



Forest / Forêt

Association CNVC00046

***Thuja plicata* - *Pseudotsuga menziesii* - *Tsuga heterophylla* / *Oplopanax horridus* /
Polystichum munitum / *Plagiomnium insigne***

Western Redcedar - Douglas-fir - Western Hemlock / Devil's Club / Western Sword Fern / Coastal Leafy Moss

Thuja géant - Douglas de Menzies - Pruche de l'Ouest / Bois piquant / Fougère épée / Mnie remarquable

Subassociations: none

CNVC Alliance: not yet determined

CNVC Group: not yet determined

Type Description

Concept: Located within the rain shadow valleys of the leeward Pacific Ranges of British Columbia, this very productive, Pacific coastal coniferous or mixed coniferous / hardwood forest association is exposed to a distinctly drier transitional coast / interior climatic regime than other coastal forest associations. CNVC00046 is typically found on lower / toe slope and level topopositions which receive seepage water. The moist soils are nutritionally rich. The elevation range is from near sea level in valley floors to 650 mASL. In its mature and old forest stage western redcedar (*Thuja plicata*) and western hemlock (*Tsuga heterophylla*) are leading species along with Douglas-fir (*Pseudotsuga menziesii*), which forms the uppermost canopy layer. The larger trees are vulnerable to wind breakage and blowdown. Devil's club (*Oplopanax horridus*) typically dominates the shrub layer; salmonberry (*Rubus spectabilis*) is usually present and vine maple (*Acer circinatum*) can be abundant. Along with additional species of moist, nutrient-rich sites, the lush herb layer includes spreading wood fern (*Dryopteris expansa*), western sword fern (*Polystichum munitum*) and three-leaved foamflower (*Tiarella trifoliata*). Common mosses include coastal leafy moss (*Plagiomnium insigne*), stairstep moss (*Hylocomium splendens*) and electrified cat's-tail moss (*Rhytidiadelphus triquetrus*).

Vegetation: CNVC00046 is a highly productive coniferous or mixedwood forest association. *Thuja plicata* and *Tsuga heterophylla* are leading species along with *Pseudotsuga menziesii*, which forms the uppermost canopy layer. *Picea sitchensis* can be an additional upper canopy species. *Alnus rubra* and *Acer macrophyllum* typically dominate in younger forest stages, in response to logging disturbances which open the canopy and expose mineral soil, and may persist for some time during development of the coniferous canopy. Depending on the developmental stage following disturbance, and the available light, the understory vegetation can be dense. *Oplopanax horridus* typically dominates the shrub layer, occasionally with *Acer circinatum*. *Rubus spectabilis* and conifer species regeneration can also be moderately abundant in the shrub layer. The lush herb layer, which features many indicators of moist, nutrient-rich sites, often includes *Dryopteris expansa*, *Polystichum munitum*, *Streptopus amplexifolius*, *Galium triflorum*, *Tiarella trifoliata* (see the Comments section), *Athyrium filix-femina*, *Streptopus lanceolatus*, *Mycelis muralis* and *Gymnocarpium dryopteris*. Common moss-layer species include *Plagiomnium insigne*, *Hylocomium splendens*, *Rhytidiadelphus triquetrus* and *Rhytidiadelphus loreus*.



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Type Description (cont'd)

Environment: CNVC00046 is typically found on lower / toe slope and level topositions that receive seepage water. The elevation range is from near sea level in valley floors to approximately 650 mASL. The sandy and coarse loamy soil parent materials are predominantly of fluvial origins, although morainal and colluvial deposits are also found. The moist soils are nutritionally rich, and characteristically have moder humus forms. The climatic regime is transitional between the coast and interior, with growing season moisture deficits for most forest communities in the area, excluding this association which has the benefit of well-oxygenated, non-acidic moisture and nutrient supply via groundwater seepage. These sites may on occasion receive some overland water flow.

Dynamics: Given the higher soil moisture levels and the resultant shallow rooting, in addition to the potential for the growth of the tallest trees within this climatic regime, larger trees of CNVC00046 are vulnerable to wind breakage and blowdown. Except perhaps under extreme conditions, wildfire is not a serious threat, since the vegetation on these sites tends to retain good moisture content through the summer fire season. The presence of *Pseudotsuga menziesii* in the canopy of older forest stages, does however suggest occasional fire disturbance in the past, on an infrequent cycle spanning hundreds of years. An intensive logging history during the 1900s has left few of the once characteristic mature and old-forest successional stages intact. In the event that logging has not taken place, and fires have been typically sporadic, then stand replacement is more gradual through gap phase processes, thereby resulting in a structurally complex uneven-age composition with high wildlife habitat values. Spruce budworms (*Choristoneura* spp.) can be a periodically serious threat for *Pseudotsuga menziesii*. Armillaria root disease (*Armillaria ostoyae*) is a medium-intensity threat for *Pseudotsuga menziesii*, *Tsuga heterophylla*, and *Thuja plicata*. Laminated root disease (*Phellinus weirii*) is potentially of medium risk for *Pseudotsuga menziesii* and *Tsuga heterophylla*. Deer browsing can be intense on *Thuja plicata* regeneration in the more southerly locations. The white pine weevil (*Pissodes strobi*), commonly also called the spruce leader weevil, is a high-risk problem for *Picea sitchensis* in young plantations. The greatest disturbance factor since the late-1800s is logging.

Range: CNVC00046 is found at low to mid elevations in scattered occurrences from the Fraser River valley around Hope, northwestward through the Lillooet River valley and Pemberton, within various leeward Coast Mountain valleys and heads of longer inlets such as Bute and Knight, to as far as the southern tip of Tweedsmuir Provincial Park and the lower Bella Coola River valley. The association ranges quite extensively south in the Cascade Range through Washington State into northern Oregon.

Conservation Status (NatureServe)

Global Conservation Rank: no applicable rank

National Conservation Rank: not yet determined

Subnational Conservation Rank: S1S2



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Distribution

Countries: Canada

Provinces / Territories / States: British Columbia

Terrestrial Ecozones and Ecoregions of Canada: Pacific Maritime: Pacific Ranges

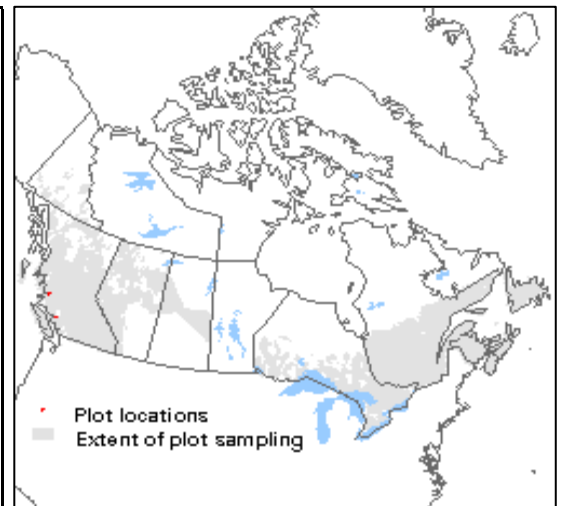
Rowe's Forest Regions and Sections of Canada: Coast: Southern Pacific Coast

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

Nature Conservancy of Canada Ecoregions: North Cascades and Pacific Ranges

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

British Columbia Ecoregion Classification (ecoregions and ecosections): Pacific Ranges: Central Pacific Ranges, Eastern Pacific Ranges, Southern Pacific Range; Coastal Gap: Kimsquit Mountains



Corresponding Types and Associations

CNVC00046	British Columbia	CWH ds 1 /07	Western Redcedar - Devil's Club
		CWH ds 2 /07	Western Redcedar - Devil's Club



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Vegetation Summary*

Species Name [†]	Association CNVC00046 15 plots	
	% Cover [‡]	% Presence [^]
Overstory Trees		
<i>Thuja plicata</i>	36	93
<i>Tsuga heterophylla</i>	19	80
<i>Pseudotsuga menziesii</i>	27	73
<i>Alnus rubra</i>	13	47
<i>Picea sitchensis</i>	36	40
<i>Acer macrophyllum</i>	17	40
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(57 66 75 82 93)	
Understory Woody Shrubs and Regenerating Trees		
<i>Oplopanax horridus</i>	23	87
<i>Rubus spectabilis</i>	7	80
<i>Tsuga heterophylla</i>	9	60
<i>Thuja plicata</i>	8	53
<i>Sambucus racemosa</i>	3	47
<i>Acer circinatum</i>	27	40
<i>Menziesia ferruginea</i>	2	40
<i>Vaccinium parvifolium</i>	1	40
<i>Ribes lacustre</i>	1	33
<i>Cornus stolonifera</i>	2	27
<i>Frangula purshiana</i>	2	27
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(21 28 46 65 78)	
Understory Herbs and Dwarf Shrubs		
<i>Dryopteris expansa</i>	8	100
<i>Tiarella trifoliata</i>	11	87
<i>Polystichum munitum</i>	9	80
<i>Streptopus amplexifolius</i>	1	67
<i>Galium triflorum</i>	1	67
<i>Athyrium filix-femina</i>	11	53
<i>Streptopus lanceolatus</i>	8	53
<i>Mycelis muralis</i>	1	53
<i>Gymnocarpium dryopteris</i>	25	47
<i>Clintonia uniflora</i>	6	40
<i>Asarum caudatum</i>	5	40



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Vegetation Summary (cont'd)*

Species Name [†]	Association CNVC00046	
	% Cover [‡]	% Presence [^]
<i>Cornus canadensis</i>	4	40
<i>Actaea rubra</i>	2	40
<i>Rubus ursinus</i>	2	33
<i>Osmorhiza berteroi</i>	2	33
<i>Goodyera oblongifolia</i>	1	33
<i>Maianthemum dilatatum</i>	4	27
<i>Adiantum aleuticum</i>	4	27
<i>Pteridium aquilinum</i>	2	27
<i>Viola glabella</i>	2	27
<i>Trientalis borealis</i>	1	27
<i>Circaea alpina</i>	1	27
<i>Claytonia sibirica</i>	1	27
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(10 22 46 72 83)	
Bryophytes and Lichens		
<i>Plagiomnium insigne</i>	14	100
<i>Hylocomium splendens</i>	9	93
<i>Rhytidiadelphus triquetrus</i>	10	80
<i>Rhytidiadelphus loreus</i>	6	53
<i>Eurhynchium oreganum</i>	7	47
<i>Rhizomnium glabrescens</i>	2	40
<i>Leucolepis acanthoneuron</i>	1	40
Bryo-Lichen Stratum Cover		
(P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(16 20 35 48 62)	

* 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

[‡] average percent cover of a species within the plots in which it occurs (i.e., characteristic cover)

[^] percent frequency occurrence for a species within the total plots

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



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Site / Soil Characteristics

Association
CNVC00046
15 plots

Elevation Range (min–mean–max meters)

10–188–665

Slope Gradient (% frequency)

steep (7)
moderately steep (20)
gentle (20)
level (53)

Aspect (% frequency)

north (33)
east (13)
south (7)
west (13)
level (33)

Meso Toposition (% frequency)

mid (7)
lower / toe (7)
level (27)
missing data (60)

Moisture Regime (% frequency)

mesic (33)
moist (60)
missing data (7)

Nutrient Regime (% frequency)

medium (13)
rich (33)
saline (13)
missing data (40)



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Site / Soil Characteristics (cont'd)

	Association CNVC00046
Soil Parent Material (% frequency)	fluvial (20) glaciofluvial (13) missing data (67)
Soil Rooting Zone Substrate (% frequency)	sandy (53) coarse loamy (47)
Root Restricting Depth (% frequency)	21 – 99 cm (27) ≥ 100 cm (7) missing data (67)
Humus Form (% frequency)	mor (27) moder (47) missing data (27)



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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: CNVC00028 *Tsuga heterophylla* - *Abies amabilis* / *Oplopanax horridus* / *Gymnocarpium dryopteris*

Related United States National Vegetation Classification Associations: CEG000497 *Tsuga heterophylla* - (*Thuja plicata*) / *Oplopanax horridus* / *Polystichum munitum* Forest

Relationships with Other Classifications:

Comments

CNVC00028 [*Tsuga heterophylla* - *Abies amabilis* / *Oplopanax horridus* / *Gymnocarpium dryopteris*] is a wide-ranging Pacific coastal "devil's club" association that is found in wetter and maritime climates where *Abies amabilis*, *Vaccinium alaskaense* and *Rubus pedatus* are prevalent. *Pseudotsuga menziesii* is not often found in CNVC00028.

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).

Few plot locations are shown on the distribution map because not all of the constituent plots have known geocoordinates.

Source Information

Number of source plots for CNVC00046: 15

Information Sources: British Columbia Ministry of Forests and Range, Research Branch BECMaster database, October 2007 (15 plots)

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

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

Date of Concept: 1991

Date of Description: June, 2011



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

<http://cnvc-cnvc.ca>

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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.

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

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