



Forest / Forêt

Association CNVC00013

Tsuga heterophylla* - *Thuja plicata* - *Pseudotsuga menziesii* / *Polystichum munitum* - *Blechnum spicant

Western Hemlock - Western Red Cedar - Douglas-fir / Western Sword Fern - Deer Fern

Pruche de l'Ouest - Thuya géant - Douglas de Menzies / Fougère épée - Blechnum en épi

Subassociations: none

CNVC Alliance: not yet determined

CNVC Group: not yet determined

Type Description

Concept: CNVC00013 is a closed-canopy, coniferous forest association that occurs at low elevations in the maritime climates of coastal British Columbia and south to western Oregon, USA. It occurs as small to medium patches on sites with soils that are moist for a significant part of the growing season, either through seepage (in the dryer part of the coast) or through precipitation (in the wetter, maritime parts of the coast). Overstories are closed and dominated by high cover of western hemlock (*Tsuga heterophylla*), with frequent and variable cover of western red cedar (*Thuja plicata*) and/or Douglas-fir (*Pseudotsuga menziesii*). The shrub layer is dominated by regenerating western hemlock and western red cedar, often with salal (*Gaultheria shallon*) and red huckleberry (*Vaccinium parvifolium*). Western sword fern (*Polystichum munitum*) dominates in the herb layer, with deer fern (*Blechnum spicant*) usually present. The moderately well-developed moss layer consists primarily of stairstep moss (*Hylocomium splendens*).

Vegetation: The overstory of this closed-canopy forest association is characterized by high cover of *Tsuga heterophylla*, with frequent and variable cover of *Thuja plicata* and/or *Pseudotsuga menziesii*. Moderate amounts of *Alnus rubra* are sometimes present in the overstory. The shrub layer is dominated by moderate cover of regenerating *Tsuga heterophylla* and *Thuja plicata*, often with *Gaultheria shallon* and *Vaccinium parvifolium*. *Polystichum munitum* dominates the herb layer; *Blechnum spicant* is usually present and sometimes nearly equal in abundance to *P. munitum*. *Dryopteris expansa* and *Tiarella trifoliata* (see the Comments section) are often present and can attain moderate covers. Moderate to high cover of *Hylocomium splendens* dominates the moss layer. Other bryophytes occurring with low to moderate cover include *Eurhynchium oregonum*, *Rhytidiadelphus loreus*, *Plagiothecium undulatum*, and *Rhizomnium glabrescens*.

Environment: CNVC00013 occurs in maritime climates at low elevations (less than 500 mASL) in much of southern coastal British Columbia. It occurs on two types of site conditions: 1) in drier maritime climates, on nutrient-poor to medium soils that are moist with seepage waters, and 2) in wetter maritime climates, on drier, rich colluvial sites that are moist from precipitation. Soil textures are mainly coarse loamy.

Dynamics: This is a late-successional (mature and climax) edaphic forest association. Stands originated from infrequent stand-replacing fires (perhaps every 150-200 years or more on average) or windthrow. Within mature and old forests, small gaps result from the death of single trees or small groups of trees due to root-rots, bark beetles or windthrow. Gap dynamics in old forests result in an all-aged stand structure.



***Tsuga heterophylla* - *Thuja plicata* - *Pseudotsuga menziesii* / *Polystichum munitum* - *Blechnum spicant* CNVC00013**

Type Description (cont'd)

Range: CNVC00013 occurs at low elevations all along the south coast of British Columbia and adjacent islands, at low elevations and in major valleys of Vancouver Island, and at low elevations in western Oregon, USA.

Conservation Status (NatureServe)

Global Conservation Rank: not yet determined

National Conservation Rank: not yet determined

Subnational Conservation Rank: not yet determined



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

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Distribution

Countries: Canada

Provinces / Territories / States: British Columbia

Ecozones and Ecoregions of Canada: Pacific Maritime: Coastal Gap, Eastern Vancouver Island, Lower Mainland, Pacific Ranges, Western Vancouver Island

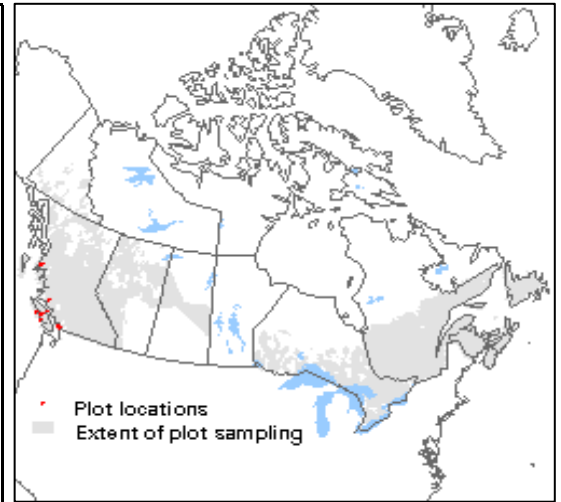
Rowe's Forest Regions and Sections: Coast: Southern Pacific Coast

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

The Nature Conservancy (USA) and Nature Conservancy of Canada Ecoregions: North Cascades, Northwest Coast, Puget Trough, S.E. Alaska - B.C. Coastal Forest and Mountains

Biogeoclimatic Ecosystem Classification of British Columbia (zones and subzones): CWH dm, CWH vm, CWH xm

Ecoregion Classification System of British Columbia (ecosections): Central Pacific Ranges, Fraser Lowland, Kitimat Ranges, Leeward Island Mountains, Northern Island Mountains, Windward Island Mountains



Corresponding Types and Associations

CNVC00013	British Columbia	CWH dm /06	<i>Thuja plicata</i> - <i>Blechnum spicant</i>
		CWH vm 1 /04	<i>Thuja plicata</i> - <i>Tsuga heterophylla</i> - <i>Achlys triphylla</i> (in part)
		CWH xm 1 /06	<i>Thuja plicata</i> - <i>Blechnum spicant</i>
		CWH xm 2 /06	<i>Thuja plicata</i> - <i>Blechnum spicant</i>



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Vegetation Summary*

Species Name [†]	Association CNVC00013	
	23 plots	
	% Cover	% Presence
Overstory Trees		
<i>Tsuga heterophylla</i>	52	100
<i>Thuja plicata</i>	30	91
<i>Pseudotsuga menziesii</i>	25	83
<i>Alnus rubra</i>	16	35
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(70 75 84 95 99)	
Understory Woody Shrubs and Regenerating Trees		
<i>Tsuga heterophylla</i>	19	83
<i>Vaccinium parvifolium</i>	5	83
<i>Thuja plicata</i>	8	74
<i>Gaultheria shallon</i>	10	65
<i>Rubus spectabilis</i>	2	39
<i>Vaccinium alaskaense</i>	4	30
<i>Acer circinatum</i>	7	26
<i>Menziesia ferruginea</i>	2	26
<i>Mahonia nervosa</i>	3	22
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(5 8 31 50 79)	
Understory Herbs and Dwarf Shrubs		
<i>Polystichum munitum</i>	17	91
<i>Blechnum spicant</i>	7	83
<i>Dryopteris expansa</i>	5	65
<i>Tiarella trifoliata</i>	5	48
<i>Rubus ursinus</i>	2	39
<i>Pteridium aquilinum</i>	6	26
<i>Cornus canadensis</i>	5	26
<i>Linnaea borealis</i>	2	22
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(13 18 33 40 64)	
Bryophytes and Lichens		
<i>Eurhynchium oreganum</i>	10	78
<i>Rhytidiadelphus loreus</i>	7	74
<i>Hylocomium splendens</i>	21	70
<i>Rhizomnium glabrescens</i>	6	61
<i>Plagiothecium undulatum</i>	6	57
Bryo-Lichen Stratum Cover		



***Tsuga heterophylla* - *Thuja plicata* - *Pseudotsuga menziesii* / *Polystichum munitum* - *Blechnum spicant* CNVC00013**

Vegetation Summary (cont'd)*

Species Name [†]	Association CNVC00013				
	% Cover		% Presence		
	(P ₁₀ P ₂₅ Mean P ₇₅ P ₉₀) [‡]		(15 28 45 58 70)		

* 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
 CNVC00013
23 plots

Elevation Range (min–mean–max meters)
 110–198–360

Slope Gradient (% frequency)
 very steep (13)
 steep (26)
 moderately steep (9)
 moderate (4)
 gentle (4)
level (43)

Aspect (% frequency)
 north (9)
 east (22)
south (39)
 west (13)
 level (9)
 missing data (9)

Meso Topoposition (% frequency)
 crest / upper (9)
mid (30)
 lower / toe (9)
 level (9)
 missing data (43)

Moisture Regime (% frequency)
 very dry (4)
 mesic (26)
moist (48)
 missing data (22)

Nutrient Regime (% frequency)
 poor (4)
 medium (17)
rich (35)
 missing data (43)



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Site / Soil Characteristics (cont'd)

Association
CNVC00013

Soil Parent Material (% frequency)

bedrock (4)
colluvium (22)
moraine / till (9)
glaciofluvial (4)
missing data (61)

Soil Rooting Zone Substrate (% frequency)

non-soil (26)
sandy (4)
coarse loamy (52)
silty (4)
missing data (13)

Root Restricting Depth (% frequency)

21 – 99 cm (43)
missing data (57)

Humus Form (% frequency)

mor (43)
moder (30)
missing data (26)



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Additional Characteristics

Species of High Conservation Concern: Reported habitat for marbled murrelet (*Brachyramphus marmoratus*) (G3G4 [NatureServe], S2B, S4N [BC CDC], T [COSEWIC]); spotted owl (*Strix occidentalis*) (G3 [NatureServe], S1 [BC CDC], E [COSEWIC]); Keen's long-eared myotis (*Myotis keenii*) (G2G3 [NatureServe], S2 [BC CDC], DD [COSEWIC]); dotted leafy moss (*Rhizomnium punctatum*) (G5 [NatureServe], S1S3 [BC CDC]).

Non-native Species:

Management Issues:

Type Statistics

Internal Similarity:

Confidence: high

Strength:

Related Concepts

Similar CNVC Associations:

Related United States National Vegetation Classification Associations: CEG002843 *Tsuga heterophylla* - *Thuja plicata* - *Pseudotsuga menziesii* / *Polystichum munitum* - *Blechnum spicant* Forest

Relationships with Other Classifications:

Comments

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).

CNVC00075 [*Pseudotsuga menziesii* - *Tsuga heterophylla* - *Thuja plicata* / *Rubus spectabilis* / *Polystichum munitum* - *Athyrium filix-femina*] is similar to this association in overstory and dominance of *Polystichum munitum* but occurs on richer sites and has a greater abundance and consistency of *Acer macrophyllum*, *Rubus spectabilis*, *Athyrium filix-femina* and *Tiarella trifoliata*.

Source Information

Number of source plots for CNVC00013: 23

Information Sources: British Columbia Ministry of Forests and Range, Research Branch BECMaster database, October 2007 (23 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, K. Iverson, C. Cadrin and K. Baldwin

Date of Concept: November, 2005

Date of Description: March, 2011



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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:

British Columbia Conservation Data Centre. 2007. B.C. Species and Ecosystems Explorer. B.C. Min. of Environ. Victoria, BC. Available: <http://www.env.gov.bc.ca/cdc/access.html> (accessed November 26, 2007).

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

British Columbia Ministry of Water, Land and Air Protection. 2004b. Marbled Murrelet in: Accounts and measures for managing identified wildlife. B.C. Min. Water, Land and Air Prot., Victoria, BC. 52 p.

British Columbia Ministry of Water, Land and Air Protection. 2004d. Spotted Owl in: Accounts and measures for managing identified wildlife. B.C. Min. Water, Land and Air Prot., Victoria, BC. 52 p.

British Columbia Ministry of Water, Land and Air Protection. 2004e. Keen's Long-eared Myotis in: Accounts and measures for managing identified wildlife. B.C. Min. Water, Land and Air Prot., Victoria, BC. 52 p.

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Green, R.N.; Klinka, K. 1994. A field guide to site identification and interpretation for the Vancouver Forest Region. B.C. Min. For., Res. Branch, Victoria, BC. Land Manage. Handb. No. 28. 285 p.

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 November 26, 2007).

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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