



Forest / Forêt

Association CNVC00005

Tsuga heterophylla* (*Picea sitchensis* - *Abies amabilis*) / *Rubus spectabilis* / *Polystichum munitum

Western Hemlock (Sitka Spruce - Pacific Silver Fir) / Salmonberry / Western Sword Fern
Pruche de l'Ouest (Épinette Sitka - Sapin gracieux) / Ronce remarquable / Fougère épée

Subassociations: none

CNVC Alliance: not yet determined

CNVC Group: not yet determined

Type Description

Concept: CNVC00005 is an endemic Pacific coastal coniferous association that develops on very moist, nutrient-rich soils in the hypermaritime climate of the outer coastal areas of southern British Columbia. These highly productive coniferous forests tend to occur on lower and toe slopes with underground seepage. Western hemlock (*Tsuga heterophylla*) is consistently present and usually codominates with Sitka spruce (*Picea sitchensis*) and Pacific silver fir (*Abies amabilis*). The well-developed shrub layer comprises salmonberry (*Rubus spectabilis*), red huckleberry (*Vaccinium parvifolium*) and regeneration of western hemlock. The herb layer features ferns, especially western sword fern (*Polystichum munitum*), deer fern (*Blechnum spicant*), northern wood fern (*Dryopteris expansa*), and common lady fern (*Athyrium filix-femina*). Leading species in the well-developed moss layer are lanky moss (*Rhytidiadelphus loreus*) and Oregon beaked moss (*Eurhynchium oreganum*).

Vegetation: These old, highly productive coniferous forests feature *Tsuga heterophylla*, with co-dominants *Picea sitchensis* and *Abies amabilis* usually present in the variably dense canopy. Regeneration of *Tsuga heterophylla* is prominent in the shrub layer. Other important species in the shrub layer include *Rubus spectabilis* and *Vaccinium parvifolium*, with scattered lower coverage of *Abies amabilis* regeneration and *Gaultheria shallon*. The herb layer is often well-developed, featuring moderate to high cover of *Polystichum munitum* and *Blechnum spicant*. Rich-site indicators, such as *Tiarella trifoliata* (see the Comments section), *Athyrium filix-femina*, *Claytonia sibirica* and *Dryopteris expansa*, are often present. Leading species in the well-developed moss layer are *Rhytidiadelphus loreus* and *Eurhynchium oreganum*. Other common species include *Pellia neesiana*, *Plagiothecium undulatum*, *Rhizomnium glabrescens* and *Hylocomium splendens*.

Environment: These communities develop on very moist, nutrient-rich soils in the hypermaritime climate of the outer coastal areas of southern British Columbia. They often occur on well- to imperfectly drained fluvial and colluvial parent materials, situated on level areas, or lower and toe slopes with subterranean seepage. Forest floor organic materials typically have a total depth of less than 25 cm with a prominent dark humus layer, indicative of relatively good decomposition and high site quality. This association occurs at low elevations in this climatic subzone, having been sampled up to about 100 mASL.



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Type Description (cont'd)

Dynamics: Disturbances from wind tend to keep these forests from becoming or remaining very old. Since the trees can grow very large on these sites, they tend to become more vulnerable to damage or mortality from wind disturbance. These potentially tall forests can have considerable variability in vertical structure. Age composition is often uneven, with regeneration into the tree layer occurring in canopy gaps resulting from tree mortality and wind damage. Competition from *Rubus spectabilis* beneath larger canopy openings can increase average stand age and structural variability by effectively delaying or preventing conifer regeneration. Hemlock dwarf mistletoe (*Arceuthobium tsugense*) is widespread and can be very damaging to *Tsuga heterophylla*. Fire is not a factor.

Range: This association occurs in hypermaritime areas to the north of the Port Renfrew area on the west coast of Vancouver Island, in the lowlands of northern Vancouver Island, and on the adjacent outer mainland coast north to the vicinity of Rivers Inlet. It is a Canadian endemic.

Conservation Status (NatureServe)

Global Conservation Rank: G1G3

National Conservation Rank: not yet determined

Subnational Conservation Rank: S1S3 (BC)



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

<http://cnvc-cnvc.ca>

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Distribution

Countries: Canada

Provinces / Territories / States: British Columbia

Ecozones and Ecoregions of Canada: Pacific Maritime: Western Vancouver Island

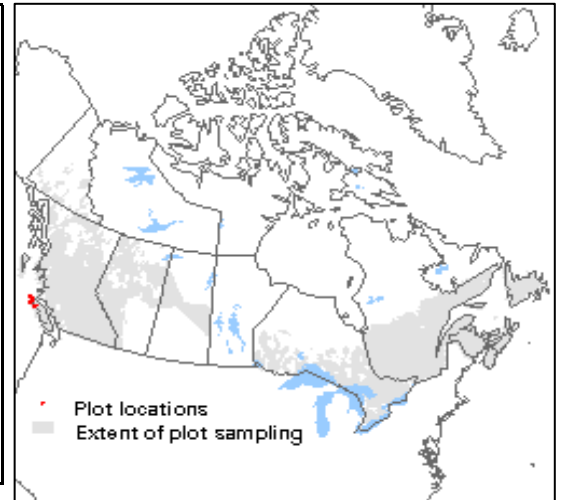
Rowe's Forest Regions and Sections: Coast: Northern Pacific Coast, Southern Pacific Coast

Commission for Environmental Cooperation Ecological Regions of North America: Marine West Coast Forests

The Nature Conservancy (USA) and Nature Conservancy of Canada Ecoregions: Northwest Coast

Biogeoclimatic Ecosystem Classification of British Columbia (zones and subzones): CWH vh

Ecoregion Classification System of British Columbia (ecosections): Nahwitti Lowland, Windward Island Mountains



Corresponding Types and Associations

CNVC00005

British Columbia

CWH vh 1 /07

Abies amabilis - *Streptopus amplexifolius* - *Streptopus lanceolatus*



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Vegetation Summary*

Species Name [†]	Association CNVC00005	
	12 plots	
	% Cover	% Presence
Overstory Trees		
<i>Tsuga heterophylla</i>	40	100
<i>Picea sitchensis</i>	32	67
<i>Abies amabilis</i>	26	58
Tree Stratum Cover (P ₁₀ P ₂₅ Mean P ₇₅ P ₉₀) [‡]	(46 62 70 82 94)	
Understory Woody Shrubs and Regenerating Trees		
<i>Rubus spectabilis</i>	24	92
<i>Tsuga heterophylla</i>	18	92
<i>Vaccinium parvifolium</i>	14	92
<i>Abies amabilis</i>	9	50
<i>Gaultheria shallon</i>	4	50
<i>Sambucus racemosa</i>	6	33
<i>Menziesia ferruginea</i>	2	33
<i>Vaccinium alaskaense</i>	2	25
Shrub Stratum Cover (P ₁₀ P ₂₅ Mean P ₇₅ P ₉₀) [‡]	(16 20 38 50 70)	
Understory Herbs and Dwarf Shrubs		
<i>Polystichum munitum</i>	40	92
<i>Blechnum spicant</i>	16	92
<i>Tiarella trifoliata</i>	4	83
<i>Dryopteris expansa</i>	6	75
<i>Athyrium filix-femina</i>	5	67
<i>Tiarella trifoliata</i> var. <i>laciniata</i>	2	67
<i>Claytonia sibirica</i>	4	50
<i>Luzula parviflora</i>	3	50
<i>Galium triflorum</i>	6	42
<i>Maianthemum dilatatum</i>	4	42
<i>Moneses uniflora</i>	2	42
<i>Stachys chamissonis</i> var. <i>cooleyae</i>	10	33
<i>Melica subulata</i>	7	33
<i>Trautvetteria caroliniensis</i>	6	33
<i>Trisetum canescens</i>	6	33
<i>Circaea alpina</i>	11	25
<i>Listera cordata</i>	2	25
<i>Viola glabella</i>	2	25
<i>Adenocaulon bicolor</i>	1	25
<i>Carex mertensii</i>	1	25



***Tsuga heterophylla* (*Picea sitchensis* - *Abies amabilis*) / *Rubus spectabilis* / *Polystichum munitum* CNVC00005**

Vegetation Summary (cont'd)*

Species Name [†]	Association CNVC00005	
	% Cover	% Presence
<i>Carex deweyana</i>	0	25
<i>Poa marcida</i>	0	25
<i>Streptopus amplexifolius</i>	0	25
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(45 45 65 85 94)	
Bryophytes and Lichens		
<i>Rhytidiadelphus loreus</i>	24	100
<i>Eurhynchium oreganum</i>	17	92
<i>Pellia neesiana</i>	7	75
<i>Plagiothecium undulatum</i>	6	75
<i>Rhizomnium glabrescens</i>	5	67
<i>Hylocomium splendens</i>	10	58
<i>Polytrichastrum alpinum</i> var. <i>alpinum</i>	2	58
<i>Plagiochila aspleniformis</i>	2	50
<i>Eurhynchium praelongum</i>	9	42
<i>Leucolepis acanthoneuron</i>	17	33
<i>Plagiomnium insigne</i>	15	33
<i>Sphagnum girgensohnii</i>	10	33
<i>Conocephalum conicum</i>	3	33
<i>Hookeria lucens</i>	2	33
<i>Pogonatum contortum</i>	2	33
<i>Diplophyllum albicans</i>	2	33
<i>Scapania bolanderi</i>	5	25
<i>Bazzania denudata</i>	2	25
Bryo-Lichen Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(38 79 77 91 95)	

* species present in > 20% of sample plots are listed

[†] see **Botanical Nomenclature** link at <http://cnvc-cnvc.ca> for botanical sources, synonyms and common names

[‡] P_x = Xth percentile (e.g., P₁₀ = 10th percentile)



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Site / Soil Characteristics

Association
CNVC00005

12 plots

Elevation Range (min–mean–max meters)

10–54–105

Slope Gradient (% frequency)

steep (25)
level (75)

Aspect (% frequency)

north (8)
east (8)
south (8)
west (8)
level (67)

Meso Toposition (% frequency)

mid (8)
lower / toe (17)
level (50)
missing data (25)

Moisture Regime (% frequency)

moist (100)

Nutrient Regime (% frequency)

medium (8)
rich (92)



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Site / Soil Characteristics (cont'd)

	Association CNVC00005
Soil Parent Material (% frequency)	colluvium (25) moraine / till (8) fluvial (50) missing data (17)
Soil Rooting Zone Substrate (% frequency)	non-soil (25) coarse loamy (58) fine loamy (8) silty (8)
Root Restricting Depth (% frequency)	≥ 100 cm (8) missing data (92)
Humus Form (% frequency)	mor (58) moder (8) mull (17) missing data (17)



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Additional Characteristics

Species of High Conservation Concern:

Non-native Species:

Management Issues:

Type Statistics

Internal Similarity:

Confidence: high

Strength:

Related Concepts

Similar CNVC Associations:

Related United States National Vegetation Classification Associations: CEG002834 *Tsuga heterophylla* - *Picea sitchensis* - *Abies amabilis* / *Rubus spectabilis* / *Polystichum munitum* Forest

Relationships with Other Classifications:

Comments

This association is easily distinguished by its productive coniferous forest in the southern hypermaritime climate, abundance of *Rubus spectabilis*, and location on lower and toe slope seepage sites. CNVC00036 [*Tsuga heterophylla* - *Abies amabilis* / *Blechnum spicant* - *Tiarella trifoliata* - *Polystichum munitum*] has similar vegetation, but has much less cover of *Picea sitchensis* and *Rubus spectabilis*, and higher cover of *Vaccinium alaskaense*. It is a wider ranging association, and where it is found in the same area as CNVC00005, it is found on slightly dryer sites.

Tiarella trifoliata (three-leaved foamflower) may include *T. trifoliata* var. *laciniata* (cut-leaved foamflower), *T. trifoliata* var. *trifoliata* (three-leaved foamflower) and/or *T. trifoliata* var. *unifoliata* (one-leaved foamflower).

Source Information

Number of source plots for CNVC00005: 12

Information Sources: British Columbia Ministry of Forests and Range, Research Branch BECMaster database, October 2007 (12 plots)

Concept Authors: D. Meidinger, C. Chappell, C. Cadrin, G. Kittel, C. McCain, K. Boggs, J. Kagan, G. Cushon, A. Banner and T. DeMeo

Description Authors: D. Meidinger, A. Inselberg, C. Cadrin and K. Baldwin

Date of Concept: November, 2005

Date of Description: March, 2011



***Tsuga heterophylla (Picea sitchensis - Abies amabilis) / Rubus spectabilis / Polystichum munitum* CNVC00005**

Source Information (cont'd)

Classification References:

British Columbia Ministry of Forests and Range, Research Branch. 2007. Vegetation classification hierarchy: BECMaster database (October 2007). B.C. Min. For., Victoria, BC.

Meidinger, D.; Chappell, C.; Cadrin, C.; Kittel, G.; McCain, C.; Boggs, K.; Kagan, J.; Cushon, G.; Banner, A.; DeMeo, T. 2005. International vegetation classification of the Pacific Northwest: International correlation of temperate coastal forest plant associations of Oregon, Washington, British Columbia and Alaska. Contributors: B.C. Ministry of Forests, USDA Forest Service, B.C. Conservation Data Centre, Alaska Natural Heritage Program, Washington Natural Heritage Program, Oregon Natural Heritage Information Center.

Characterization References:

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.

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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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