



Forest / Forêt

Association CNVC00035

***Tsuga heterophylla* - *Abies amabilis* / *Vaccinium alaskaense* / *Rubus pedatus* / *Rhytidiopsis robusta***

Western Hemlock - Pacific Silver Fir / Alaskan Blueberry / Five-leaved Dwarf Bramble / Pipecleaner Moss  
Pruche de l'Ouest - Sapin gracieux / Airelle d'Alaska / Ronce à feuilles pédatifides / Rhytidiopsis robuste

**Subassociations:** none

**CNVC Alliance:** not yet determined

**CNVC Group:** not yet determined

## Type Description

**Concept:** This Pacific coastal coniferous forest association occurs on mesic and moist, nutritionally poor to medium soils within a transitional coast / interior climatic regime. CNVC00035 covers a wide elevation range from near sea level to approximately 1300 mASL. This productive association normally has a well-developed, multi-layer canopy dominated by western hemlock (*Tsuga heterophylla*) and Pacific silver fir (*Abies amabilis*). The ericaceous shrub layer features Alaskan blueberry (*Vaccinium alaskaense*), oval-leaved blueberry (*V. ovalifolium*) and false azalea (*Menziesia ferruginea*). Bunchberry (*Cornus canadensis*) and five-leaved dwarf bramble (*Rubus pedatus*) are the most consistent herb layer species. The moss layer is mainly lanky moss (*Rhytidiadelphus loreus*), stairstep moss (*Hylocomium splendens*) and pipecleaner moss (*Rhytidiopsis robusta*). Stand replacement is generally gradual through gap-phase processes resulting in old, structurally complex uneven-aged forests

**Vegetation:** CNVC00035 is a relatively common, productive old or mature coniferous forest association. *Tsuga heterophylla* and *Abies amabilis* are the characteristic leading species in the well-developed multi-layered coniferous canopy. *Thuja plicata* is a minor component, and usually occurs in a secondary canopy layer. Aside from the regeneration of *Tsuga heterophylla* and *Abies amabilis* in the understory shrub layers, ericaceous species, typical of nutritionally poor to moderate soils, dominate, including *Vaccinium alaskaense*, *V. ovalifolium* and *Menziesia ferruginea*. Leading species in the moderately developed herb layer include *Cornus canadensis*, *Rubus pedatus*, *Orthilia secunda*, and *Clintonia uniflora*. The most prominent species in the well-developed moss layer are *Rhytidiadelphus loreus*, *Hylocomium splendens* and *Rhytidiopsis robusta*. *Pleurozium schreberi* occurs frequently, but with lower cover. Its presence is not only an indicator of poorer soils, but also of the continental climate influence on this subarctic transitional coast / interior association.

**Environment:** CNVC00035 occurs in a moist to wet transitional climatic area between the cool temperate coastal rainforest and the cold, more continental interior areas of western British Columbia. It occurs primarily on mesic, nutritionally poor to medium soil conditions, but also on moist sites. Steeply sloping colluvial parent materials with adequate seepage are common but it is also found on less steep, well- to imperfectly drained and moderately poor morainal, inactive fluvial and glaciofluvial materials. Depending on the geographic location, this association covers a wide elevation range; from near sea level at the head of some coastal fiords, to approximately 1300 mASL inland.



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**Type Description (cont'd)**

**Dynamics:** If growing in wind-exposed conditions, windthrow and breakage tend to keep these relatively tall forests from becoming or remaining very old. If wind exposure is limited, then stand replacement is more gradual, through the process of mortality of individual or small numbers of canopy trees. These productive coniferous forests tend to have an intensive logging history. Unless logging has occurred, the age composition of these potentially old forests is uneven. Wildfires of any significance are uncommon. Armillaria root disease (*Armillaria ostoyae*) is a moderate risk for *Tsuga heterophylla*, and is a high risk for *Abies amabilis* in moist subarctic regions. Annosus root disease (*Heterobasidion annosum*) is a medium risk for *Abies amabilis*.

**Range:** CNVC00035 is found at low to mid elevations far enough from the coast to be in a coast / interior transition climate. It occurs from the northern limits of the Kitimat Ranges southward through the Coast Mountains (Pacific Ranges) into the Cascade Mountains east of Chilliwack. It also occurs southward into Washington, USA.

**Conservation Status (NatureServe)**

**Global Conservation Rank:** G3G4

**National Conservation Rank:** not yet determined

**Subnational Conservation Rank:** no applicable rank



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 Classification nationale de la végétation du Canada (CNVC)

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**Distribution**

**Countries:** Canada

**Provinces / Territories / States:** British Columbia

**Terrestrial Ecozones and Ecoregions of Canada:** Pacific Maritime: Coastal Gap, Nass Basin, Nass Ranges, Pacific Ranges

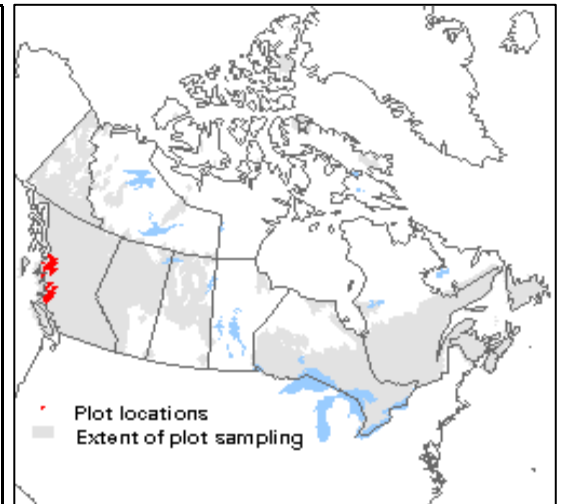
**Rowe's Forest Regions and Sections of Canada:** Coast: Northern Pacific Coast, Southern Pacific Coast

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

**Nature Conservancy of Canada Ecoregions:** North Cascades and Pacific Ranges, Coastal Forests and Mountains of Southeast Alaska and B.C.

**Biogeoclimatic Ecosystem Classification of British Columbia (zones and subzones):** CWHms, CWHws

**British Columbia Ecoregion Classification (ecoregions and ecosections):** Nass Ranges: Cranberry Upland, Meziadin Mountains, Nass Basin, Nass Mountains; Coastal Gap: Kimsquit Mountains, Kitimat Ranges; Pacific Ranges: Northern Pacific Ranges, Southern Pacific Ranges



**Corresponding Types and Associations**

CNVC00035	British Columbia	CWH ms 1 /05	Western Hemlock - Amabilis Fir - Queen's Cup
		CWH ms 2 /05	Western Hemlock - Amabilis Fir - Queen's Cup
		CWH ws 1 /01	Western Hemlock - Amabilis Fir - Bramble
		CWH ws 1 /05	Western Hemlock - Amabilis Fir - Queen's Cup
		CWH ws 2 /01	Western Hemlock - Amabilis Fir - Bramble
		CWH ws 2 /05	Western Hemlock - Amabilis Fir - Queen's Cup



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**Vegetation Summary\***

Species Name <sup>†</sup>	Association CNVC00035 143 plots	
	% Cover <sup>±</sup>	% Presence <sup>^</sup>
<b>Overstory Trees</b>		
<i>Tsuga heterophylla</i>	43	98
<i>Abies amabilis</i>	27	80
<i>Thuja plicata</i>	9	35
<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>(35 52 65 80 90)</b>	
<b>Understory Woody Shrubs and Regenerating Trees</b>		
<i>Vaccinium alaskaense</i>	22	92
<i>Tsuga heterophylla</i>	12	92
<i>Abies amabilis</i>	11	85
<i>Vaccinium ovalifolium</i>	8	71
<i>Menziesia ferruginea</i>	4	64
<i>Vaccinium parvifolium</i>	3	45
<i>Vaccinium membranaceum</i>	4	27
<i>Oplopanax horridus</i>	1	27
<i>Thuja plicata</i>	5	25
<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>(12 24 48 70 87)</b>	
<b>Understory Herbs and Dwarf Shrubs</b>		
<i>Cornus canadensis</i>	6	80
<b><i>Rubus pedatus</i></b>	<b>5</b>	<b>76</b>
<i>Orthilia secunda</i>	2	55
<i>Clintonia uniflora</i>	6	53
<i>Streptopus lanceolatus</i>	3	37
<i>Goodyera oblongifolia</i>	1	36
<i>Gymnocarpium dryopteris</i>	2	28
<i>Streptopus streptopoides</i>	2	26
<i>Dryopteris expansa</i>	1	24
<i>Linnaea borealis</i>	3	22
<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 4 17 25 38)</b>	
<b>Bryophytes and Lichens</b>		
<i>Rhytidiadelphus loreus</i>	24	89
<i>Hylacomium splendens</i>	26	86



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

Species Name <sup>†</sup>	Association CNVC00035	
	Cover <sup>±</sup>	Presence <sup>^</sup>
<b><i>Rhytidiopsis robusta</i></b>	<b>24</b>	<b>73</b>
<i>Pleurozium schreberi</i>	9	39
<i>Plagiochila asplenioides</i>	2	36
<i>Dicranum fuscescens</i>	3	26
<i>Rhytidiadelphus triquetrus</i>	7	24
<i>Dicranum</i> sp.	5	24
<i>Scapania bolanderi</i>	3	20
<b>Bryo-Lichen Stratum Cover</b>		
<b>(P<sub>10</sub> P<sub>25</sub> Mean P<sub>75</sub> P<sub>90</sub>)<sup>‡</sup></b>	<b>(36 56 69 88 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  
 CNVC00035  
 143 plots

Elevation Range (min–mean–max meters)  
 5–508–1300  
 missing data (8)

Slope Gradient (% frequency)  
 very steep (10)  
**steep (34)**  
 moderately steep (20)  
 moderate (6)  
 gentle (13)  
 level (5)  
 missing data (13)

Aspect (% frequency)  
 north (16)  
 east (21)  
**south (24)**  
 west (21)  
 level (3)  
 missing data (15)

Meso Toposition (% frequency)  
 crest / upper (13)  
**mid (45)**  
 lower / toe (13)  
 depression (1)  
 level (6)  
 missing data (22)

Moisture Regime (% frequency)  
 dry (1)  
**mesic (94)**  
 moist (3)  
 missing data (1)



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

Association  
CNVC00035

**Nutrient Regime (% frequency)**

poor (10)  
**medium (71)**  
rich (3)  
missing data (16)

**Soil Parent Material (% frequency)**

colluvium (12)  
moraine / till (6)  
fluvial (6)  
glaciofluvial (1)  
organic (1)  
missing data (74)

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

non-soil (12)  
sandy (20)  
**coarse loamy (38)**  
fine loamy (3)  
organic (7)  
missing data (21)

**Root Restricting Depth (% frequency)**

0 – 20 cm (7)  
21 – 99 cm (24)  
≥ 100 cm (1)  
missing data (68)

**Humus Form (% frequency)**

**mor (65)**  
moder (1)  
peatmor (5)  
missing data (29)



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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: CNVC00009 *Tsuga heterophylla* - *Pseudotsuga menziesii* - *Abies amabilis* / *Hylocomium splendens*

Related United States National Vegetation Classification Associations:

Relationships with Other Classifications:

### Comments

CNVC00009 [*Tsuga heterophylla* - *Pseudotsuga menziesii* - *Abies amabilis* / *Hylocomium splendens*] occurs on slightly drier sites within the moist climatic conditions of the range of CNVC00035. It has *Pseudotsuga menziesii* as a key canopy component, and generally less *Rubus pedatus*.

### Source Information

Number of source plots for CNVC00035: 143

Information Sources: British Columbia Ministry of Forests and Range, Research Branch BECMaster database, October 2007 (143 plots)

Concept Authors: D. Meidinger, K. Klinka, and J. Pojar

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

Date of Concept: 1991, 2008

Date of Description: June, 2011





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### **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:**

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Wong, C.; Sandmann, H.; Dorner, B. 2003. Historical variability of natural disturbances in British Columbia: A literature review. FORREX-Forest Research Extension Partnership, Kamloops, BC. FORREX Series 12. Available: <http://www.forrex.org/publications/forrexseries/fs12.pdf> (accessed Nov., 2008).

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