



Forest / Forêt

Association CNVC00001

***Tsuga heterophylla* - *Thuja plicata* / *Gaultheria shallon* - *Vaccinium alaskaense* /  
*Hylocomium splendens***

Western Hemlock - Western Redcedar / Salal - Alaskan Blueberry / Stairstep Moss

Pruche de l'Ouest - Thuya géant / Salal - Airelle d'Alaska / Hypne éclatante

**Subassociations:** none

**CNVC Alliance:** not yet determined

**CNVC Group:** not yet determined

## Type Description

**Concept:** CNVC00001 is a Pacific Coast coniferous rainforest association that is characterized by a mixed species canopy dominated by western hemlock (*Tsuga heterophylla*) and western redcedar (*Thuja plicata*), a dense to well-developed shrub layer of salal (*Gaultheria shallon*) and/or Alaskan blueberry (*Vaccinium alaskaense*), with a mossy forest floor of mostly lanky moss (*Rhytidiadelphus loreus*) and stairstep moss (*Hylocomium splendens*). It occurs on shallow, nutrient-poor sites on water-shedding upper slope or crest topopositions, up to approximately 850 mASL, on western and northern Vancouver Island and along the windward Coast Mountains of mainland British Columbia. Because of the site conditions, tree growth is poor, relative to other coastal forests. Unless growing in wind-protected conditions, windthrow and breakage tend to keep these forests from becoming or remaining very old.

**Vegetation:** The open canopy of this sometimes scrubby, coniferous association is dominated by *Tsuga heterophylla* and *Thuja plicata*, or at higher montane elevations, *Tsuga heterophylla* and *Chamaecyparis nootkatensis*. Increasing amounts of *Pseudotsuga menziesii* appear in more southerly latitudes where fire or open exposure have encouraged it. The dense to moderately developed shrub layer is, at least at lower elevations, dominated by *Gaultheria shallon* and variable coverage of *Tsuga heterophylla* and *Thuja plicata* regeneration. Other shrub species include *Vaccinium alaskaense*, *V. parvifolium*, and *Menziesia ferruginea*. The poorly developed herb layer often includes scattered occurrences of *Cornus canadensis*, *Blechnum spicant*, *Goodyera oblongifolia*, *Linnaea borealis* and *Listera cordata*. *Hylocomium splendens* and *Rhytidiadelphus loreus* dominate the well-developed to moderately developed moss layer.

**Environment:** CNVC00001 occurs predominantly on water-shedding upper slope and crest topopositions, from sea level to approximately 850 mASL. The mostly well-drained soils are poor quality thin veneers of freely draining organic, colluvial or morainal materials directly over ridged or hummocky bedrock. As such, productivity is relatively low for Pacific coastal associations.



Source: B.C. Forest Service



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**Type Description (cont'd)**

**Dynamics:** Unless growing in wind-protected conditions, windthrow and breakage tend to keep these forests from becoming or remaining very old. *Tsuga heterophylla*, the leading tree species, is vulnerable to wind breakage, and also to uprooting given the shallow soils. Windthrow effects can extend from individual trees to entire stands; on wind-exposed sites the stand structure can vary from multi-aged to even-aged. Where windthrow is not pervasive, these communities can form potentially old (> 500 years) edaphic climax forests. Under these conditions, the age structure is uneven due to gap phase succession (i.e., stand renewal via replacement of individual or small numbers of canopy trees). With the exception of those geographic areas in the rain shadow of the Vancouver Island Ranges or the Olympic Mountains, where summer-dry conditions prevail, fire is not a common disturbance factor. Stands in locations most vulnerable to fire tend to have a significant component of *Pseudotsuga menziesii* in their canopies. Hemlock dwarf mistletoe (*Arceuthobium tsugense*) is a moderate threat to *Tsuga heterophylla*.

**Range:** CNVC00001 occurs on western and northern Vancouver Island, and along the windward Coast Mountains of British Columbia. It is also found in Washington State.

**Conservation Status (NatureServe)**

**Global Conservation Rank:** G3

**National Conservation Rank:** not yet determined

**Subnational Conservation Rank:** S3 (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

**Terrestrial Ecozones and Ecoregions of Canada:** Pacific Maritime: Coastal Gap, Lower Mainland, Northern Coastal Mountains, Pacific Ranges, Western Vancouver Island

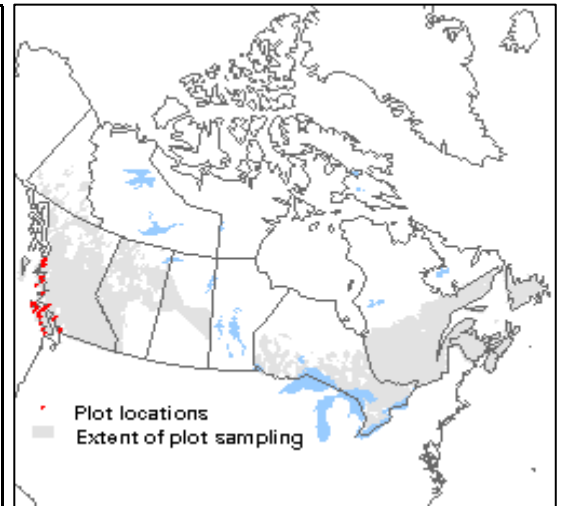
**Rowe's Forest Regions and Sections of Canada:** Coast: Northern Pacific Coast, Southern Pacific Coast

**NAAEC CEC Ecoregions of North America (Levels I & II):** Marine West Coast Forests

**Nature Conservancy of Canada Ecoregions:** North Cascades and Pacific Ranges, Pacific Northwest Coast, Puget Trough-Willamette Valley-Georgia Basin, Coastal Forests and Mountains of Southeast Alaska and B.C.

**Biogeoclimatic Ecosystem Classification of British Columbia (zones and subzones):** CWHvm

**British Columbia Ecoregion Classification (ecoregions and ecosections):** Pacific Ranges: Northern Pacific Ranges, Central Pacific Ranges, Outer Fiordland, Southern Pacific Ranges; Lower Mainland: Fraser Lowland; Coastal Gap: Kitimat Ranges; Western Vancouver Island: Nahwitti Lowland, Northern Island Mountains, Windward Island Mountains; Nass Ranges: Nass Mountains



**Corresponding Types and Associations**

CNVC00001	British Columbia	CWHvm 1 /03	Western Hemlock - Western Redcedar - Salal
		CWHvm 2 /03	Western Hemlock - Western Redcedar - Salal



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### Vegetation Summary\*

Species Name <sup>†</sup>	Association CNVC00001 78 plots	
	% Cover <sup>‡</sup>	% Presence <sup>^</sup>
<b>Overstory Trees</b>		
<i>Tsuga heterophylla</i>	35	99
<i>Thuja plicata</i>	21	88
<i>Pseudotsuga menziesii</i>	16	47
<i>Chamaecyparis nootkatensis</i>	14	35
<i>Abies amabilis</i>	9	22
<b>Tree Stratum Cover (P<sub>10</sub> P<sub>25</sub> Mean P<sub>75</sub> P<sub>90</sub>)<sup>‡</sup></b>	<b>(38 50 61 75 85)</b>	
<b>Understory Woody Shrubs and Regenerating Trees</b>		
<i>Tsuga heterophylla</i>	16	96
<i>Vaccinium parvifolium</i>	7	90
<i>Thuja plicata</i>	8	79
<i>Gaultheria shallon</i>	38	77
<i>Vaccinium alaskaense</i>	17	76
<i>Menziesia ferruginea</i>	4	64
<i>Abies amabilis</i>	3	35
<i>Vaccinium ovalifolium</i>	7	31
<i>Chamaecyparis nootkatensis</i>	5	29
<b>Shrub Stratum Cover (P<sub>10</sub> P<sub>25</sub> Mean P<sub>75</sub> P<sub>90</sub>)<sup>‡</sup></b>	<b>(27 46 64 86 95)</b>	
<b>Understory Herbs and Dwarf Shrubs</b>		
<i>Cornus canadensis</i>	6	59
<i>Blechnum spicant</i>	4	50
<i>Goodyera oblongifolia</i>	1	47
<i>Linnaea borealis</i>	4	46
<i>Listera cordata</i>	1	45
<i>Pteridium aquilinum</i>	1	28
<i>Chimaphila menziesii</i>	1	23
<i>Polystichum munitum</i>	2	22
<i>Listera caurina</i>	1	21
<b>Herb Stratum Cover (P<sub>10</sub> P<sub>25</sub> Mean P<sub>75</sub> P<sub>90</sub>)<sup>‡</sup></b>	<b>(1 2 12 19 31)</b>	
<b>Bryophytes and Lichens</b>		
<i>Hylocomium splendens</i>	31	97
<i>Rhytidiadelphus loreus</i>	18	94
<i>Plagiothecium undulatum</i>	3	72



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**Vegetation Summary (cont'd)\***

Species Name <sup>†</sup>	Association CNVC00001	
	% Cover <sup>‡</sup>	% Presence <sup>^</sup>
<i>Eurhynchium oregonum</i>	5	45
<i>Rhytidiopsis robusta</i>	11	40
<i>Sphagnum</i> sp.	8	27
<i>Pleurozium schreberi</i>	9	24
<b>Bryo-Lichen Stratum Cover</b> (P <sub>10</sub> P <sub>25</sub> Mean P <sub>75</sub> P <sub>90</sub> ) <sup>‡</sup>	<b>(18 50 68 94 98)</b>	

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

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

<sup>‡</sup> average percent cover of a species within the plots in which it occurs (i.e., characteristic cover)

<sup>^</sup> percent frequency occurrence for a species within the total plots

<sup>‡</sup> P<sub>x</sub> = X<sup>th</sup> percentile (e.g., P<sub>10</sub> = 10<sup>th</sup> percentile)



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## Site / Soil Characteristics

Association  
CNVC00001  
**78 plots**

### Elevation Range (min–mean–max meters)

5–333–827  
missing data (3)

### Slope Gradient (% frequency)

very steep (14)  
**steep (21)**  
moderately steep (19)  
moderate (13)  
gentle (13)  
level (18)  
missing data (3)

### Aspect (% frequency)

north (12)  
east (13)  
**south (23)**  
west (17)  
level (10)  
missing data (26)

### Meso Toposition (% frequency)

crest / upper (40)  
mid (12)  
lower / toe (4)  
missing data (45)

### Moisture Regime (% frequency)

**dry (74)**  
mesic (12)  
moist (12)  
missing data (3)

### Nutrient Regime (% frequency)

**poor (47)**  
medium (18)  
rich (4)  
missing data (31)



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**Site / Soil Characteristics (cont'd)**

Association  
CNVC00001

**Soil Parent Material (% frequency)**

bedrock (6)  
colluvium (22)  
moraine / till (15)  
fluvial (3)  
organic (12)  
missing data (42)

**Soil Rooting Zone Substrate (% frequency)**

non-soil (28)  
**coarse loamy (35)**  
organic (19)  
missing data (18)

**Root Restricting Depth (% frequency)**

0 – 20 cm (10)  
21 – 99 cm (26)  
missing data (64)

**Humus Form (% frequency)**

**mor (54)**  
moder (5)  
peatymor (5)  
missing data (36)



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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:** CNVC00008 *Pinus contorta* var. *contorta* / *Gaultheria shallon* - *Vaccinium alaskaense* / *Cladina* spp.

**Related United States National Vegetation Classification Associations:** CEG1002778 *Tsuga heterophylla* - *Thuja plicata* / *Vaccinium (alaskaense and ovalifolium)* - *Gaultheria shallon* / *Hylocomium splendens* Forest

**Relationships with Other Classifications:**

### Comments

CNVC00001 is differentiated from the woodland CNVC00008 [*Pinus contorta* var. *contorta* / *Gaultheria shallon* - *Vaccinium alaskaense* / *Cladina* spp.], which occurs on even drier and poorer sites, by the denser canopy, general absence of *Pinus contorta* var. *contorta* and the absence or minimal cover of the driest site indicators such as *Racomitrium* spp., *Cladina* spp. and *Cladonia* spp.

### Source Information

**Number of source plots for CNVC00001:** 78

**Information Sources:** British Columbia Ministry of Forests and Range, Research Branch BECMaster database, October 2007 (78 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





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

<http://cnvc-cnvc.ca>

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### **Classification References:**

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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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Lewis, T. 2003. The ecosystems of Block 6, Tree-Farm License 25, Queen Charlotte Islands, British Columbia. Internal Report for Western Forest Products Inc. 137 p.

Lewis, T.; Inselberg, A. 2005. The ecosystems of Block 5, Tree-Farm License 25, British Columbia. Prepared for Western Forest Products Inc. Unpubl. Rep.

NatureServe. 2007. NatureServe Explorer: An online encyclopedia of life [web application]. Version 6.2. NatureServe. Arlington, VA, USA. Available: <http://www.natureserve.org/explorer> (accessed Jun., 2011).

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For more information about the contents of this factsheet and definitions of attribute names and data classes, see the **Understanding the Factsheet** link at <http://cnvc-cnvc.ca>.

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