



Forest / Forêt

Association CNVC00030

Pseudotsuga menziesii* - *Tsuga heterophylla* (*Thuja plicata*) / *Paxistima myrsinites* - *Vaccinium membranaceum* / *Rhytidiopsis robusta

Douglas-fir - Western Hemlock (Western Redcedar) / Oregon Boxleaf - Mountain Huckleberry / Pipecleaner Moss

Douglas de Menzies - Pruche de l'Ouest (*Thuja géant*) / *Pachistima myrte* - Airelle à feuilles membraneuses / *Rhytidiopsis robusta*

Subassociations: 30a typic, 30b *Rhododendron macrophyllum*

CNVC Alliance: not yet determined

CNVC Group: not yet determined

Type Description

Concept: This mature to old, coniferous forest association is found within the coast / interior climatic transition of the middle to leeward valley systems of the Coast and Cascade Mountains of British Columbia. The canopy is co-dominated by western hemlock (*Tsuga heterophylla*) and Douglas-fir (*Pseudotsuga menziesii*), with less cover of western redcedar (*Thuja plicata*). Pacific silver fir (*Abies amabilis*) and/or subalpine fir (*Abies lasiocarpa*) are often present in the canopy. Along with conifer regeneration, the shrub layer features Oregon boxleaf (*Paxistima myrsinites*), mountain huckleberry (*Vaccinium membranaceum*), and red huckleberry (*V. parvifolium*). The sparse herb layer typically includes common pipsissewa (*Chimaphila umbellata*), twinflower (*Linnaea borealis*), one-sided wintergreen (*Orthilia secunda*), Menzies' rattlesnake-plantain (*Goodyera oblongifolia*), and pink pyrola (*Pyrola asarifolia*). Stairstep moss (*Hylocomium splendens*), pipecleaner moss (*Rhytidiopsis robusta*) and red-stemmed feather moss (*Pleurozium schreberi*) along with some common freckle pelt lichen (*Peltigera aphthosa*) comprise most of the cover on the forest floor. Two subassociations are recognized: typic and *Rhododendron macrophyllum* (Pacific rhododendron). Pacific rhododendron dominates the understory in the subassociation of this name, occurring primarily in the Skagit River valley. CNVC00030 is distinguished from similar associations in this climate by its dry to mesic and nutritionally poor to medium soils occurring mostly on either steep slopes or coarse-textured glaciofluvial or fluvial materials. Fire and forest harvesting are the most prevalent stand disturbance agents.

Vegetation: In this mature to old-forest coniferous association, *Tsuga heterophylla* and *Pseudotsuga menziesii* typically have leading coverage in the canopy, with *Thuja plicata*, *Abies amabilis* and/or *Abies lasiocarpa* often present. Along with regeneration of all of the above conifers, the shrub layer features *Paxistima myrsinites*, *Vaccinium membranaceum* and *V. parvifolium*, often also with *Amelanchier alnifolia* and *Mahonia nervosa*. *Rhododendron macrophyllum* dominates the understory in the subassociation of that name. The lightly developed herb layer typically includes *Chimaphila umbellata*, *Linnaea borealis*, *Orthilia secunda*, *Goodyera oblongifolia* and *Pyrola asarifolia*. *Hylocomium splendens*, *Rhytidiopsis robusta* and *Pleurozium schreberi* are the leading mosses in the well-developed forest floor cover; scattered small patches of the thalloid lichen *Peltigera aphthosa* are also usually present. Two subassociations of CNVC00030 are recognized: typic and *Rhododendron macrophyllum*.



***Pseudotsuga menziesii* - *Tsuga heterophylla* (*Thuja plicata*) / *Paxistima myrsinites* -
Vaccinium membranaceum / *Rhytidiopsis robusta* CNVC00030**

Type Description (cont'd)

Environment: CNVC00030 is found within the coast / interior climatic transition of the Coast and Cascade Mountains. Rainshadow effects from these mountain ranges contribute to summer-dry conditions. Although not sampled below 500 mASL, the potential elevational range for this association is from sea level to 1200 mASL in subarctic areas or to 1350 m in subcontinental climates. Slope positions and soil parent materials vary considerably, however two typical situations are: 1) mid to upper slope toppositions on moderately steep to very steeply sloping morainal and colluvial veneers; and 2) level, glaciofluvial or fluvial materials. Coarse textured, very rapidly to rapidly drained, dry to mesic, and nutrient-poor to medium soils are normal for these sites. Forest humus forms are commonly moss which are less than 10 cm thick.

Dynamics: The typically dry summer weather has contributed to a history of extensive wildfires. This, combined with recent forest harvesting, has resulted in few old to very old stands of CNVC00030 remaining on the landscape. However, *Pseudotsuga menziesii* is long-lived and if stands escape fire or windthrow (and harvesting), they can become old. In older stands, replacement may be more gradual through the mortality of individual or small numbers of canopy trees and the age composition can be uneven. Armillaria root disease (*Armillaria ostoyae*) is a high hazard for *Abies amabilis* and a medium hazard for *Pseudotsuga menziesii* and *Tsuga heterophylla*. Laminated root disease (*Phellinus weirii*) is a medium risk for *Pseudotsuga menziesii* and *Abies amabilis*. Annosus root disease (*Heterobasidion annosum*) is a medium hazard for *Abies amabilis*. In the southern portion of the range of this association, three insects can cause mortality: Douglas-fir beetle (*Dendroctonus pseudotsugae*) on *Pseudotsuga menziesii*; western spruce budworm (*Choristoneura occidentalis*) on *P. menziesii* and *Abies amabilis*; and balsam woolly adelgid (*Adelges piceae*) on *Abies amabilis*.

Range: CNVC00030 occurs at low to mid elevations in the middle to leeward eastern valley systems of the Coast and Cascade Mountains of British Columbia, from near the headwaters of Dean Channel, approximately 75 km north of Bella Coola, south to the US border. The *Rhododendron macrophyllum* subassociation is found only in, and near the Skagit River valley. Although CNVC00030 is not linked officially with any US association, it is likely that this association, or something similar, does occur southward, as it is found adjacent to the US in several river valleys.

Conservation Status (NatureServe)

Global Conservation Rank: no applicable rank

National Conservation Rank: not yet determined

Subnational Conservation Rank: no applicable rank



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Distribution

Countries: Canada

Provinces / Territories / States: British Columbia

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

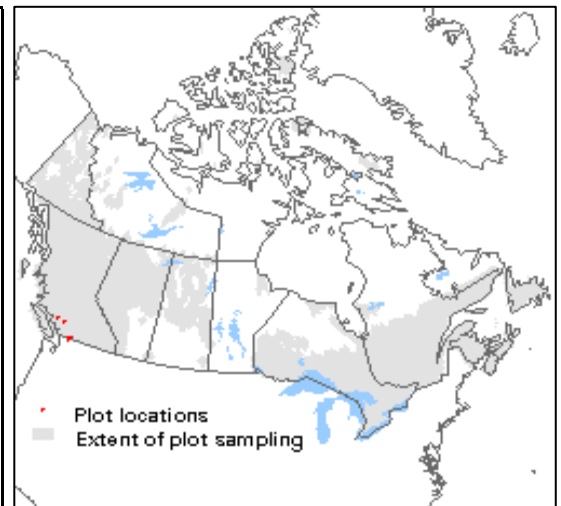
Rowe's Forest Regions and Sections of Canada: Coast: Southern Pacific Coast

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): CWHms

British Columbia Ecoregion Classification (ecoregions and ecosections): Pacific Ranges: Central Pacific Ranges, Southern Pacific Ranges



Corresponding Types and Associations

30a typic	British Columbia	CWHms 1 /03 CWHms 2 /03	Douglas-fir - Western Hemlock - Falsebox Douglas-fir - Western Hemlock - Falsebox
30b <i>Rhododendron macrophyllum</i>	British Columbia	CWHms 1 /032	Douglas-fir - Western Hemlock - Falsebox



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Vegetation Summary*

Species Name [†]	Association CNVC00030		Subassociation 30a typic		Subassociation 30b <i>Rhododendron macrophyllum</i>	
	37 plots		20 plots		17 plots	
	% Cover [±]	% Presence [^]	% Cover [±]	% Presence [^]	% Cover [±]	% Presence [^]
Overstory Trees						
<i>Pseudotsuga menziesii</i>	31	97	32	100	31	94
<i>Tsuga heterophylla</i>	32	92	26	90	38	94
<i>Thuja plicata</i>	12	70	13	85	9	53
<i>Abies amabilis</i>	8	27	8	50	-	-
<i>Abies lasiocarpa</i> var. <i>lasiocarpa</i>	3	27	4	25	2	29
<i>Pinus monticola</i>	4	19	5	30	3	6
<i>Pinus contorta</i>	3	14	2	5	3	24
Tree Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(40 40 59 75 85)		(39 40 56 71 80)		(43 50 63 80 87)	
Understory Woody Shrubs and Regenerating Trees						
<i>Paxistima myrsinites</i>	6	97	9	95	4	100
<i>Vaccinium membranaceum</i>	4	89	7	90	1	88
<i>Tsuga heterophylla</i>	10	70	13	50	8	94
<i>Thuja plicata</i>	8	70	13	45	6	100
<i>Vaccinium parvifolium</i>	2	68	3	60	1	76
<i>Mahonia nervosa</i>	4	54	9	30	2	82
<i>Amelanchier alnifolia</i>	1	54	2	75	< 1	29
<i>Rhododendron macrophyllum</i>	31	46	-	-	31	100
<i>Rosa gymnocarpa</i>	1	46	2	40	< 1	53
<i>Abies amabilis</i>	5	43	10	40	< 1	47
<i>Acer circinatum</i>	2	38	3	30	1	47
<i>Acer glabrum</i>	2	35	2	55	< 1	12
<i>Abies lasiocarpa</i> var. <i>lasiocarpa</i>	6	27	13	20	2	35
<i>Menziesia ferruginea</i>	3	27	4	30	< 1	24
<i>Pinus monticola</i>	3	27	6	10	2	47
<i>Rubus parviflorus</i>	1	27	1	40	< 1	12
<i>Lonicera ciliosa</i>	1	24	1	30	< 1	18
<i>Ribes lacustre</i>	1	24	1	45	-	-
<i>Pseudotsuga menziesii</i>	2	22	1	10	2	35
<i>Spiraea betulifolia</i>	< 1	19	1	15	< 1	24
<i>Vaccinium ovalifolium</i>	3	16	3	30	-	-
<i>Taxus brevifolia</i>	2	16	5	10	< 1	24
<i>Picea engelmannii</i>	1	14	1	5	1	24
<i>Abies grandis</i>	3	11	-	-	3	24



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Vegetation Summary (cont'd)*

Species Name [†]	Association CNVC00030		Subassociation 30a typic		Subassociation 30b <i>Rhododendron macrophyllum</i>	
	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]	% Cover [‡]	% Presence [^]
<i>Alnus rubra</i>	1	11	-	-	1	24
Shrub Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(16 25 43 60 72)		(24 25 42 60 65)		(16 23 45 68 82)	
Understory Herbs and Dwarf Shrubs						
<i>Chimaphila umbellata</i>	4	100	5	100	2	100
<i>Linnaea borealis</i>	3	95	4	90	2	100
<i>Goodyera oblongifolia</i>	1	89	2	90	< 1	88
<i>Pyrola asarifolia</i>	1	84	2	75	< 1	94
<i>Orthilia secunda</i>	2	76	3	90	< 1	59
<i>Cornus canadensis</i>	2	43	3	45	< 1	41
<i>Pyrola picta</i>	< 1	35	< 1	10	< 1	65
<i>Clintonia uniflora</i>	4	32	6	35	1	29
<i>Monotropa hypopithys</i>	< 1	30	< 1	10	< 1	53
<i>Hieracium cynoglossoides</i>	1	27	1	50	-	-
<i>Chimaphila menziesii</i>	< 1	27	< 1	35	< 1	18
<i>Vaccinium scoparium</i>	< 1	27	-	-	< 1	59
<i>Arctostaphylos uva-ursi</i>	4	24	4	10	5	41
<i>Gaultheria ovatifolia</i>	2	22	4	5	2	41
<i>Listera cordata</i>	< 1	22	1	5	< 1	41
<i>Trientalis borealis</i>	2	19	3	30	< 1	6
<i>Maianthemum stellatum</i>	2	16	2	30	-	-
<i>Pteridium aquilinum</i>	1	16	1	30	-	-
<i>Polypodium glycyrrhiza</i>	2	14	2	25	-	-
<i>Chamerion angustifolium</i>	< 1	14	< 1	25	-	-
Herb Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(2 4 10 12 20)		(5 5 12 16 20)		(1 2 7 7 14)	
Bryophytes and Lichens						
<i>Rhytidiopsis robusta</i>	16	95	21	100	9	88
<i>Hylocomium splendens</i>	24	86	18	75	29	100
<i>Pleurozium schreberi</i>	11	86	5	75	15	100
<i>Peltigera aphthosa</i>	1	70	1	70	1	71
<i>Dicranum fuscescens</i>	5	57	7	65	2	47
<i>Rhytidiadelphus triquetrus</i>	2	46	4	25	1	71
<i>Polytrichum juniperinum</i>	1	35	1	45	< 1	24
<i>Dicranum polysetum</i>	2	30	-	-	2	65
<i>Ptilium crista-castrensis</i>	1	30	1	20	< 1	41
<i>Rhytidiadelphus loreus</i>	2	27	4	20	1	35
<i>Eurhynchium oreganum</i>	2	27	2	40	< 1	12
<i>Dicranella palustris</i>	16	19	18	30	< 1	6
<i>Niphotrichum canescens</i>	1	19	2	25	1	12
<i>Cladina rangiferina</i>	< 1	19	< 1	5	< 1	35
<i>Scapania bolanderi</i>	< 1	14	< 1	25	-	-
Bryo-Lichen Stratum Cover (P₁₀ P₂₅ Mean P₇₅ P₉₀)[‡]	(25 40 57 75 84)		(25 36 59 76 90)		(33 40 54 70 75)	



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* 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

‡ $P_x = X^{\text{th}}$ percentile (e.g., $P_{10} = 10^{\text{th}}$ percentile)



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Site / Soil Characteristics

	Association CNVC00030 37 plots	Subassociation 30a typic 20 plots	Subassociation 30b <i>Rhododendron macrophyllum</i> 17 plots
Elevation Range (min–mean–max meters)	500–774–1122	500–851–1122	558–684–869
Slope Gradient (% frequency)	very steep (22) steep (19) moderately steep (16) moderate (16) gentle (3) level (24)	very steep (40) steep (15) moderately steep (20) moderate (20) gentle (5) level (0)	very steep (0) steep (24) moderately steep (12) moderate (12) gentle (0) level (53)
Aspect (% frequency)	north (14) east (19) south (27) west (14) level (24) missing data (3)	north (5) east (15) south (50) west (25) level (0) missing data (5)	north (24) east (24) south (0) west (0) level (53) missing data (0)
Meso Toposition (% frequency)	crest / upper (16) mid (24) lower / toe (14) level (19) missing data (27)	crest / upper (20) mid (30) lower / toe (0) level (0) missing data (50)	crest / upper (12) mid (18) lower / toe (29) level (41) missing data (0)
Moisture Regime (% frequency)	dry (35) mesic (65)	dry (55) mesic (45)	dry (12) mesic (88)
Nutrient Regime (% frequency)	poor (81) medium (16) rich (3)	poor (70) medium (25) rich (5)	poor (94) medium (6) rich (0)



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Site / Soil Characteristics (cont'd)

	Association CNVC00030	Subassociation 30a typic	Subassociation 30b <i>Rhododendron macrophyllum</i>
Soil Parent Material (% frequency)	colluvium (16) moraine / till (16) fluvial (11) glaciofluvial (5) missing data (51)	colluvium (10) moraine / till (0) fluvial (0) glaciofluvial (0) missing data (90)	colluvium (24) moraine / till (35) fluvial (24) glaciofluvial (12) missing data (6)
Soil Rooting Zone Substrate (% frequency)	non-soil (16) sandy (30) coarse loamy (49) missing data (5)	non-soil (10) sandy (55) coarse loamy (35) missing data (0)	non-soil (24) sandy (0) coarse loamy (65) missing data (12)
Root Restricting Depth (% frequency)	21 – 99 cm (32) missing data (68)	21 – 99 cm (50) missing data (50)	21 – 99 cm (12) missing data (88)
Humus Form (% frequency)	mor (73) moder (5) peatymor (16) missing data (5)	mor (80) moder (10) peatymor (0) missing data (10)	mor (65) moder (0) peatymor (35) missing data (0)



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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: CNVC00031 *Pseudotsuga menziesii* - *Tsuga heterophylla* (*Thuja plicata*) / *Hylocomium splendens* (*Rhytidiadelphus triquetrus*); CNVC00009 *Tsuga heterophylla* - *Pseudotsuga menziesii* - *Abies amabilis* / *Hylocomium splendens*

Related United States National Vegetation Classification Associations: CEGL002828 (ms1/03) *Pseudotsuga menziesii* - *Tsuga heterophylla* - *Thuja plicata* / *Chimaphila umbellata* / *Rhytidiopsis robusta* Forest (also ds1/01, ds2/01 - part of CNVC00031); CEGL002836 (ms2/03) *Tsuga heterophylla* - *Pseudotsuga menziesii* - *Abies amabilis* / *Paxistima myrsinites* Forest

Relationships with Other Classifications:

Comments

This association is similar to CNVC00031 [*Pseudotsuga menziesii* - *Tsuga heterophylla* (*Thuja plicata*) / *Hylocomium splendens* (*Rhytidiadelphus triquetrus*)] which occurs in the same subarctic / subcontinental climatic areas of British Columbia, but on moister sites in slightly drier climates. It has less content of *Abies* spp. (*A. amabilis*, *A. lasiocarpa*), *Vaccinium membranaceum* and *Paxistima myrsinites*, and more *Rhytidiadelphus triquetrus* than CNVC00030.

CNVC00009 [*Tsuga heterophylla* - *Pseudotsuga menziesii* - *Abies amabilis* / *Hylocomium splendens*] is found on moister sites of this moist subarctic climate. It contains *Rubus pedatus*, more *Vaccinium alaskaense* and *Rhytidiadelphus loreus*, and less *Paxistima myrsinites* than CNVC00030.

The extinction risk of CNVC00030 is of concern.

Source Information

Number of source plots for CNVC00030: 37

Number of source plots for 30a typic: 20

Number of source plots for 30b *Rhododendron macrophyllum*: 17

Information Sources: British Columbia Ministry of Forests and Range, Research Branch BECMaster database, October 2007 (37 plots)

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

Description Authors: D. Meidinger and K. Baldwin

Date of Concept: 1991, 2008

Date of Description: May, 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.

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Characterization References:

British Columbia Conservation Data Centre. 2011. B.C. Species and Ecosystems Explorer. B.C. Min. of Environ. Victoria, BC. Available: <http://www.env.gov.bc.ca/cdc/access.html> (accessed Jun., 2011).

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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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