



Forest / Forêt

Association CNVC00036

***Tsuga heterophylla* - *Abies amabilis* / *Blechnum spicant* - *Tiarella trifoliata* - *Polystichum munitum***

**Western Hemlock - Pacific Silver Fir / Deer Fern - Three-leaved Foamflower - Western Sword Fern**

**Pruche de l'Ouest - Sapin gracieux / Blechnum en épi - Tiarelle trifoliée - Fougère épée**

**Subassociations:** 36a typic, 36b *Picea sitchensis*

**CNVC Alliance:** not yet determined

**CNVC Group:** not yet determined

## Type Description

**Concept:** CNVC00036 is a mature to old, Pacific coast, coniferous forest association that is found on well-drained, colluvial and fluvial materials in very wet maritime to hypermaritime climates. The soils are mesic to moist, and in most cases nutrient-rich to very rich. Western hemlock (*Tsuga heterophylla*) is the leading species in the closed coniferous canopy, followed by Pacific silver fir (*Abies amabilis*). However, very old stands are dominated by western redcedar (*Thuja plicata*). On Haida Gawii (Queen Charlotte Islands), Pacific silver fir is absent and Sitka spruce (*Picea sitchensis*) often plays a more important canopy role. The shrub layer often features Alaskan blueberry (*Vaccinium alaskaense*), red huckleberry (*V. parvifolium*), and salmonberry (*Rubus spectabilis*). Common herb species include western sword fern (*Polystichum munitum*), deer fern (*Blechnum spicant*), five-leaved dwarf bramble (*Rubus pedatus*), spreading wood fern (*Dryopteris expansa*) and three-leaved foamflower (*Tiarella trifoliata*). Lanky moss (*Rhytidiadelphus loreus*) and stairstep moss (*Hylocomium splendens*) are the leading mosses. Two subassociations are recognized: typic and *Picea sitchensis*.

**Vegetation:** *Tsuga heterophylla* is generally the leading species in the closed coniferous canopy of this productive forest association, followed by *Abies amabilis*, *Thuja plicata* and *Picea sitchensis*. CNVC00036 is a mature to old-forest condition that has experienced extensive or frequent windthrow or other tree mortality. *Picea sitchensis* is more important on Haida Gwaii where *Abies amabilis* is absent. *Thuja plicata* dominates very old stands where disturbance is rare and, over the course of many centuries, a structurally more complex uneven-aged forest develops. The moderately developed to dense shrub layer is dominated by tree regeneration but also includes *Vaccinium alaskaense*, *V. parvifolium*, *Rubus spectabilis*, *Menziesia ferruginea* and *Oplopanax horridus*. Common species in the variably developed herb layer include *Polystichum munitum*, *Blechnum spicant*, *Rubus pedatus*, *Gymnocarpium dryopteris*, *Tiarella trifoliata* (see the Comments section), *Dryopteris expansa*, *Maianthemum dilatatum*, *Athyrium filix-femina* and *Streptopus amplexifolius*, the majority of which are rich-site indicators. *Rhytidiadelphus loreus* is normally the leading species in the typically moderately well-developed moss layer, followed by *Hylocomium splendens*. Additional mosses of lower coverage include *Rhizomnium glabrescens*, *Eurhynchium oregonum* and *Plagiothecium undulatum*. Two subassociations are recognized: typic and *Picea sitchensis*. *Picea sitchensis* and a number of bryophyte species are more prominent in the subassociation of this name.



***Tsuga heterophylla* - *Abies amabilis* / *Blechnum spicant* - *Tiarella trifoliata* - *Polystichum munitum* CNVC00036**

### Type Description (cont'd)

**Environment:** CNVC00036 extends from sea level to more than 1,100 mASL. The overwhelming influence of the very wet maritime to hypermaritime climate, as well as mineral soil lithology, tends to override the significance of aspect, slope gradients and slope positions, which vary widely. Adequate soil drainage is also critical, given the abundance of rain and seepage. For the most part, this association develops on colluvial and fluvial materials, which tend not to be extensive on the landscape. The fluvial deposits are often fans or cones. Hybrid terrain conditions also form through various combinations of colluvial and fluvial processes. The soils are mesic to moist, in most cases nutrient-rich to very rich, with mostly skeletal or fragmental (> 35% to > 70% coarse fragments by volume) sandy loam, loam and silty loam textures. Regardless of the higher productivity and good soil nutrient regime, mor humus forms still prevail over moders, perhaps due in large part to an abundance of acidic western hemlock litter. The prominence of coarse woody debris-loving species like *Tsuga heterophylla*, *Vaccinium parvifolium* and *Dryopteris expansa* in the understory is a reflection of the abundance of this substrate in such a productive, high biomass forest.

**Dynamics:** In this old-growth forest association, stand-replacing disturbances are neither frequent nor large because of the maritime climate. Fire is a natural occurrence in the southern range of CNVC00036, but fire suppression activities have mostly eliminated it as a significant disturbance agent. Small-scale disturbances can result from wind, flooding, or mass-wasting (e.g., landslides). In most cases, stand replacement is the result of gradual cumulative tree replacement, through gap-phase processes. Older *Abies amabilis* and *Tsuga heterophylla* are prone to heart and butt rots. Windthrow and breakage create canopy gaps which are filled by the release of understory trees due to improved light conditions. The result is a multi-aged stand condition with considerable vertical structure. Hemlock dwarf mistletoe (*Arceuthobium tsugense*) is widespread and can be very damaging to *Tsuga heterophylla*, significantly reducing growth, stressing the trees and thereby making them more susceptible to other forest pests or pathogens. Balsam woolly adelgid (*Adelges piceae*) is a moderate threat to the health of *Abies amabilis* in the southern regions, mainly in areas around the Strait of Georgia. As a widespread, relatively productive forest type, CNVC00036 is under harvesting pressure where it is accessible.

**Range:** CNVC00036 occurs on the windward slopes of the Coast Mountains and outer coastal lowlands from the southern Alaska Panhandle southward to the north slopes of the Fraser River valley, and including windward slopes of the Vancouver Island Ranges, and lowlands on the outer coast of Haida Gwaii (Queen Charlotte Islands). It is also found in northwestern Washington including the Olympic Peninsula. The typical subassociation occurs over much of the windward side of the Coast Mountains in maritime areas from sea level to approximately 1200 mASL. The *Picea sitchensis* subassociation is located on the outer coast of the mainland, Vancouver Island and Haida Gwaii, in hypermaritime areas characterized by more fog, from sea level to approximately 600 mASL.

### Conservation Status (NatureServe)

**Global Conservation Rank:** GNR

**National Conservation Rank:** not yet determined

**Subnational Conservation Rank:** no applicable rank



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

<http://cnvc-cnvc.ca>

Forest / Forêt

Association CNVC00036

***Tsuga heterophylla* - *Abies amabilis* / *Blechnum spicant* - *Tiarella trifoliata* - *Polystichum munitum***

**Western Hemlock - Pacific Silver Fir / Deer Fern - Three-leaved Foamflower - Western Sword Fern**

**Pruche de l'Ouest - Sapin gracieux / Blechnum en épi - Tiarelle trifoliée - Fougère épée**

## Distribution

**Countries:** Canada

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

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

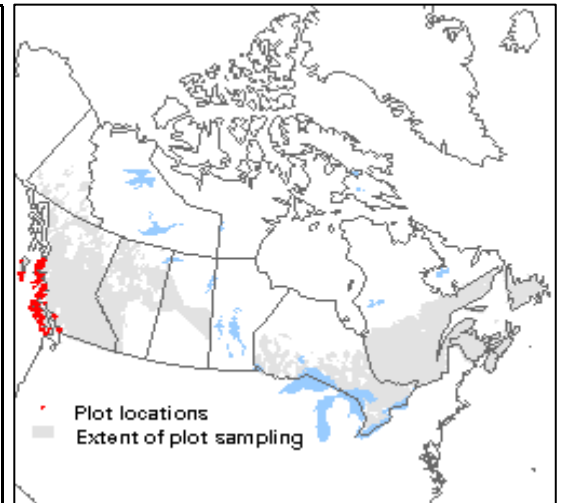
**Rowe's Forest Regions and Sections of Canada:** Coast: Northern Pacific Coast, Queen Charlotte Islands, Southern Pacific Coast

**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):** CWHvh, CWHvm

**British Columbia Ecoregion Classification (ecoregions and ecosections):** Pacific Ranges: Northern Pacific Ranges, Central Pacific Ranges, Southern Pacific Ranges; Coastal Gap: Hecate Lowland, Kitimat Ranges; Eastern Vancouver Island: Leeward Island Mountains, Nanaimo Lowland; Western Vancouver Island: Nahwitti Lowland, Northern Island Mountains, Windward Island Mountains; Gwaii Haanas: Queen Charlotte Ranges



## Corresponding Types and Associations

<b>36a typic</b>	British Columbia	CWHvm 1 /05	Amabilis Fir - Western Redcedar - Foamflower
		CWHvm 1 /07	Amabilis Fir - Western Redcedar - Salmonberry
		CWHvm 2 /05	Amabilis Fir - Western Redcedar - Foamflower
		CWHvm 2 /07	Amabilis Fir - Western Redcedar - Salmonberry
<b>36b <i>Picea sitchensis</i></b>	British Columbia	CWHvh 1 /06	Western Redcedar - Sitka Spruce - Foamflower
		CWHvh 2 /06	Western Redcedar - Sitka Spruce - Foamflower



Forest / Forêt

Association CNVC00036

***Tsuga heterophylla* - *Abies amabilis* / *Blechnum spicant* - *Tiarella trifoliata* - *Polystichum munitum***

Western Hemlock - Pacific Silver Fir / Deer Fern - Three-leaved Foamflower - Western Sword Fern

Pruche de l'Ouest - Sapin gracieux / Blechnum en épi - Tiarelle trifoliée - Fougère épée

**Vegetation Summary\***

Species Name <sup>†</sup>	Association CNVC00036 304 plots		Subassociation 36a typic 207 plots		Subassociation 36b <i>Picea sitchensis</i> 97 plots	
	% Cover <sup>‡</sup>	% Presence <sup>^</sup>	% Cover <sup>‡</sup>	% Presence <sup>^</sup>	% Cover <sup>‡</sup>	% Presence <sup>^</sup>
	<b>Overstory Trees</b>					
<i>Tsuga heterophylla</i>	42	98	41	98	45	98
<i>Abies amabilis</i>	30	68	31	76	26	49
<i>Thuja plicata</i>	23	50	21	45	26	62
<i>Picea sitchensis</i>	17	35	19	20	15	67
Tree Stratum Cover (P <sub>10</sub> P <sub>25</sub> Mean P <sub>75</sub> P <sub>90</sub> ) <sup>‡</sup>	(52 65 73 85 94)		(53 65 73 80 94)		(50 65 73 85 90)	
<b>Understory Woody Shrubs and Regenerating Trees</b>						
<i>Tsuga heterophylla</i>	17	93	15	93	21	94
<i>Vaccinium parvifolium</i>	7	86	7	86	6	87
<i>Vaccinium alaskaense</i>	11	75	12	82	8	62
<i>Rubus spectabilis</i>	5	65	5	73	3	49
<i>Abies amabilis</i>	12	61	12	69	10	44
<i>Menziesia ferruginea</i>	4	57	2	46	7	79
<i>Oplopanax horridus</i>	4	38	4	41	3	32
<i>Vaccinium ovalifolium</i>	6	34	7	36	5	30
<i>Gaultheria shallon</i>	6	33	6	37	4	25
<i>Thuja plicata</i>	5	30	4	27	6	35
<i>Sambucus racemosa</i>	3	17	3	21	2	8
<i>Picea sitchensis</i>	2	17	1	9	3	34
Shrub Stratum Cover (P <sub>10</sub> P <sub>25</sub> Mean P <sub>75</sub> P <sub>90</sub> ) <sup>‡</sup>	(6 18 41 63 80)		(8 20 43 65 80)		(4 12 37 60 80)	
<b>Understory Herbs and Dwarf Shrubs</b>						
<i>Blechnum spicant</i>	9	90	10	91	7	88
<i>Tiarella trifoliata</i>	6	79	7	80	3	77
<i>Dryopteris expansa</i>	5	70	6	71	2	68
<i>Polystichum munitum</i>	9	63	11	67	5	55
<i>Athyrium filix-femina</i>	3	56	3	57	1	54
<i>Streptopus amplexifolius</i>	1	53	1	53	1	52
<i>Cornus canadensis</i>	4	43	4	45	5	37
<i>Rubus pedatus</i>	8	42	8	48	6	30
<i>Maianthemum dilatatum</i>	4	40	4	33	5	56
<i>Gymnocarpium dryopteris</i>	7	37	8	31	6	48
<i>Streptopus lanceolatus</i>	3	37	4	37	1	38
<i>Listera cordata</i>	2	34	2	26	1	53
<i>Moneses uniflora</i>	1	30	1	26	1	38
<i>Coptis aspleniifolia</i>	3	26	3	25	3	29



***Tsuga heterophylla* - *Abies amabilis* / *Blechnum spicant* - *Tiarella trifoliata* - *Polystichum munitum* CNVC00036**

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

Species Name <sup>†</sup>	Association CNVC00036		Subassociation 36a typic		Subassociation 36b <i>Picea sitchensis</i>	
	% Cover <sup>‡</sup>	% Presence <sup>^</sup>	% Cover <sup>‡</sup>	% Presence <sup>^</sup>	% Cover <sup>‡</sup>	% Presence <sup>^</sup>
<i>Listera caurina</i>	1	25	1	22	1	32
<i>Luzula parviflora</i>	1	19	1	22	1	13
<i>Huperzia haleakalae</i>	1	18	< 1	10	1	34
<i>Viola glabella</i>	4	16	4	22	2	4
<i>Phegopteris connectilis</i>	3	15	2	8	3	30
<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>(5 11 34 50 75)</b>		<b>(6 15 38 60 80)</b>		<b>(3 7 25 40 52)</b>	
<b>Bryophytes and Lichens</b>						
<i>Rhytidiadelphus loreus</i>	21	85	15	79	32	96
<i>Plagiothecium undulatum</i>	5	76	6	80	3	68
<i>Hylocomium splendens</i>	11	68	8	60	14	86
<i>Rhizomnium glabrescens</i>	8	60	7	47	8	86
<i>Eurhynchium oreganum</i>	7	57	7	53	8	66
<i>Pellia neesiana</i>	4	38	3	29	5	56
<i>Sphagnum</i> sp.	6	36	6	30	7	48
<i>Polytrichastrum alpinum</i>	3	34	2	23	4	56
<i>Scapania bolanderi</i>	6	29	6	23	6	41
<i>Hookeria lucens</i>	1	28	1	21	1	42
<i>Plagiochila asplenoides</i>	2	9	2	3	2	21
<b>Bryo-Lichen Stratum Cover (P<sub>10</sub> P<sub>25</sub> Mean P<sub>75</sub> P<sub>90</sub>)<sup>‡</sup></b>	<b>(14 30 55 80 90)</b>		<b>(10 21 48 75 87)</b>		<b>(39 60 71 90 95)</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)



Forest / Forêt

Association CNVC00036

*Tsuga heterophylla* - *Abies amabilis* / *Blechnum spicant* - *Tiarella trifoliata* - *Polystichum munitum*

Western Hemlock - Pacific Silver Fir / Deer Fern - Three-leaved Foamflower - Western Sword Fern

Pruche de l'Ouest - Sapin gracieux / Blechnum en épi - Tiarelle trifoliée - Fougère épée

Site / Soil Characteristics

	Association CNVC00036 <b>304 plots</b>	Subassociation 36a typic <b>207 plots</b>	Subassociation 36b <i>Picea sitchensis</i> <b>97 plots</b>
<b>Elevation Range (min–mean–max meters)</b>	1–259–1150 missing data (7)	1–330–1150 missing data (9)	5–119–585 missing data (1)
<b>Slope Gradient (% frequency)</b>	very steep (15) <b>steep (25)</b> moderately steep (18) moderate (6) gentle (17) level (12) missing data (7)	very steep (16) steep (19) moderately steep (14) moderate (7) <b>gentle (20)</b> level (14) missing data (10)	very steep (12) <b>steep (37)</b> moderately steep (27) moderate (4) gentle (10) level (7) missing data (2)
<b>Aspect (% frequency)</b>	north (20) east (19) south (14) <b>west (22)</b> level (7) missing data (16)	north (18) east (16) south (14) west (22) level (8) missing data (22)	north (25) east (27) south (16) west (22) level (6) missing data (4)
<b>Meso Toposition (% frequency)</b>	crest / upper (5) mid (19) lower / toe (23) depression (1) level (8) missing data (44)	crest / upper (3) mid (13) lower / toe (15) depression (1) level (7) missing data (61)	crest / upper (8) mid (34) lower / toe (41) depression (1) level (8) missing data (7)
<b>Moisture Regime (% frequency)</b>	dry (2) mesic (32) <b>moist (55)</b> wet (2) missing data (9)	dry (0) mesic (13) <b>moist (72)</b> wet (3) missing data (12)	dry (7) <b>mesic (71)</b> moist (18) wet (0) missing data (4)
<b>Nutrient Regime (% frequency)</b>	poor (2) medium (14) <b>rich (59)</b> missing data (25)	poor (1) medium (15) <b>rich (48)</b> missing data (35)	poor (4) medium (12) <b>rich (81)</b> missing data (2)



***Tsuga heterophylla* - *Abies amabilis* / *Blechnum spicant* - *Tiarella trifoliata* - *Polystichum munitum* CNVC00036**

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

	Association CNVC00036	Subassociation 36a typic	Subassociation 36b <i>Picea sitchensis</i>
<b>Soil Parent Material (% frequency)</b>	bedrock (1) colluvium (20) moraine / till (4) fluvial (10) glaciofluvial (2) lacustrine (0) glaciomarine (0) organic (3) anthropogenic (1) missing data (58)	bedrock (1) colluvium (17) moraine / till (5) fluvial (11) glaciofluvial (3) lacustrine (0) glaciomarine (0) organic (1) anthropogenic (1) missing data (60)	bedrock (0) colluvium (27) moraine / till (2) fluvial (9) glaciofluvial (0) lacustrine (0) glaciomarine (1) organic (5) anthropogenic (0) missing data (54)
<b>Soil Rooting Zone Substrate (% frequency)</b>	non-soil (21) sandy (7) <b>coarse loamy (29)</b> fine loamy (9) silty (2) clayey (2) organic (8) missing data (22)	non-soil (18) sandy (8) <b>coarse loamy (27)</b> fine loamy (9) silty (2) clayey (1) organic (5) missing data (29)	non-soil (27) sandy (6) <b>coarse loamy (32)</b> fine loamy (10) silty (3) clayey (3) organic (12) missing data (6)
<b>Root Restricting Depth (% frequency)</b>	0 – 20 cm (3) 21 – 99 cm (21) ≥ 100 cm (2) missing data (74)	0 – 20 cm (2) 21 – 99 cm (21) ≥ 100 cm (1) missing data (76)	0 – 20 cm (6) 21 – 99 cm (21) ≥ 100 cm (2) missing data (71)
<b>Humus Form (% frequency)</b>	<b>mor (49)</b> moder (19) mull (1) peatymor (1) missing data (30)	<b>mor (44)</b> moder (18) mull (1) peatymor (1) missing data (36)	<b>mor (60)</b> moder (23) mull (0) peatymor (0) missing data (18)



Forest / Forêt

Association CNVC00036

***Tsuga heterophylla* - *Abies amabilis* / *Blechnum spicant* - *Tiarella trifoliata* - *Polystichum munitum***

Western Hemlock - Pacific Silver Fir / Deer Fern - Three-leaved Foamflower - Western Sword Fern

Pruche de l'Ouest - Sapin gracieux / Blechnum en épi - Tiarelle trifoliée - Fougère épée

### Additional Characteristics

Species of High Conservation Concern:

Non-native Species:

Management Issues:

### Type Statistics

Internal Similarity:

Confidence: high

Strength:

### Related Concepts

**Similar CNVC Associations:** CNVC00005 *Tsuga heterophylla* (*Picea sitchensis* - *Abies amabilis*) / *Rubus spectabilis* / *Polystichum munitum*; CNVC00028 *Tsuga heterophylla* - *Abies amabilis* / *Oplopanax horridus* / *Gymnocarpium dryopteris*

**Related United States National Vegetation Classification Associations:**

**Relationships with Other Classifications:**

### Comments

Where CNVC00036 occurs on Haida Gwaii (Queen Charlotte Islands), it is influenced by intense browsing by Sitka black-tailed deer (*Odocoileus hemionus sitkensis*), which were introduced in the early 1900s. Browsing is now so intense that understory shrub- and herb-layer vegetation is either absent, or is at best poorly developed.

CNVC00036 is similar to CNVC00005 [*Tsuga heterophylla* (*Picea sitchensis* - *Abies amabilis*) / *Rubus spectabilis* / *Polystichum munitum*] but has much less *Rubus spectabilis* and more *Vaccinium alaskaense*. Where they occur in the same area, CNVC00005 occupies wetter sites.

CNVC00028 [*Tsuga heterophylla* - *Abies amabilis* / *Oplopanax horridus* / *Gymnocarpium dryopteris*] can occur on moist, rich sites within the range of CNVC00036, but is characterized by much greater cover of *Oplopanax horridus* and *Gymnocarpium dryopteris*, and less *Polystichum munitum*.

*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).

### Source Information

**Number of source plots for CNVC00036:** 304

**Number of source plots for 36a typic:** 207

**Number of source plots for 36b *Picea sitchensis*:** 97

**Information Sources:** British Columbia Ministry of Forests and Range, Research Branch BECMaster database, October 2007 (304 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:** A. Inselberg, D. Meidinger, and K. Baldwin

**Date of Concept:** November, 2005

**Date of Description:** April, 2011





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

<http://cnvc-cnvc.ca>

## ***Tsuga heterophylla* - *Abies amabilis* / *Blechnum spicant* - *Tiarella trifoliata* - *Polystichum munitum* CNVC00036**

### **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:**

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.

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).

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

Church, M.; Ryder, J.M. 2007. Physiography of British Columbia [Draft] Chapter 2 in: Compendium of Forest Hydrology and Geomorphology in British Columbia [In Prep.] Pike, R.G. et al., eds. B.C. Ministry of Forests and Range, Res. Branch, Victoria, BC and FORREX Forest Research Extension Partnership, Kamloops, BC. Land Management Handbook (TBD). Available: <http://www.forrex.org/program/water/compendium.asp> (accessed Nov., 2008).

Dorner, B.; Wong, C. 2003. Natural disturbance dynamics on the North Coast. Background report for North Coast LRMP, Integrated Land Management Bureau, Gov. British Columbia. 51 p.

Finck, K.E.; Humphreys, P.; Hawkins, G.V. 1989. Field guide to pests of managed forests in British Columbia. Joint publication of For. Can. and B.C. Min. For., ISSN 0843-4719, No. 16.

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.

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. 2007. The ecosystems of northern Vancouver Island, British Columbia. Prepared for Western Forest Products Inc. Unpubl. Rep. 129 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. 2011. 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).

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).

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 and definitions of attribute names and data classes, see the **Understanding the Factsheet** link at <http://cnvc-cnvc.ca>.



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

<http://cnvc-cnvc.ca>

**Suggested Citation:** Inselberg, A.; Meidinger, D.; Baldwin, K. *Tsuga heterophylla* - *Abies amabilis* / *Blechnum spicant* - *Tiarella trifoliata* - *Polystichum munitum* [online]. Sault Ste. Marie, Ontario, Canada: Canadian National Vegetation Classification. April, 2011; generated Oct-03-2012; cited ENTER DATE ACCESSED. 10 p. Canadian National Vegetation Classification Association: CNVC00036. Available from <http://cnvc-cnvc.ca>. System Requirements: Adobe Acrobat Reader v. 7.0 or higher. ISSN 1916-3266.