Scapania bolanderi</i>			■■■■■	
	<i>Sphagnum</i> spp.			■■■■■	
	<i>Pellia neesiana</i>			■■■■■	
	<i>Buckiella undulata</i>			■	

#### Legend

Constancy:	Black bar >= 50%	Cover:	5 bars >= 25%	2 bars >= 1%
	Grey bar >= 30%		4 bars >= 10%	1 bar < 1%
	Asterisk >= 20%		3 bars >= 3%	