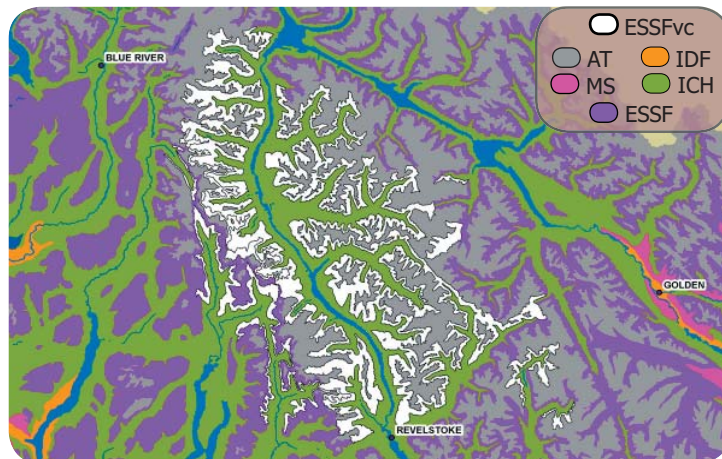


ESSFvc

VERY WET COLD ENGELMANN SPRUCE — SUBALPINE FIR SUBZONE

Distribution: The ESSFvc occurs above the ICH and below the ESSF woodland subzone in the northern Monashee Mountains. It is most extensive in the side drainages of the Columbia River between Revelstoke and the Mica dam. West of there, it occurs in the Perry, Myoff, and Ratchford drainage basins. It also occurs in the upper Seymour River, north of the confluence with the Ratchford River

Elevational Range: The elevational range of the ESSFvc is less variable than many other biogeoclimatic subzones. On south aspects it generally starts at 1400-1450m and on north aspects at 1350-1400 m. However, in valleys receiving cold air drainage from nearby glaciers, the lower elevation can drop to 1100-1200m. The upper elevational limit commonly occurs at 1650-1700 m on north aspects and 1700-1750m on south aspects.



ESSFvc - 1

Climate: Long, cold winters with a high snow cover and short, cool summers characterize the ESSF zone. The ESSFvc falls within the geographic area that receives the greatest mean annual precipitation in the Southern Interior Forest Region. The mean annual precipitation is estimated to be 2000-2400mm and maximum snow depths can reach 3-4 m. In general the Alpine zone above the ESSFvc is dominated by large glaciers and snowfields which reflects the high annual snowfall. Growing season moisture deficits are rare due to late snowmelt and frequent summer storms. The short growing season is likely the most limiting climatic factor for biological activity .

Forest Cover: Climax stands of Se, Bl and Hm dominate the landscape of this subzone. Hm forms almost pure stands near the center of the subzone but near the geographic margins it is reduced to scattered individuals in the lower tree canopy and/or shrub layer. Pl rarely occurs and if present, is confined to very dry, southern exposed ridges. Snow damage and/or vegetation competition precludes successful establishment and long-term survival of Pl. Hw, Cw, Pw and Fd rarely occur and are generally confined to the transition zone between the ICH and ESSF. The mean stand age exceeds 200 years. Disturbances are generally patchy and tree mortality is attributed to insects, disease and windthrow. Late seral and climax stands are typically 15-18 m tall.

Zonal Vegetation and Soils: Mature climax stands are dominated by Bl, Hm and Se. The shrubby understory contains high covers of regenerating Bl and Hm and is dominated by white-flowered rhododendron, black huckleberry, oval-leaved blueberry and false azalea. The rich and diverse herb layer includes oak fern, Sitka valerian, five-leaved bramble, rosy twistedstalk, mountain arnica and one-leaved foamflower. The patchy moss layer is dominated by ragged-moss, herons'-bill moss, pipecleaner moss and leafy liverworts. Soils are predominantly Humo-Ferric Podzols and Ferro-Humic Podzols with Mor humus forms.

Adjacent Biogeoclimatic Subzones: The ICHwk1 or ICHvk1 occur below the ESSFvc. The ESSFvcw occurs above the ESSFvc throughout its distribution. The ESSFvc4 occurs south of the ESSFvc at similar elevations, while the ESSFvc2 occurs to the west, north and east of the ESSFvc at similar elevations.

ESSFvc - 2

Distinguishing adjacent Biogeoclimatic units from the ESSFvc

On zonal sites:

ESSFwc2

- lacks Hm

ESSFwc4

- lacks Hm
- false azalea is absent or only rarely observed
- Utah honeysuckle is generally present

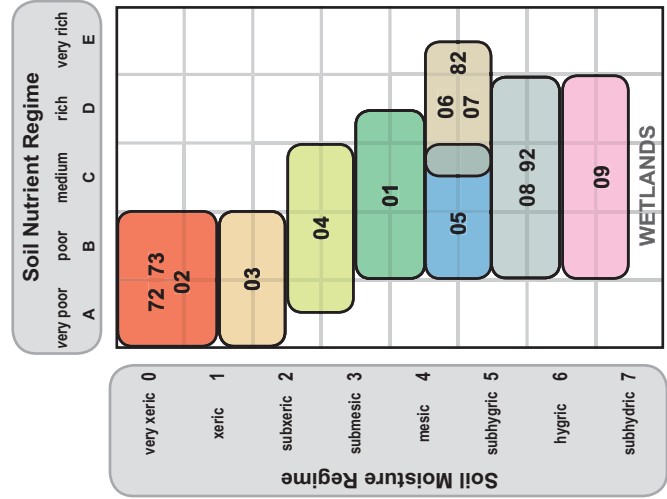
ESSFvcw

- has more open and clumpy stand structure
- partridge-foot and mountain-heathers are commonly present

ICHwk1 and ICHvk1

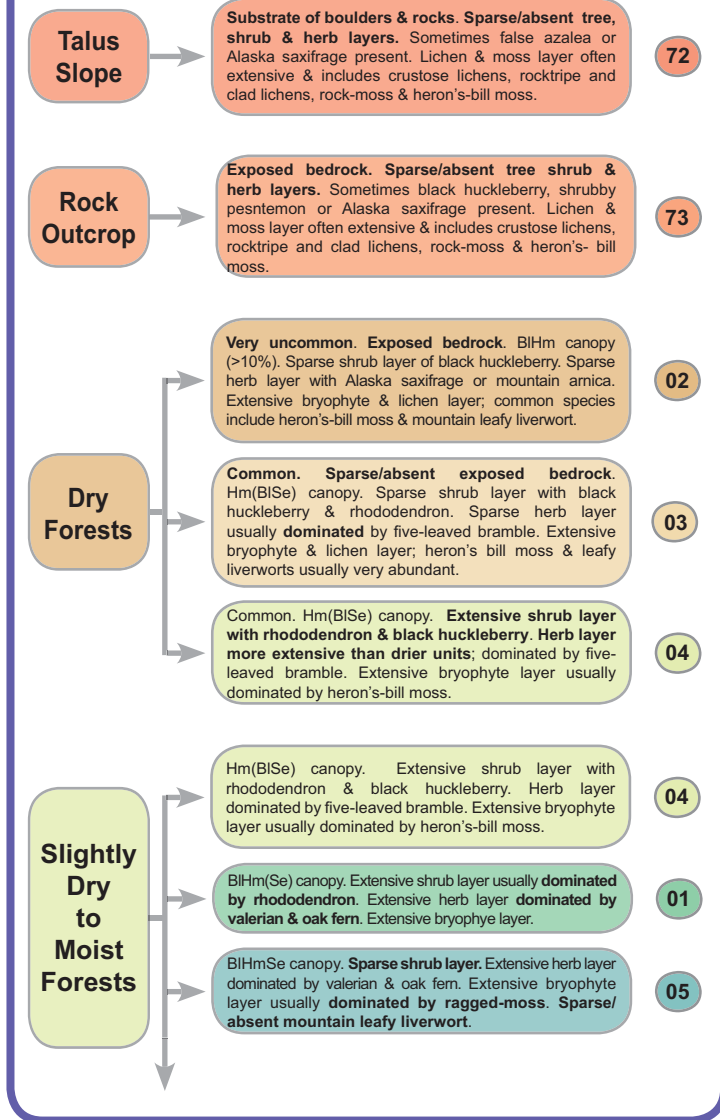
- late succession stands are dominated by Hw and Cw,
- seral stands may contain Fd, Pw, Ep
- lacks white-flowered rhododendron and Sitka valerian

Edatopic Grid

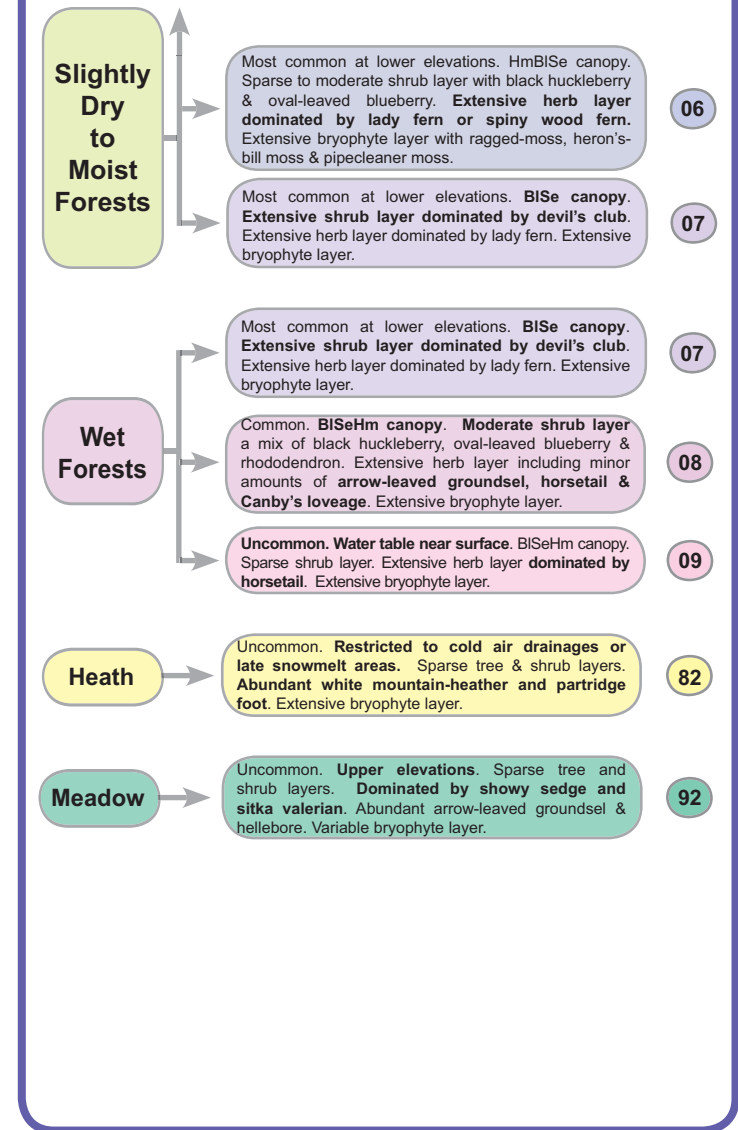


- 72 Rocktrippe lichens — Rock-moss
- 73 Rock-moss — Clad lichens
- 02 BIHm — Huckleberry — Clad lichens
- 03 BIHm — Huckleberry — Heron's-bill moss
- 04 BIHm — Rhododendron — Heron's-bill moss
- 01 BIHm — Rhododendron — Oak fern
- 05 BIHm — Valerian — Oak fern
- 06 BIHm — Lady fern — Spiny wood fern
- 07 BIHm — Devil's club — Lady fern
- 08 BIHm — Arrow-leaved groundsel — Valerian
- 09 BIHm — Horsetail
- 82 White mountain-heather — Partridge-foot
- 92 Valerian — Showy sedge
- Wf01 Water sedge — Beaked sedge
- Wf03 Water sedge — Peat-moss
- Wf04 Barclay's willow — Water sedge — Glow moss
- Wf11 Tufted clubrush — Star moss
- Wf12 Narrow-leaved cotton-grass — Marsh-marigold
- Wf13 Narrow-leaved cotton-grass — Shore sedge
- Wf16 Black alpine sedge — White mtn. marsh-marigold — Glow moss
- Wrm01 Beaked sedge — Water sedge

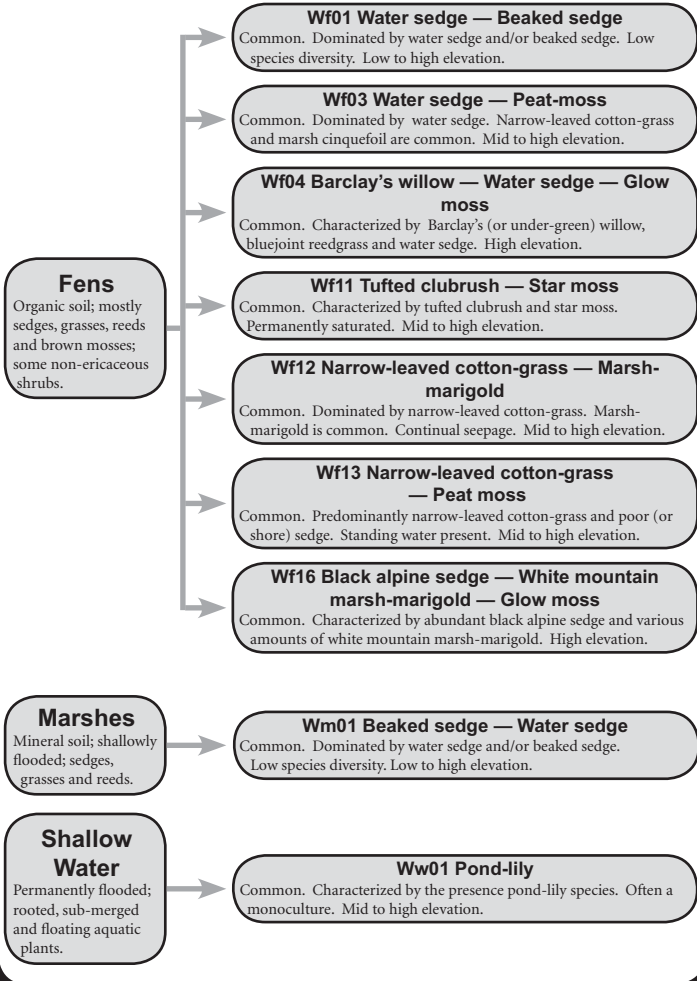
Site Series Flowchart



Site Series Flowchart



Site Unit Flowchart



Vegetation Table

	Forests										Heath	Meadow		
	72	73	02	03	04	01	05	06	07	08			09	82
Trees														
<i>Abies lasiocarpa</i>														
<i>Tsuga mertensiana</i>														
<i>Picea engelmannii</i> x <i>glauca</i>														
<i>Abies lasiocarpa</i>		*												
<i>Tsuga mertensiana</i>														
<i>Picea engelmannii</i> x <i>glauca</i>														
<i>Rhododendron albiflorum</i>														
<i>Vaccinium ovalifolium</i>														
<i>Menziesia ferruginea</i>														
<i>Ribes lacustre</i>														
<i>Opiopanax horridus</i>														
<i>Rubus parviflorus</i>														
<i>Rubus racemosus</i>														
<i>Sorbus sitchensis</i>														
<i>Alnus</i>														
<i>Lonicera involucrata</i>														
<i>Salix sitchensis</i>														
Herbs														
<i>Penstemon fruticosus</i>														
<i>Saxifraga ferruginea</i>														
<i>Thalictrum occidentale</i>														
<i>Luzula</i> sp.														
<i>Osmorhiza</i> sp.														
<i>Viola</i> sp.														
<i>Rubus pedatus</i>														
<i>Mitella</i> sp.														
<i>Clintonia uniflora</i>														
<i>Trifolium trifoliate</i> var. <i>unifoliate</i>														
<i>Gymnocarpium dryopteris</i>														
<i>Streptopus lanceolatus</i>														
<i>Dryopteris expansa</i>														
<i>Valeriana sitchensis</i>														
<i>Arnica latifolia</i>														
<i>Veratrum viride</i>														
<i>Athyrium filix-femina</i>														
<i>Urtica sondata</i>														
<i>Oxalis</i>														
<i>Galium triflorum</i>														
<i>Malanthemum racemosum</i>														

	72	73	02	03	04	01	05	06	07	08	09	82	92
	Herbs												
<i>Streptopus amplexifolius</i>													
<i>Equisetum arvense</i>													
<i>Equisetum sylvaticum</i>													
<i>Senecio triangulans</i>													
<i>Calamagrostis canadensis</i>													
<i>Ligusticum canbyi</i>													
<i>Cassiope mertensiana</i>													
<i>Luetkea pectinata</i>													
<i>Carex spectabilis</i>													
Mosses & Lichens													
<i>Umbilicaria</i> sp.													
<i>Racomitrium</i> sp.													
<i>Cladonia</i> sp.													
<i>Dicranum</i> sp.													
<i>Barbilophozia foerikei</i>													
<i>Pharocodium schreberi</i>													
<i>Platydictyon</i> sp.													
<i>Rhizogonium nudum</i>													
<i>Rhizogonium palustre</i>													
<i>Aulacomnium macrosporum</i>													
<i>Rhizogonium polypodiifolium</i>													
<i>Macchanteia polymorpha</i>													
<i>Sphagnum girgensohnii</i>													
<i>Rhytidiadelphus squarrosus</i>													
<i>Byrrum weigelii</i>													

Frequency of Occurrence:
 Abundance (Average Percent Cover):



Environment Table

Site Units	Forests										Meadow	
	Talus	Rock Outcrop	02	03	04	01	05	06	07	08		09
Soil Moisture Regime	VX X	VX X	VX X	X SX	SX SM	M SM	M SHG	M SHG (M)	SHG HG	SHG HG (SHD)	M SHG	SHG HG
Mesoslope Position	UP MD LW	CR UP MD	CR UP MD	CR UP MD	MD UP LV	MD UP LV	MD LV LW	MD LW LV	MD LW TO LV	DP LV	MD LW TO LV	MD GU DP LV
Slope Gradient	Steep	Variable	Variable	Gentle (Steep)	Variable	Variable	Gentle Level	Gentle Level	Gentle (Level)	Level	Variable	Variable
Aspect	Variable	Neutral Warm	Variable	Neutral Warm	Variable	Variable	Neutral	Neutral	Neutral	Neutral	Neutral (Cool)	Variable
Parent Materials	Cb	R	R	Mv Cv	Mb Cb	Mb (Cb)	Fb Mb Cb	Cb Mb Fb	Fb Mb	Fb	Mb (FG)	Fb (Cb Mb)
Soil Texture Class	Fragmental	Variable	Variable	Coarse Medium	Coarse (Medium)	Medium (Coarse)	Coarse (Medium)	Medium (Coarse)	Medium (Coarse)	Medium Fine	Medium (Coarse)	Variable
Important Features	Rocks & boulders	Bedrock 0-20 cm	Bedrock 0-20 cm	Bedrock 20-100 cm					Seepage	Water table 10-40 cm	Cold air drainage	Some seepage
Successional Stage		MC	MC	MC	MC	MC	MC	MC	MC	MC		
Occurrence	Uncommon	Uncommon	Uncommon	Common	Common	Dominant	Common	Common ¹	Common	Uncommon	Uncommon ²	Uncommon ³

¹Most common at lower elevations.
²Cold air drainage, late snow melt areas, most common at upper elevations.
³Most common at higher elevations.

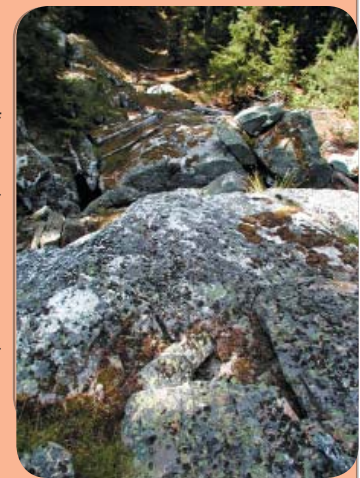
72 Rocktripe lichens — Clad lichens

Exposed talus slopes are uncommon. They typically occur on steep upper, middle and lower slopes. The tree, shrub and herb layers are very sparse or absent. Occasionally, individual vascular plants such as false azalea or Alaska saxifrage occur in small pockets of humus or soil. The lichen and moss layer is usually extensive. Crustose lichens cover much of the exposed rock in addition to patches of rocktripe and clad lichens, rock-moss and heron's-bill moss.



73 Rock-moss — Clad lichens

Non-forested rock outcrops are uncommon. They occur on crests and steep upper and middle slopes. Soils are very shallow and much of the substrate is composed of exposed bedrock. The tree, shrub and herb layers are very sparse or absent. Occasionally, vascular species including black huckleberry, shrubby penstemon and Alaska saxifrage may become established on deeper pockets of humus and soil. Crustose lichens typically dominate the moss and lichen layer. Other common species include rocktripe lichens, rock-moss, clad lichens and heron's-bill moss.

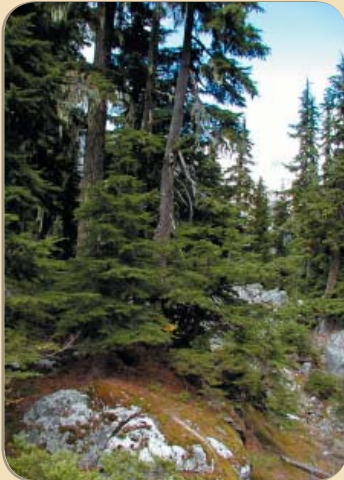


02 BIHm — Black huckleberry — Clad lichen

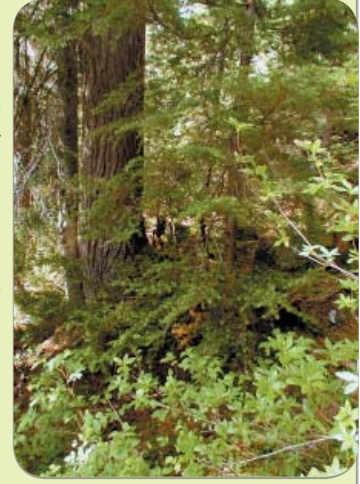
This site series is uncommon and represents forested rock outcrops. These sites are usually found on crests and steep upper and middle slopes. Soils are very shallow and much of the substrate is composed of exposed bedrock. BI and Hm often occur in small patches or as scattered individuals (>10% cover) where soils are sufficiently deep. The sparse shrub layer is usually represented by black huckleberry and, occasionally, scattered stunted white-flowered rhododendron. The herb layer is very sparse; common species include Alaska saxifrage. The bryophyte and lichen layer is usually extensive. Heron's-bill moss and mountain leafy liverwort are common species.

**03 BIHm — Huckleberry — Heron's-bill moss**

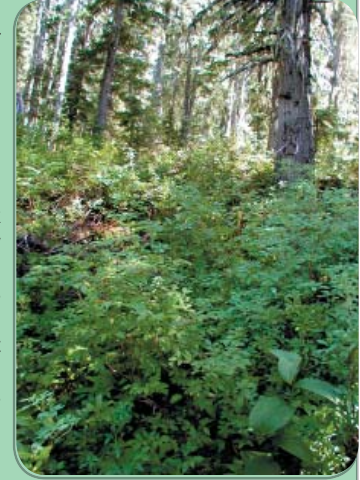
This is a common site series. Like the 02 unit, the 03 unit typically occurs on crests and steep upper slopes. It differs in that exposed bedrock is absent or much more limited in extent compared to the 02 unit. Mountain hemlock often dominates the open forest canopy and regeneration layers. BI and Se are usually present in minor amounts. The shrub layer is similar to that of the 02 unit and includes black huckleberry. White-flowered rhododendron is usually more abundant than that found on the 02 unit. The herb layer is sparse; five-leaved bramble is the most common and abundant species. Lichens are absent except for clad lichens. Bryophytes often form an extensive cover.

**04 BIHm — Rhododendron — Heron's-bill moss**

The 04 site series is common and occurs on gentle or steep middle and upper slopes on deep soils. Both the moderate tree and regeneration layers are usually dominated by mountain hemlock with a minor component of BI and Se. The shrub layer differs from drier site series in that it is much more extensive and is dominated by a mixture of white-flowered rhododendron and black huckleberry. Oval-leaved blueberry and false azalea are sometimes present in minor amounts. The herb layer is typically much more extensive than on drier units. Five-leaved bramble is the most common and abundant species. The extensive bryophyte layer is usually dominated by heron's-bill moss.

**01 BIHm — Rhododendron — Oak fern**

Zonal sites are found most often on gentle middle slopes but may also occur on level areas and steep upper slopes. The forest canopy and regeneration layer is usually dominated by BI or Hm with a minor component of Se. The shrub layer is similar to that of the 04 unit but white-flowered rhododendron is usually more abundant than black huckleberry. Oval-leaved blueberry and false azalea are often present in minor amounts. The herb layer differs from the 04 unit in that oak fern and Sitka valerian are much more abundant than five-leaved bramble and dominate the herb layer. Other abundant species include rosy twistedstalk, one-leaved foamflower and Indian hellebore. The bryophyte layer is similar to that of the 04 unit and is usually dominated by ragged-moss and heron's-bill moss.



05 BIHm — Valerian — Oak fern

This site series is common and typically found on gentle middle and lower slopes and level areas. The forest canopy is composed of BI, Hm and Se of which any species may be dominant. The regeneration layer is dominated by BI or Hm. The shrub layer differs from the 01 in that shrubs are sparse. Black huckleberry is the most common species although sparse patches of white-flowered rhododendron, false azalea, oval-leaved blueberry and black gooseberry are often present. The herb layer is very similar to that of the 01 unit and is dominated by oak fern and Sitka valerian. The bryophyte layer is often extensive and is usually dominated by ragged-moss. Unlike drier units, mountain leafy liverwort is rarely present.

**06 BIHm — Lady fern — Spiny wood fern**

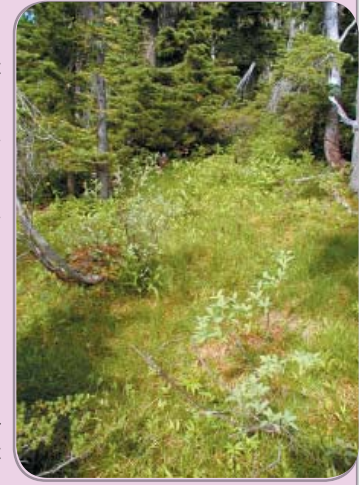
The 06 unit is common and occurs most frequently at lower elevations on gentle middle and lower slopes and level areas. The forest canopy is composed of BI, Hm and Se of which any species may be dominant. The regeneration layer is dominated by BI or Hm. The shrub layer is sparse to moderate and is dominated by black huckleberry and oval-leaved blueberry. Small amounts of rhododendron, false azalea, black gooseberry or devil's club may be present. The extensive herb layer similar to the 01 and 05 units but lady fern or spiny wood fern are abundant. The bryophyte layer is dominated by heron's-bill moss, ragged-moss, round-leaved leafy moss and pipecleaner moss.

**07 BIHm — Devil's club — Lady fern**

The 07 unit is most common at lower elevations on gentle middle and lower slopes where seepage is present. The forest canopy and sparse regeneration layer is dominated BI and Se. The shrub layer is moderate to extensive and is dominated by the indicator species, devil's club. Thimbleberry, false azalea, black huckleberry and oval-leaved blueberry may also be abundant. Rhododendron is rarely present. The herb layer is similar to the 06 unit and is dominated by lady fern. Other common and abundant species include spiny wood fern, oak fern, Sitka valerian, one-leaved foamflower and rosy twistedstalk. The extensive moss layer is usually dominated by ragged-moss and round-leaved leafy moss.

**08 BIHm — Arrow-leaved groundsel — Valerian**

The 08 unit is common and is found on gentle middle, lower and toe slopes and level areas. The moderate forest canopy and sparse regeneration layer is a mix of BI, Se and Hm. The moderate shrub layer is usually dominated by black huckleberry and oval-leaved blueberry. White-flowered rhododendron and black gooseberry are present in small amounts. The extensive herb layer contains a large number of species including those found on the 06 and 07 units. Other common species present in small amounts include arrow-leaved groundsel, common horsetail and Canby's lovage. The bryophyte layer is extensive and variable. The most common and abundant species are ragged-moss and round-leaved leafy moss.

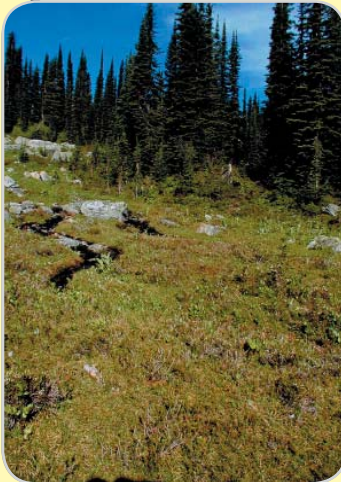


09 BIHm — Horsetail

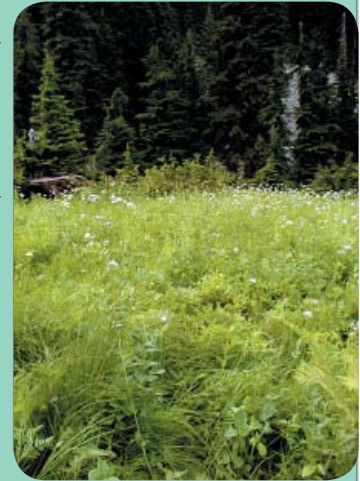
This site unit is uncommon and occurs on level areas and depressions where the water table is near the soil surface. The forest canopy is dominated by a mix of BI, Se and Hm. Conifer regeneration is sparse to absent. The shrub layer is sparse; common species may include black twinberry and black gooseberry. Unlike other site series the extensive herb layer is dominated by common and/or wood horsetails. Other common species present in minor amounts include those found in the 08 site unit. The bryophyte layer is usually extensive; common species include ragged-moss and large-leaved leafy moss. Peat-moss and green-tongue liverwort may be abundant.

**82 White mountain-heather — Partridge-foot**

This heath unit is uncommon and is restricted to cold air drainages or late snowmelt areas and is often at higher elevations. It occurs most often on mesic and subhygric steep or gentle middle, lower and toe slopes and level areas. Stunted BI and Hm may be present. The shrub layer is sparse. The herb layer is dominated by white mountain-heather and partridge-foot. The bryophyte layer is usually extensive and is often dominated by heron's-bill moss and mountain leafy liverwort.

**92 Showy sedge — Valerian**

The 92 meadow unit is uncommon and is found most often at higher elevations on middle slopes, gullies, depressions and level areas. It is wetter than the 82 heath unit. Trees and shrubs are sparse to absent. The herb layer is dominated by showy sedge and Sitka valerian. Other common species include arrow-leaved groundsel, Indian hellebore, mitrewort, violets, lady fern, oak fern, rosy twistedstalk, wood-rush and mountain arnica. The bryophyte layer is variable.



ESSFvcw

VERY WET COLD ENGELMANN SPRUCE — SUBALPINE FIR WOODLAND SUBZONE

Distribution: The ESSFvcw represents the southern range of the previously described ESSFv Lloyd et al. (1990). It occupies an elevational band between the ESSFvc and the ESSFvcp. Its geographic distribution is confined by the Monashee Mountains. It extends north of the Trans-Canada Highway from the Perry River to the Rogers Pass. From west to east, this includes the Perry, Ratchford, and upper Seymour Rivers, side drainages of the Columbia River between Revelstoke and the Mica dam, including; Downie, Goldstream and Bigmouth Creeks.

Elevational Range: Generally, the lower elevation limit on north aspects is 1650-1700 m and 1700-1750 m on south aspects. The upper elevation is defined by the ESSF parkland boundary that occurs at 1900-1950 m on north aspects and 1950-2000 m on south aspects.

Climate: The ESSF zone is characterized by long, cold winters with a deep snowpack and short, cool summers. It is estimated that mean annual precipitation ranges from 2000 –2500 mm and maximum snow depths exceeds 3.5 m. Late snowmelt and a very short frost-free period contribute to a short growing season. As a result, tree regeneration is slow to establish and often widely dispersed or somewhat clumpy. We speculate that early fall snow accumulations prevents deep ground freezing and contributes to the successful establishment of Hm in this subzone.

Forest Cover: The majority of stands are dominated by Bl with varying amounts of Hm and Se. At the extreme limits of the subzone Hm is restricted to isolated individual stems located in the lower tree layer or the shrub layer. Se occurs more commonly on steep south aspects that are subject to less intense summer frosts, faster snow melt and a slightly longer growing season. Hm is most abundant on north aspects at the limits of its range. Pl and Pa rarely occur and are generally restricted to drier exposed ridges. Stands are generally more than 200 years old, have an open structure and average 10-13 meters in height. The wet climate and open stand structure results in fire return intervals that likely exceed 250–500 years. Balsam bark beetle and root and stem rots ensure average stands ages are less than 350 years.

ESSFvcw - 1

ESSFvcw

Zonal Vegetation and Soils: Semi-open climax stands of Bl, Hm and Se dominate much of the ESSFvcw landscape. Tree regeneration is primarily Bl and to a lesser extent Hm. The shrub layer is variable in development but commonly includes black huckleberry and white-flowered rhododendron. The moderately well developed herb layer includes Sitka valerian, mountain arnica, wood-rush, mountain hairgrass and variable cover of partridge-foot and mountain-heathers. The moss layer is well developed and dominated by common and mountain leafy liverworts. Soils are Humo-Ferric Podzols or Ferro-Humic Podzols with a shallow Mor humus form. The abundance of heather species and partridge-foot increases significantly in areas subject to cold air drainage.

Adjacent Biogeoclimatic Subzones: The ESSFvcw occupies an elevational band between the ESSFvc and the ESSFvcp. It adjoins the ESSFwcv at similar elevations.



ESSFvcw- 2

Distinguishing adjacent Biogeoclimatic units from the ESSFvcw

On zonal sites:

ESSFvc and ESSFvc2

- mature stands are taller and less open
- oak fern, lady fern, rosy twistedstalk and false azalea are common
- lack partridge-foot and mountain-heathers

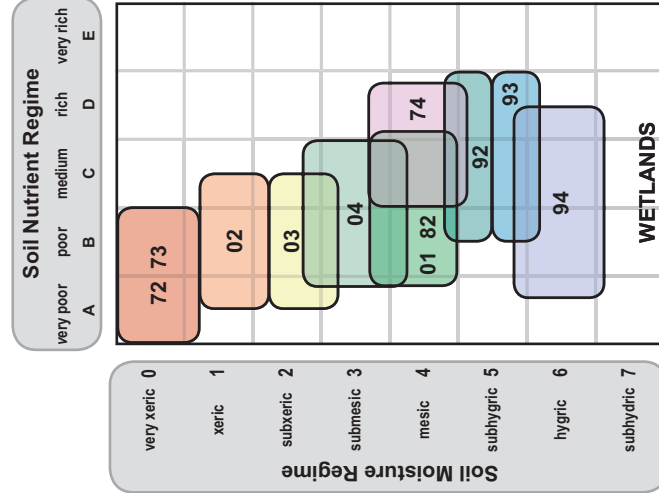
ESSFvcw

- lacks Hm
- occurs elevationally above the ESSFvc2, wc3, wc4

ESSFvcp

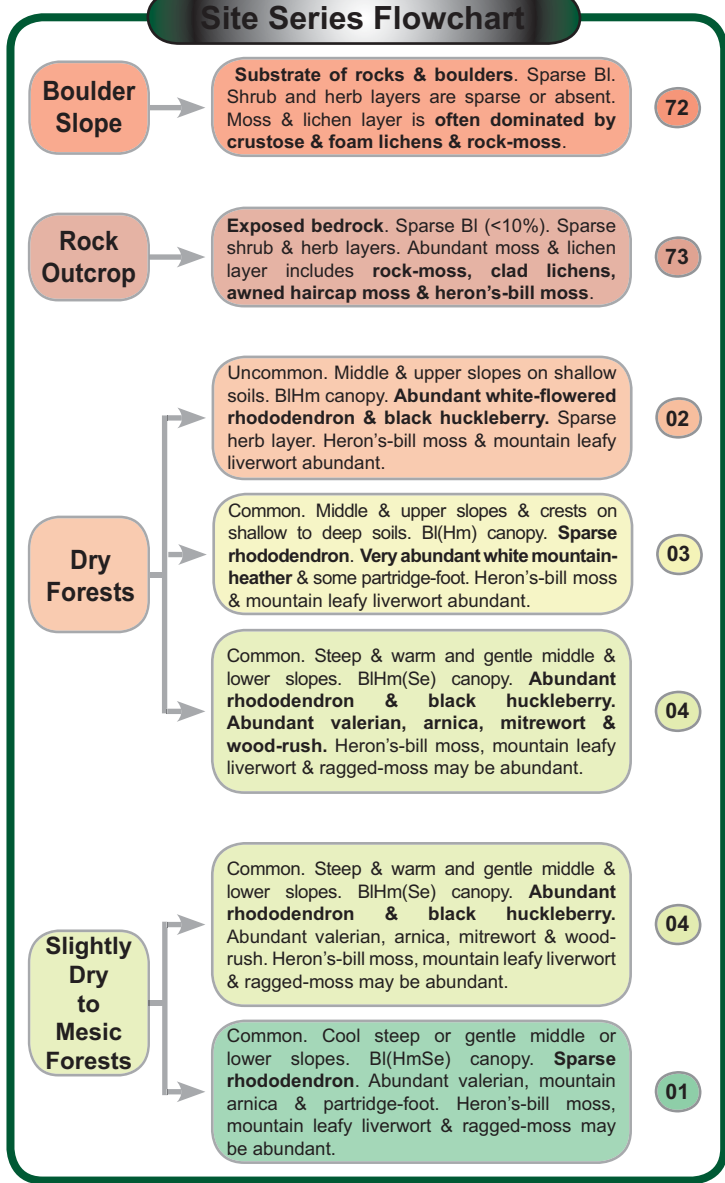
- has a clumpy discontinuous forest canopy
- herb rich meadows and heather dominated ecosystems are common, widespread and not restricted to areas subject to cold air drainage

Edatopic Grid

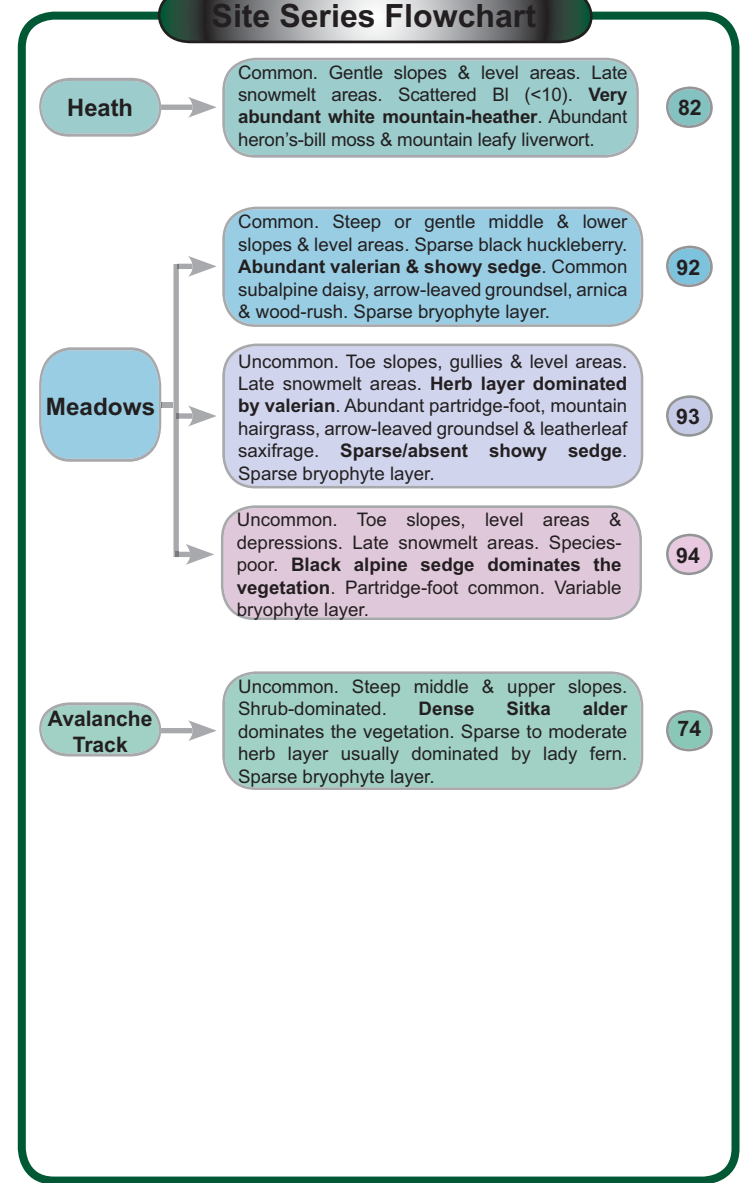


- 72 Rock-moss
- 73 Huckleberry — Rock-moss
- 02 BIHm — Rhododendron — Hemon's-bill moss
- 03 BIHm — White mountain-heather — Partridge-foot
- 04 BIHm — Rhododendron — Valerian
- 01 BIHm — Huckleberry — Valerian
- 82 White mountain-heather — Partridge-foot
- 92 Valerian — Showy sedge
- 93 Valerian — Leatherleaf saxifrage
- 94 Alder — Lady fern
- 74 Barclay's willow — Water sedge — Glow moss
- WF04 Narrow-leaved cotton-grass — Marsh-marigold
- WF12 Barclay's willow — Black alpine sedge
- WF15 Black alpine sedge — White mtn. marsh-marigold — Glow moss
- WF16

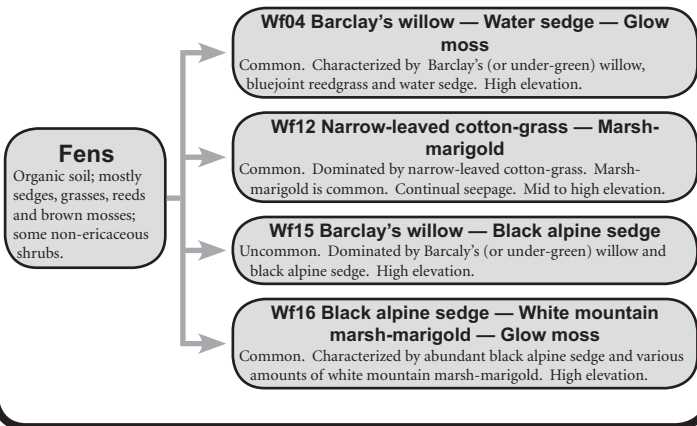
Site Series Flowchart



Site Series Flowchart



Site Unit Flowchart



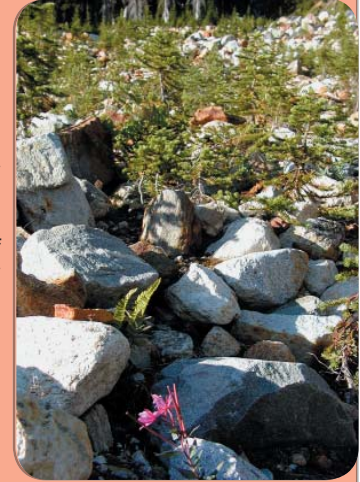
Environment Table

Site Units	Rock Outcrop			Forests			Heath		Meadows		
	72	73	77	02	03	04	01	82	92	93	94
Soil Moisture Regime	VX (X)	VX (X)		X SX	SX SM	M (SM SX)	M (SM)	SM M	M SHG	SHG (HG)	M SHG (SM)
Mesoslope Position	MD UP	CR UP		UP MD UPCR	UP CR MD	MD LW	MD LW	LV LW	MD LW LV	TO LV GU	LV DP (TO)
Slope Gradient	Steep	Variable		Variable	Variable	Variable	Variable	Variable	Variable	Level	Level
Aspect	Variable	Neutral (Warm)		Warm Neutral	Variable	Warm Neutral	Neutral (Cool)	Neutral (Cool)	Neutral Warm	Neutral	Neutral
Parent Materials	Cb	R		Mv Cv (Mb Cb)	Mb Cb (Mv Cv)	Cb Mb	Mb (Cb)	Mb	Cb Mb Fb	Fb (Mb Cb)	Fb (Mb Mb)
Soil Texture Class	Fragmental	Variable		Coarse Medium	Coarse Medium	Coarse Medium	Medium (Coarse)	Variable	Medium (Fine)	Medium (Fine)	Fine Medium (Fragmental)
Important Features	Rocks & boulders	Bedrock 0-20 cm		Bedrock 20-100 cm	Some bedrock 20-100 cm			Late snow melt	Some seepage	Water table 0-50 cm	Late snow melt
Successional Stage	Common	Uncommon		MC	MC	MC	MC	Common ²	Common	Uncommon	Uncommon ³
Occurrence	Common	Uncommon		Common	Common	Common	Dominant	Common ²	Common	Uncommon	Uncommon

¹ Not true talus but more felsic material, consisting of rubby material with a 10-25% soils matrix.
² Cold air drainage, late snow melt areas, more common at upper elevations. ³ More common at higher elevations and in cirque basins.

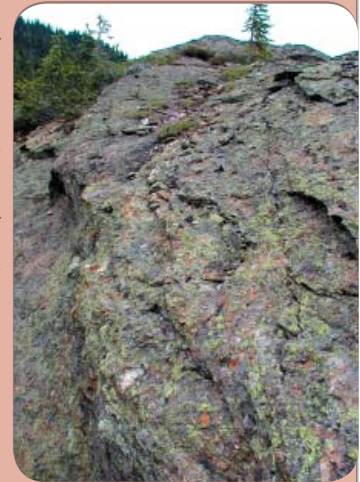
72 Rock-moss

The 72 unit is common and represents boulder-dominated steep middle and upper slopes. Trees are absent except for patches of stunted Bl. The shrub and herb layers are sparse or absent. The most common herbs are parsley fern, northern holly fern and alpine bluegrass. The moss and lichen layer is often extensive; crustose lichens and small patches of foam lichens cover much of the rocky substrate. Rock-moss typically forms extensive patches.



73 Huckleberry — Rock-moss

This is an uncommon unit that occurs on rock outcrops that typically occur on crests and upper slopes. Hm, and to a lesser extent, Bl occur as stunted patches on shallow soil. The shrub layer is sparse and black huckleberry is the most common and abundant species. The herb layer is also sparse; white mountain-heather is the most common species. The moss and lichen layer is usually moderate to abundant; rock-moss, clad and rocktripe lichens, awned haircap moss and heron's-bill moss are the most common species.



02 BIHm — Rhododendron — Heron's-bill moss

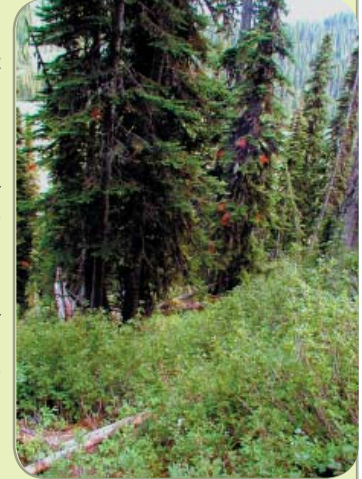
The 02 unit is common and occurs on middle and upper slopes and crests on shallow soils. The forest canopy is very open and is composed of BI and Hm. Hm often dominates the regeneration layer. The shrub layer is typically dense and is dominated by white-flowered rhododendron and black huckleberry. The herb layer is very sparse; partridge-foot is sometimes present in trace amounts. The bryophyte and lichen layer is often dominated by heron's-bill moss. Mountain leafy liverwort and clad lichens are often present.

**03 BIHm — White mountain-heather — Partridge-foot**

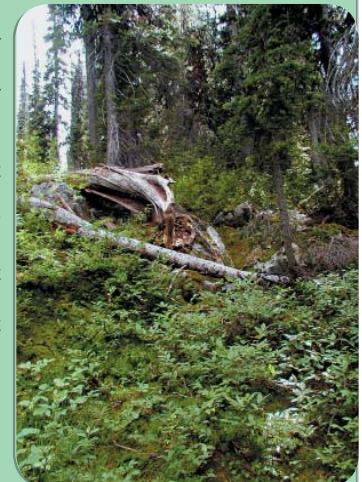
The 03 unit is common and occurs on middle and upper slopes and crests on shallow to deep soils. The tree layer is very patchy and is usually represented by dense clumps dominated by BI with a minor component of Hm. The same species occur in the understory. Black huckleberry and white-flowered rhododendron occupy the shrub layer but unlike the 02 unit, rhododendron is much less abundant. The herb layer also differs in that white mountain-heather is very abundant, particularly in open areas. Partridge-foot is also more common and abundant. Other herbs may also be present in minor amounts and include pink mountain-heather, mitrewort, mountain hairgrass and Sitka valerian. The extensive bryophyte layer is dominated by heron's-bill moss and mountain leafy liverwort.

**04 BIHm — Rhododendron — Valerian**

This is a common unit that occurs most often on warm and neutral middle and lower slopes. The forest canopy is usually dominated by BI and Hm with a minor component of Se. The sparse to moderate regeneration layer is composed of BI and, to a lesser extent, Hm. The shrub layer is similar to the 02 unit in that white-flowered rhododendron and, to a lesser extent, black huckleberry are very abundant. Unlike the 02 and 03 units, the moderate herb layer is dominated by Sitka valerian, mountain arnica, mitrewort and wood-rush. Other common species include Indian hellebore, mountain hairgrass and one-leaved foamflower. The bryophyte layer is similar to the 02 and 03 units except ragged-moss is often present.

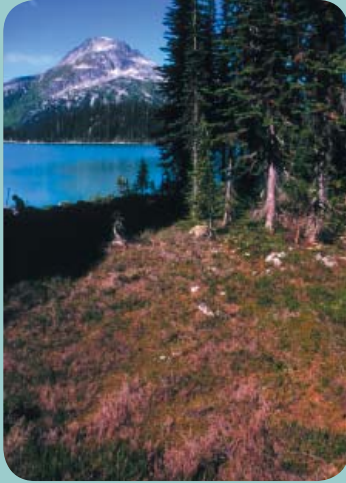
**01 BIHm — Huckleberry — Valerian**

The zonal site series is found on a neutral and cool middle and lower slopes. It is typically dominated by BI and sometimes has a minor component of Hm. The regeneration layer is composed of BI and Hm. The shrub layer differs from the 04 unit in that white-flowered rhododendron is very sparse; black huckleberry is the dominant species. The herb layer is similar to the 04 unit and is usually dominated by Sitka valerian, partridge-foot, mitrewort and mountain arnica. Small patches of white mountain-heather are often present. The bryophyte layer is similar to the 04 unit.

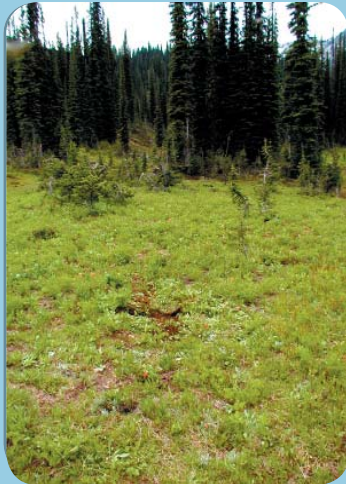


82 White mountain-heather — Partridge-foot

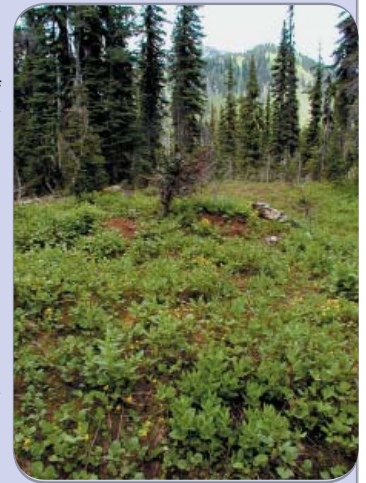
This heath community is common and is often found in late snowmelt areas on gentle lower slopes and level areas. It is very similar to the forested 03 unit in that white mountain-heather is a very common and abundant but differs in that trees and shrubs are absent except for scattered individuals of Bl, Hm and black huckleberry. Partridge-foot is also abundant. Other herbs which may be present in trace amounts include mountain hairgrass, wood-rush and Indian hellebore. The extensive bryophyte layer is dominated by heron's-bill moss and mountain leafy liverwort.

**92 Valerian — Showy sedge**

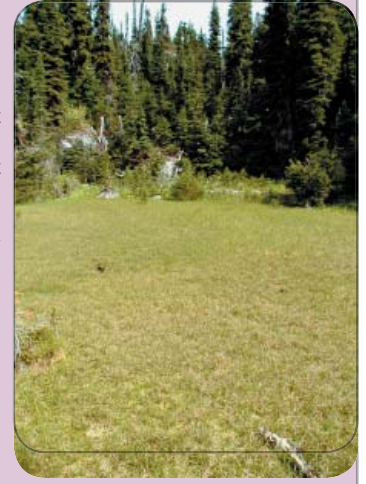
The 92 unit is common and is often found on gentle or steep middle and lower slopes and level areas on mesic and subhygric sites. Bl may be present as stunted individuals. Black huckleberry is the only common shrub and occurs in sparse scattered patches. The extensive herb layer is typically dominated by Sitka valerian and showy sedge. Other abundant species include subalpine daisy, arrow-leaved groundsel, mountain arnica and wood-rush. Bryophytes are largely absent.

**93 Valerian — Leatherleaf saxifrage**

These meadows are uncommon and are most often found on toe slopes, gullies and level areas adjacent to streams. Scattered individuals of Se, Bl, Hm or black huckleberry may be present. The extensive herb layer is usually dominated by Sitka valerian. Other abundant species include partridge-foot, mountain hairgrass, arrow-leaved groundsel and leatherleaf saxifrage. Species typically found in minor amounts include Indian hellebore, violets, mitrewort, western pasque-flower and white and pink mountain-heathers. The sparse bryophyte layer may include glow moss.

**94 Alpine sedge**

This is an uncommon unit and occurs on toe slopes, level areas and in depressions in late snowmelt areas. Trees and shrubs are largely absent. Black alpine sedge is very abundant and covers much of the substrate. Partridge-foot is moderately abundant but other herbaceous species are usually absent. The bryophyte layer is variable and mountain leafy liverwort, hook-moss and glow moss are the most common species.



74 Alder — Lady fern

Avalanche tracks are uncommon. They are typically found on middle and upper steep slopes. The shrub layer is dominated by a dense cover of Sitka alder. The herb layer is sparse to moderate and the most abundant species is usually lady fern. Other common species include mitrewort, Sitka valerian, sweet-cicely, violets and showy sedge. Bryophytes are sparse to absent.

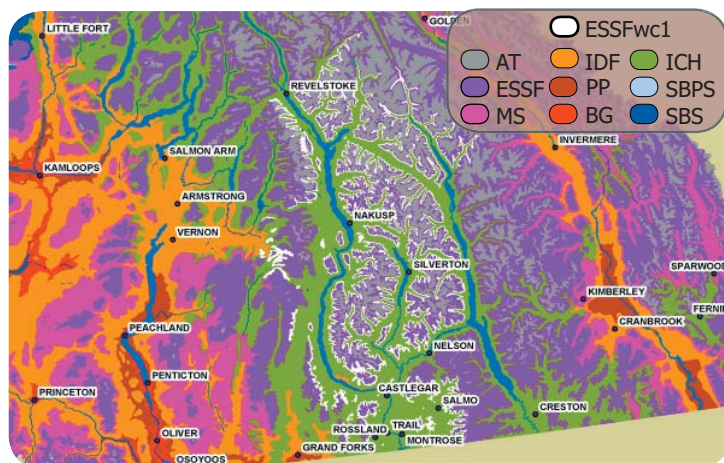


ESSFwc1

COLUMBIA WET COLD ENGELMANN SPRUCE — SUBALPINE FIR VARIANT

Distribution: The ESSFwc1 occurs on mid to upper slopes of the Monash-ee and Selkirk Mountains, from the US border north to the Trans-Canada Highway between Revelstoke and Rogers Pass. It primarily occurs west of Kootenay Lake to the Shuswap River, east of Cherryville. It is part of the interior "wetbelt" and lies above the ICH and below the ESSFwc4 in the Arrow Lake and Slocan Lake drainage basins and all creeks draining into the west side of Kootenay Lake north of Nelson.

Elevational Range: At drier geographic extremes, it lies above the ICHmw2 at approximately 1450 m on north aspects and 1500m on south aspects. Above the ICHwk1 and ICHvk1 the lower limit drops to 1350-1400 on north aspects and 1400-1450 on south aspects. The ESSFwc1 occupies an elevation band of 75 to 150 m across most of its range. It generally abuts the ESSFwc4 at about 1550-1600m on north aspects and 1600-1650 on south aspects.



ESSFwc1 - 1

Climate: The ESSF zone is characterized by long, cold winters with a deep snowpack and short, cool summers. There is no climate data for the ESSFwc1, however, we estimate the mean annual precipitation is 800-1200mm and maximum snow depths likely range from 1.5-2 m. Growing season moisture deficits are likely restricted to subxeric and xeric sites, particularly those on steep southern exposures.

Forest Cover: This variant may be viewed as representing the transition between the ICH and ESSF, particularly where the distance between the upper and lower elevation range of the ESSFwc1 is less than 75-100 meters. Se and BI dominate stands, with minor inclusions of Hw and Cw. At drier climatic extremes of this variant, stands on southern exposures often contain a significant amount of PI and occasionally Fd at lower elevations. Hw, Cw and BI dominate the regeneration layer. This variant contains some of the most productive sites in the ESSF zone. The site index of Se commonly exceeds 20m in 50 years. Fire return intervals vary from 140-250 years at the drier extremes of the subzone to 250-500 years at the wet extremes.

Zonal Vegetation and Soils: Climax stands are dominated by Se and BI with BI, Cw and Hw dominating the regeneration layers. Generally Cw and Hw are over-topped by Se and BI. The shrub layer is moderately well developed and contains white-flowered rhododendron, black huckleberry, Utah honeysuckle and oval-leaved blueberry. The herb layer is typically well developed and contains oak fern, five-leaved bramble, queen's cup and one-leaved foamflower. The moss layer is dominated by red-stemmed feather moss, knight's plume, ragged-moss and pipecleaner moss. A common feature of this variant is the dominance of Sitka alder on road-sides and recently disturbed areas. It is limited to a minor understory component in climax stands. Soils are characteristically Humo-Ferric Podzols with a 5-10cm deep Mor humus form.

Adjacent Biogeoclimatic Subzones: The ESSFwc1 generally occurs above the ICHmw2 and below the ESSFwc4. At the wetter extremes of the variant it occurs above the ICHwk1 and ICHvk1 and below the ESSFvc and ESSFwm. At the drier extremes, it can occur above the ICHmk1.

ESSFwc1 - 2

Distinguishing adjacent Biogeoclimatic units from the ESSFwc1

On zonal sites:

ICHmw2 and ICHmk1

- Se and Bl do not dominate stands
- white-flowered rhododendron is absent
- Lw, Fd, Cw, and Ep are more abundant
- western yew, baldhip rose, wild sarsaparilla, prince's pine, step moss and electrified cat's tail moss are more common

ICHwk1 and ICHvk

- Se and Bl do not dominate stands
- white-flowered rhododendron absent

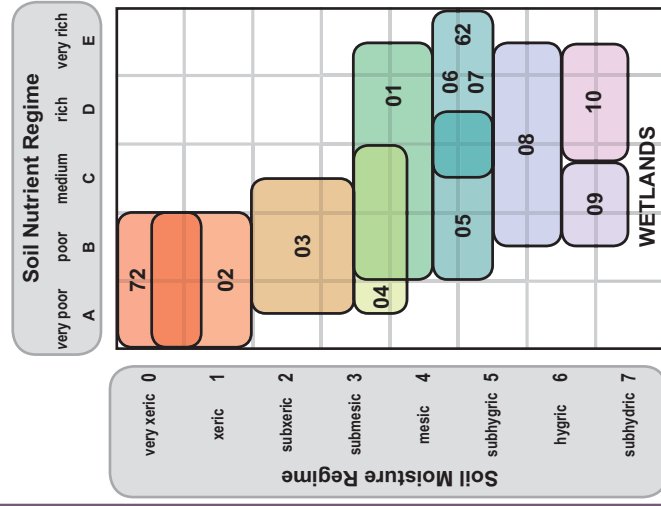
ESSFwc4 and ESSFvc

- the moss layer has more leafy liverworts
- Cw and Hw are absent
- queen's cup and false Solomon's seal are sparse to absent
- white-flowered rhododendron and Sitka valerian are more common

ESSFwm

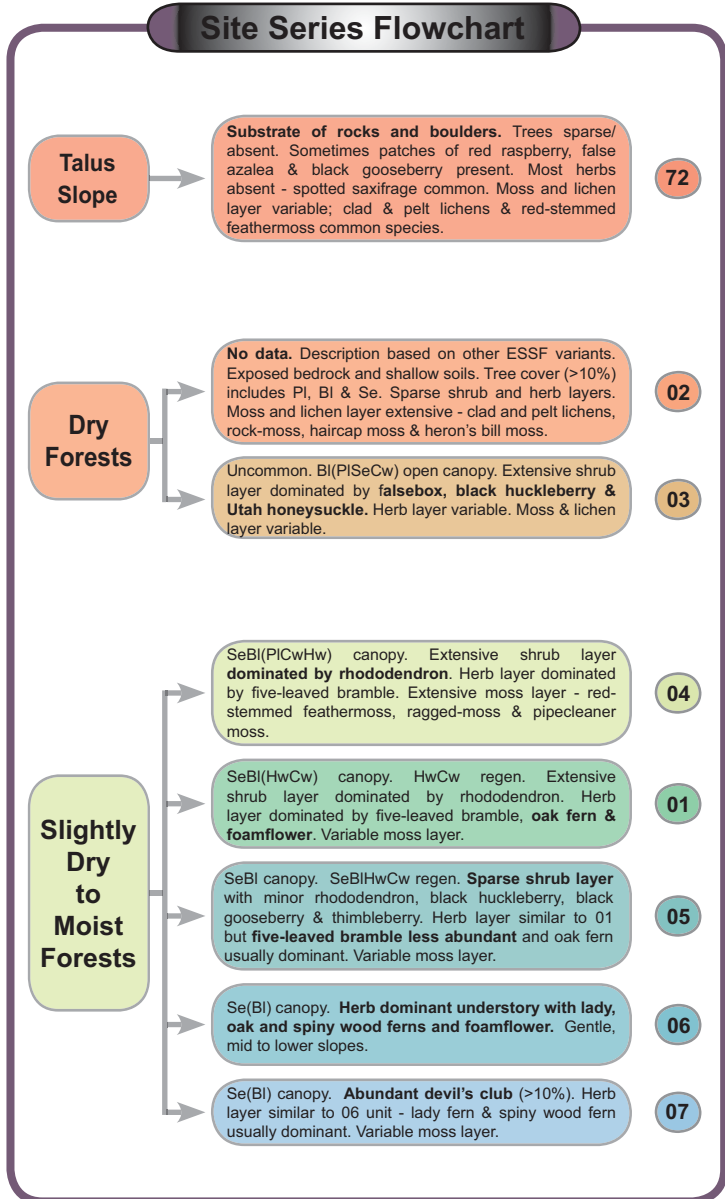
- false azalea present
- Cw and Hw absent

Edatopic Grid

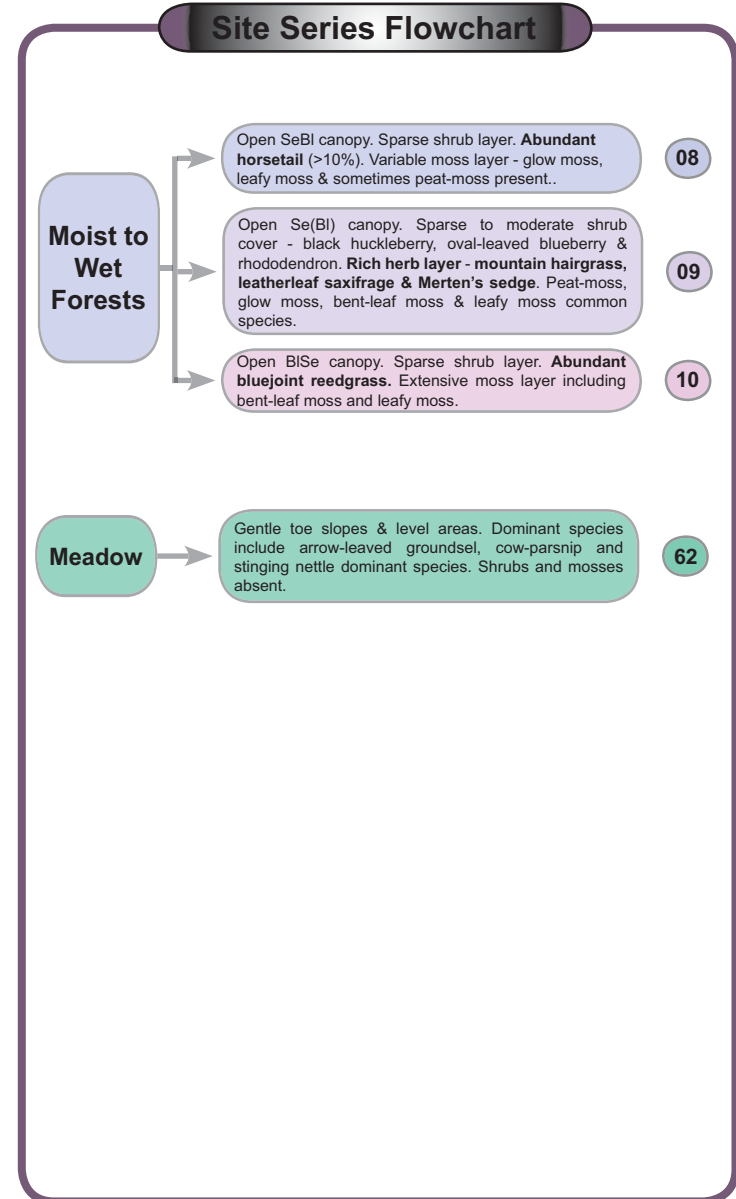


- 72 Red raspberry — Feathermoss
- 02 P|Bl — Rock-moss — Clad lichens
- 03 P|Bl — Huckleberry — Haircap moss
- 04 Bl — Rhododendron — Five-leaved bramble
- 01 Bl — Rhododendron — Oak fern
- 05 Bl — Oak fern — Foamflower
- 06 Bl — Lady fern — Spiny wood fern
- 07 Bl — Devil's club — Lady fern
- 08 Bl — Horsetail
- 09 Bl — Mountain hairgrass — Leatherleaf saxifrage
- 10 Bl — Bluejoint
- 62 Arrow-leaved groundsel — Cow parsnip
- Wf01 Water sedge — Beaked sedge
- Wf03 Water sedge — Peat-moss
- Wf04 Barclay's willow — Water sedge — Glow moss
- Wf11 Tufted clubrush — Star moss
- Wf12 Narrow-leaved cotton-grass — Marsh-marigold
- Wf13 Narrow-leaved cotton-grass — Shore sedge
- Wm01 Beaked sedge — Water sedge
- Ww01 Pond-illy

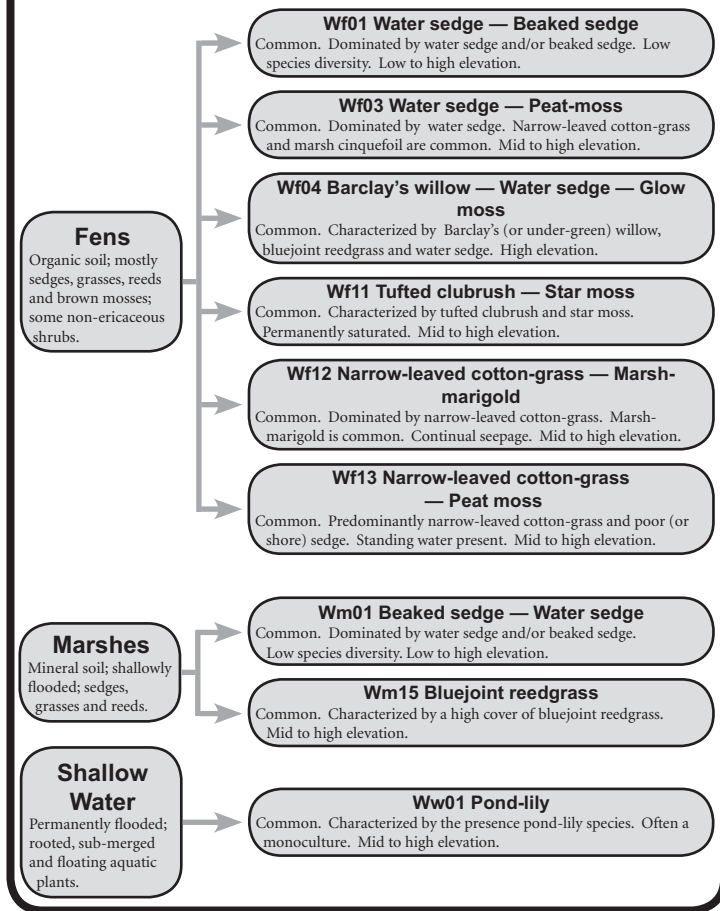
Site Series Flowchart



Site Series Flowchart



Site Unit Flowchart



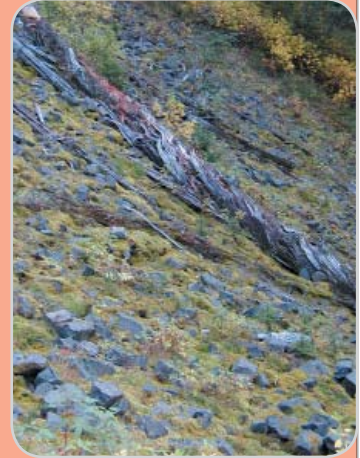
Environment Table

Site Units	Forests										Meadow	
	72	02*	03	04	01	05	06	07	08	09	10	62
Talus												
Rock Outcrop												
Soil Moisture Regime	VX X	X VX	SX SM	M SM	M SM	SHG (M)	SHG (M)	SHG M	HG SHG	SHD HG	HG SHD	SHG M
Mesotope Position	MD UP	CR UP	UP MD	MD UP	MD LW	LW TO	MD LW	TO	TO LV	LV DP	LV DP	TO LV
Slope Gradient	Steep	Gentle	Steep (Gentle)	Steep (Gentle Level)	Steep (Level Gentle)	Gentle (Steep)	Gentle	Level	Level	Level	Level	Level
Aspect	Cool	Neutral	Warm (Neutral)	Neutral (Cool)	Neutral (Cool)	Neutral (Cool)	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Parent Materials	Cb	Mv Cv R	Mb Cb	Mb (Cb)	Mb (Fb Cb)	Mb (Cb)	FG Mb	Fb Mb	Fb	Ov/Fb	Fb	Mb Fb
Soil Texture Class	Fragmental	Fragmental Coarse	Coarse	Medium (Coarse)	Medium (Coarse)	Coarse (Medium)	Coarse (Medium)	Coarse Medium	Medium Fine	Medium Fine	Medium Fine	Medium Fine
Important Features	Rocks & boulders	Bedrock 0-50 cm						Seepage	Water table 0-20cm	Water table 0-20cm	Water table 0-20cm	Seepage
Successional Stage		MS	MS MC	MC-	MC	MC	MC	MC	MC	MC	MC	
Occurrence	Scarce	Scarce	Uncommon	Common	Very Common	Common	Common	Uncommon	Uncommon	Uncommon	Uncommon	Scarce

02* - No available data; values are hypothetical and are based on similar sites in other BCC units

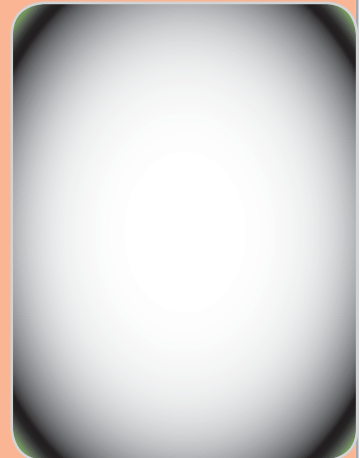
72 Red raspberry — Feathermoss

The 72 unit is very uncommon. It occurs on talus slopes and is found on steep, middle and upper slopes. Trees are usually absent although scattered individuals sometimes occur on pockets of humus and soil. Red raspberry, false azalea and black gooseberry sometimes form small patches. Herbs are largely absent although spotted saxifrage is often present. The moss and lichen layer is variable; clad and pelt lichens, red-stemmed feathermoss and knight's plume are common species. Mosses may be particularly abundant on shaded microsites.



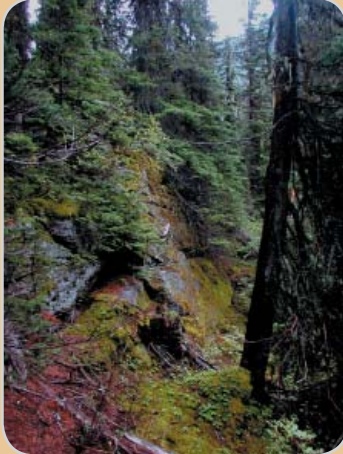
02 PIBI — Rock-moss — Clad lichens

No data have been collected for this site series. However, this unit does exist and we have provided the following description based on observations of this plant association in other ESSF variants. The 02 unit occurs very infrequently on upper slopes and crests where soils are very shallow and exposed bedrock is present. PI, BI and Se occur as scattered individuals where soils are sufficiently deep. The shrub layer is very sparse and typically consists of falsebox and black huckleberry. The sparse herb layer may include scattered patches of bunchberry and one-sided wintergreen. The moss and lichen layer is usually dominated by rock-moss with minor amounts of clad and pelt lichens, juniper haircap moss and heron's-bill moss.



03 PIBI — Huckleberry — Haircap moss

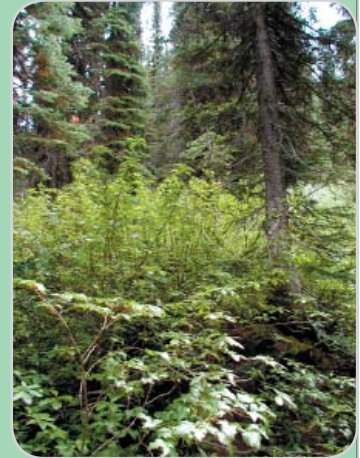
The 03 unit occurs infrequently and is largely restricted to steep and warm or gentle upper and middle slopes on deep soils. BI typically dominates the canopy with a minor component of Pl, Se or Cw. BI also dominates the sparse regeneration layer. Shrubs are moderately abundant and falsebox and black huckleberry are the most abundant species. Utah honeysuckle and, occasionally, white-flowered rhododendron may be present in minor amounts. The herb layer is variable in cover; common species include arctic lupine, mountain arnica and one-sided wintergreen. The moss and lichen layer is sparse to moderate and is most often dominated by ragged-moss, and heron's-bill moss. Clad and pelt lichens and juniper haircap moss are often present in minor amounts.

**04 BI — Rhododendron — Five-leaved bramble**

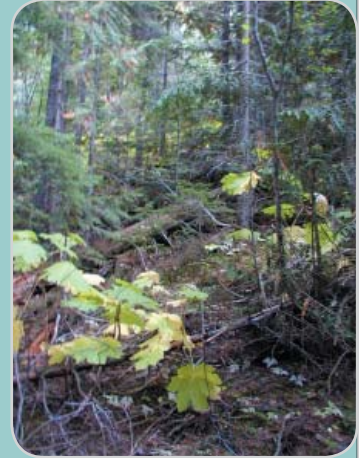
This site series occurs primarily on submesic sites on middle and upper slopes and level areas. The canopy is dominated by BI and Se and minor amounts of Pl, Cw, or Hw may be present. The regeneration layer is often dominated by BI and Cw. The extensive shrub layer differs from the 03 unit in that falsebox is much less abundant and white-flowered rhododendron is the most common and abundant species. The herb layer is moderate to well-developed but species poor in comparison to wetter site series. Five-leaved bramble is the dominant species. One-leaved foamflower, one-sided wintergreen and queen's cup may be present in minor amounts. Red-stemmed feathermoss, ragged-moss and pipecleaner moss often cover much of the forest floor.

**01 BI — Rhododendron — Oak fern**

The 01 unit occurs most often on steep and cool or gentle middle and lower slopes and level areas. BI and Se dominate the forest canopy. Hw and Cw may also be present the canopy and the regeneration layer with BI and Se. White-flowered rhododendron and black huckleberry are the most abundant shrubs. Utah honeysuckle and falsebox are often present in minor amounts. Sitka alder, oval-leaved blueberry and black gooseberry are occasionally present. The herb rich species layer includes five-leaved bramble, one-leaved foamflower and oak fern. The moss layer is usually contains a mix of red-stemmed feathermoss, ragged-moss, pipe-cleaner moss and heron's-bill moss.

**05 BI — Oak fern — Foamflower**

The 05 unit occurs on gentle or steep middle, lower and toe slopes. The closed forest canopy is dominated by BI and Se. Cw is sometimes present but it occurs more frequently in the regeneration layer with BI, Se and Hw. The shrub layer is less extensive than that of the 01 unit; white-flowered rhododendron and black huckleberry are much less abundant. Thimbleberry and black gooseberry are often present in minor amounts. The herb layer is similar to the 01 unit but five-leaved bramble is much less common and abundant whereas oak fern is usually the dominant species. The moss layer is variable in cover. Ragged-moss is usually the dominant species.



06 BI — Lady fern — Spiny wood fern

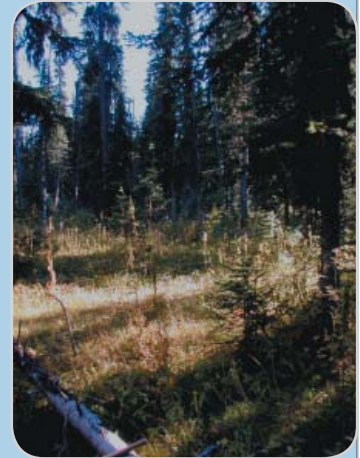
The 06 site series is a common unit found on gentle middle and lower slopes. Se and BI dominate the forest canopy. Cw is occasionally present in the canopy and sparse regeneration layer with BI, Se and Hw. The shrub layer is sparse to moderate and diverse. Common species present in minor amounts include black huckleberry, Utah honeysuckle, white-flowered rhododendron, oval-leaved blueberry, black gooseberry, devil's club, black twinberry and thimbleberry. The herb layer is very rich and, unlike drier units, it is dominated by abundant lady fern. Oak fern and spiny wood fern are also abundant. The moss layer is extensive and ragged-moss and large-leaf leafy moss are usually the most abundant species.

**07 BI — Devil's club — Lady fern**

The 07 site unit occurs infrequently on toe slopes where seepage is present. The open forest canopy is usually dominated by Se with a minor amount of BI. Conifer regeneration is sparse. The shrub layer is dominated by the characteristic species, devil's club. Less abundant shrubs include black huckleberry and oval-leaved blueberry. The rich herb layer is similar to that of the 06 unit. Lady fern and spiny wood fern are the most abundant species. Oak fern, one-leaved foamflower and Sitka valerian are common and usually abundant. The moss layer is sparse to moderate.

**08 BI — Horsetail**

The 08 unit is infrequent. It occurs on toe slopes, level areas and in depressions where the water table is near the surface. The forest canopy is usually very open and consists of Se and BI. Cw and Hw may occur in the sparse regeneration layer with Se and BI. The shrub layer is sparse but often includes black huckleberry, oval-leaved blueberry, black twinberry and black gooseberry. The 08 unit is distinguished from other units by the abundant cover of common horsetail. Other common herbs include sweet-scented bedstraw, mitrewort, twistedstalk, oak fern, one-leaved foamflower, and five-leaved bramble. The moss layer is variable and may be dominated by peat-moss. Other common species include glow moss and large-leaf leafy moss.

**09 BI — Mountain hairgrass — Leatherleaf saxifrage**

The 09 site series is restricted to level areas and depressions where the water table is at or near the soil surface. The open canopy is primarily composed of Se with a minor component of BI. Conifer regeneration is moderate and usually consists of BI with a minor component of Se. The sparse to moderate shrub layer is patchy and often confined to raised microsites. Common species include black huckleberry, oval-leaved blueberry and occasionally white-flowered rhododendron. The herb layer is dominated by mountain hairgrass, leatherleaf saxifrage, Merten's sedge and violets. Other herbs include yellow willowherb, fringed grass-of-parnassus, arrow-leaved groundsel and common horsetail. Peat-moss, glow moss, bent-leaf moss and large-leaf leafy moss dominated the moss layer.



10BI — Bluejoint

This is the wettest forested site series in the ESSFwc1. The water table is at or just below the soil surface. The open forest canopy is composed of scattered BI and Se typically growing on hummocks. The shrub layer is also confined to raised hummocks and usually consists of small patches of black huckleberry. The herb layer is dominated by bluejoint reedgrass. Other common herbs include arrow-leaved groundsel, cow-parsnip, mitrewort, Sitka valerian and five-leaved bramble. The moss layer is often extensive and is dominated by species typically found in very wet forests and wetlands including bent-leaf moss and large-leaf leafy moss.



62 Arrow-leaved groundsel — Cow parsnip

The 62 meadow unit is very uncommon. It is found on gentle toe slopes and level areas. Soils are fine to medium textured and slightly moist. The vegetation community of this unit consists entirely of herbs. No shrub or moss species are present. Arrow-leaved groundsel, cow-parsnip and stinging nettle largely contribute to the extremely high herb cover. Other forbs can include moderate amounts of mountain monkshood, mitrewort and blue wildrye.



ESSFwc2

NORTHERN MONASHEE WET COLD ENGELMANN SPRUCE — SUBALPINE FIR VARIANT

Distribution: The ESSFwc2 is the one of the most extensive biogeoclimatic units in the Southern Interior Forest Region. It occupies the upper slopes of the Monashee and Cariboo Mountains, the Quesnel and Shuswap Highlands and the northern Selkirk Mountains. This includes upper slopes in Wells Gray Park, most side drainages of the North Thompson River, northern portions of the Clearwater, Adams and Seymour Rivers and the Columbia Reach southeast of the Mica dam.

Elevational Range: Given the substantial latitudinal range, there is considerable variation in the upper and lower elevational limits of this subzone. At the climatically wetter northern limits, the ESSFwc2 starts at 1300-1400 m on north aspects and 1400-1500 m on south aspects. The upper elevational limits are typically 1650 and 1750 m on north and south aspects, respectively. At the drier southern limits the ESSFwc2 begins at 1400-1450 on north

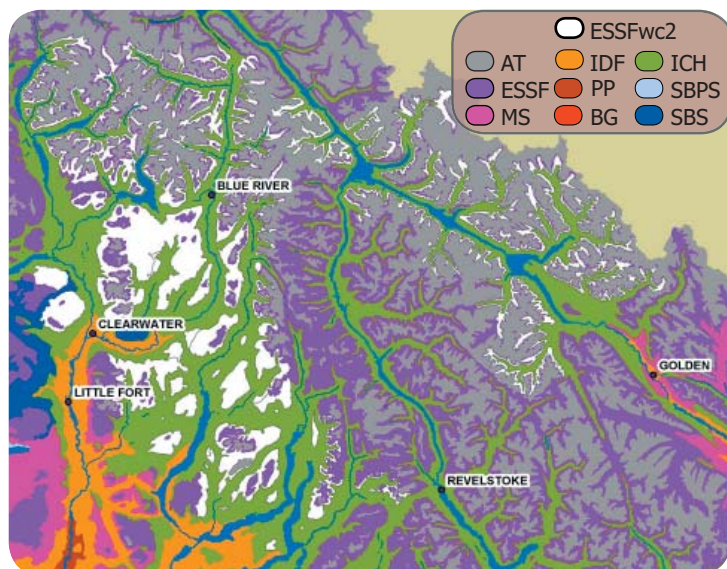


Figure X. Distribution of the ESSFwc2.

ESSFwc2 - 1

aspects and 1450-1500 m on south aspects. The upper elevational limits are typically 1750 and 1800 m on north and south aspects, respectively.

Climate: The ESSF zone is characterized by long, cold winters with a deep snowpack and short, cool summers. Estimated mean annual precipitation for the ESSFwc2 ranges from 1000-1500 mm and maximum snow depths range between 2 and 3 meters. Growing season moisture deficits are rare due to late snowmelt and frequent summer storms. The short growing season is likely the most limiting climatic factor for biological activity. The ESSFwc2 likely has a warmer temperature regime than the ESSFwc3 and is cooler than the ESSFwc4.

Forest Cover: Climax stands of Se and BI dominate the landscape. BI dominates the regeneration layer in most stands. PI occurs only at the drier geographic limits of the subzone and on dry ridges and steep, warm slopes. Hw, Cw, Pw and Fd rarely occur and are usually limited to transitional areas with the ICH. Fire return intervals are relatively long and most stands are greater than 200 years old. Stand structure is more strongly influenced by patch dynamics where tree mortality is attributed to insects, disease and windthrow. Late seral and climax stands are typically 15-18 m tall.

Zonal Vegetation and Soils: Mature climax stands of BI and Se dominate the landscape and successional stands are rare. White-flowered rhododendron dominates the understory, with minor amounts of black huckleberry, oval-leaved blueberry and false azalea. The rich herb layer consists of oak fern, Sitka valerian, five-leaved bramble, rosy twistedstalk and one-leaved foamflower. The patchy bryophyte layer is dominated by red-stemmed feathermoss, ragged-moss, herons'-bill moss and common leafy liverwort. Soils are predominantly Humo-Ferric Podzols with Mor humus forms.

Adjacent Biogeoclimatic Subzones: The ICHmw3, mk2, wk1, and vk1 occur below the ESSFwc2. In the southwestern portion of Wells Gray Park, the ESSFwk1 occurs below the ESSFwc2. The ESSFwc2 occurs below the ESSFwcw throughout its range. In drier climates, the ESSFwc2 is replaced at similar elevations by the ESSFdc2. These two variants abut each other in TFL18 and along the ridge between the North Thompson and Adams and Barriere Lakes. The ESSFwc4 occurs south of the Trans Canada Highway between Salmon Arm and Revelstoke at elevations similar to the ESSFwc2.

ESSFwc2 - 2

Distinguishing adjacent Biogeoclimatic units from the ESSFwc2

On zonal sites:

ESSFdc2

- herb layer is more sparsely developed and lacks oak fern
- PI is more common

ESSFwc4

- false azalea is rarely present
- Utah honeysuckle is present

ESSFwk1

- white-flowered rhododendron and common leafy liverwort are much less abundant
- PI, bunchberry and feathermosses are more common

ESSFvc

- has Hm

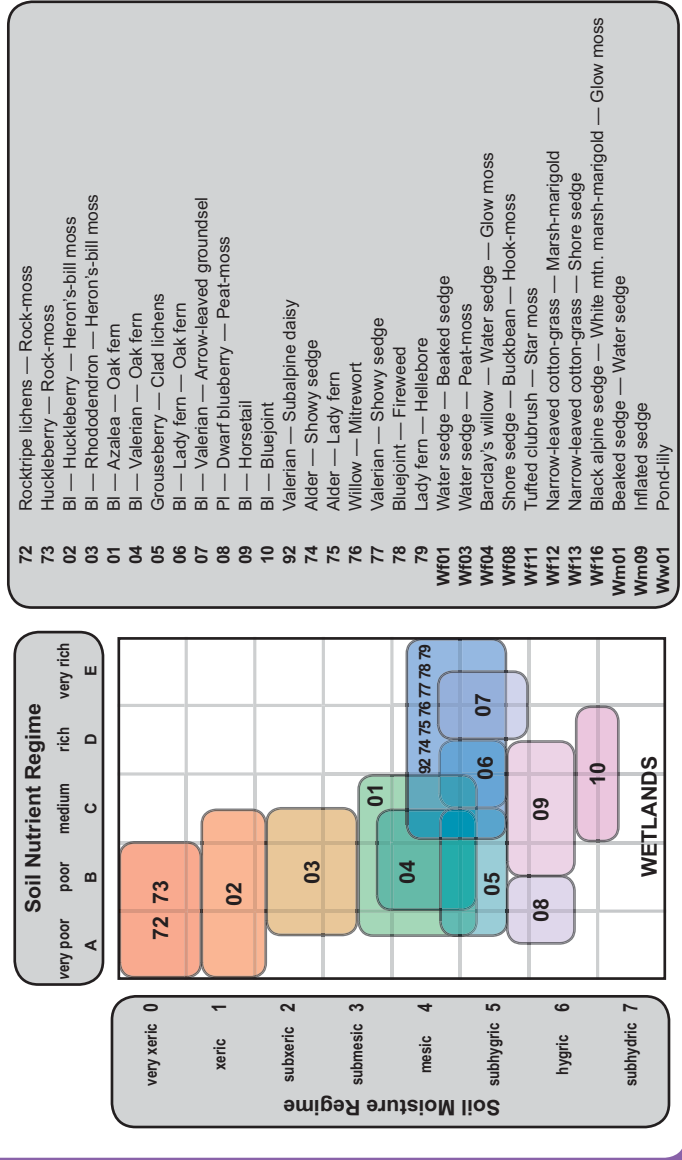
ESSFwcw

- stand structure more open and clumpy
- partridge-foot and mountain-heathers are common

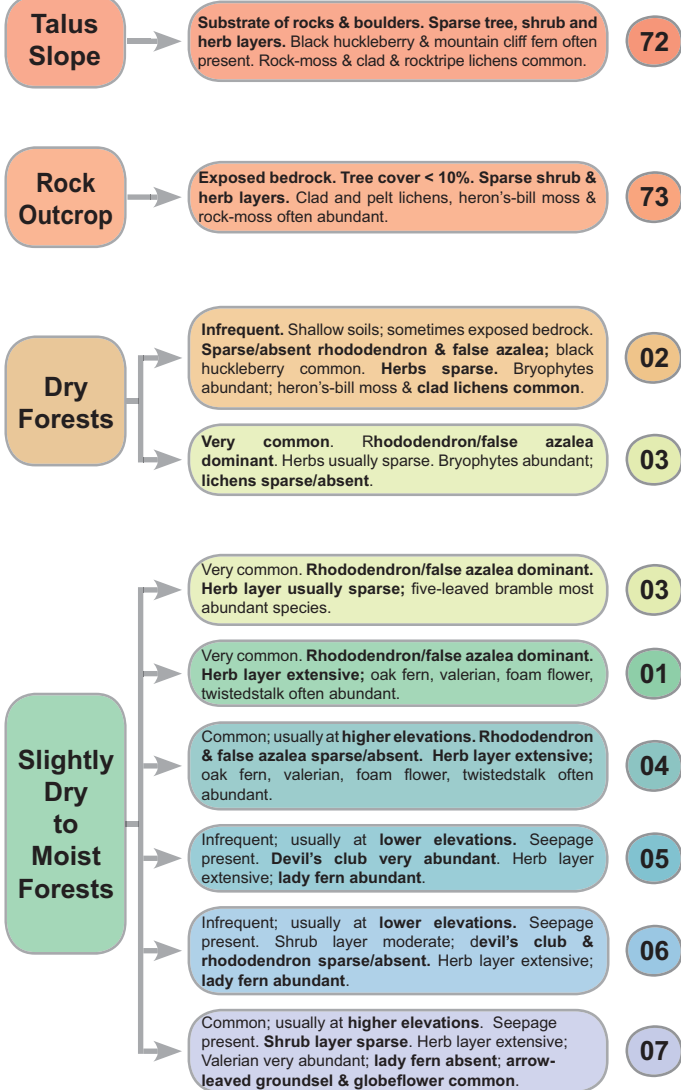
ICHmw3, mk2, wk1 and vk1

- climax stands are dominated by Hw and Cw
- successional stands commonly contain Fd, Lw, Pw, PI, At, Ep
- white-flowered rhododendron and Sitka valerian absent

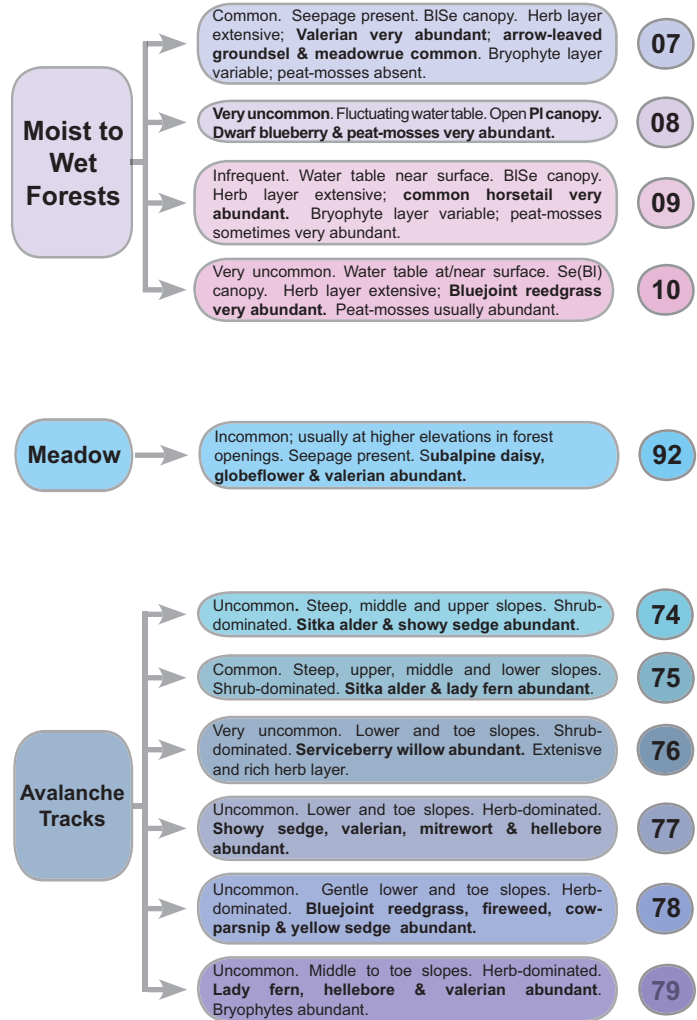
Edatopic Grid



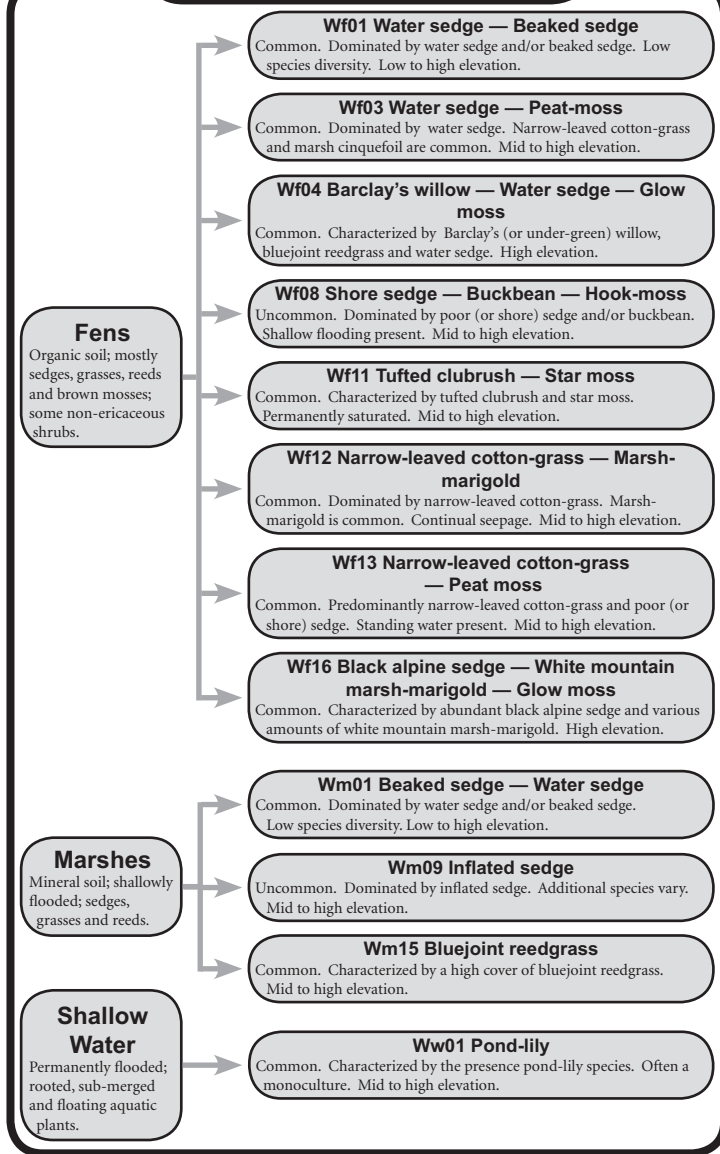
Site Unit Flowchart



Site Unit Flowchart



Site Unit Flowchart



Vegetation Table

	Forests											
	72	73	02	03	01	04	05	06	07	08	09	10
Trees												
Shrubs												
Herbs												

	Forests											
	72	73	02	03	01	04	05	06	07	08	09	10
Herbs												
Mosses & Lichens												

Frequency of Occurrence:
 Abundance (Average Percent Cover):
 * <40% and <10% cover

Environment Table

Site Units	Forests												
	Talus	72	73	02	03	01	04	05	06	07	08	09	10
Soil Moisture Regime	VX (X)	VX (X)	X SX	SM (SX)	M (SM SHG)	M (SHG SM)	M (SHG SM)	SHG M	SHG (M)	SHG (M)	HG (SHG)	HG (SHG)	HG SHD
Mesoslope Position	UP MD	CR (UP)	CR UP	MD UP LV	MD LW LV	MD LW LV	MD LW LV	MD LW TO LV	MD LW (TO GU)	LW TO LV	LV (DP)	LV DP TO	LV DP
Slope Gradient	Steep	Steep (Gentle)	Variable	Variable	Variable	Variable	Gentle (Level)	Variable	Variable	Level (Gentle)	Level	Level	Level
Aspect	Warm	Warm (Neutral)	Variable	Variable	Variable	Neutral	Neutral	Neutral (Cool)	Neutral	Neutral	Neutral	Neutral	Neutral
Parent Materials	Cb	R	R	Mb (Cb FG Mv)	Mb (Cb FG)	Mb (Cb FG)	Mb (Cb FG)	Mb (Fb FG)	Mb (Fb)	Mb Fb	Ov/Fb Ov/Lb	Fb Mb Ov	Fb Mb Ov
Soil Texture Class	Fragmental Coarse (Medium)	Fragmental Coarse (Medium)	Fragmental Coarse (Medium)	Medium Coarse	Medium Coarse	Medium Coarse	Medium (Coarse)	Medium (Coarse)	Medium (Coarse)	Medium (Coarse)	Fine Organic	Variable	Variable
Important Features	Rocks & boulders	Bedrock 0-20 cm	Bedrock 0-50cm					Some seepage	Some seepage	Seepage	Water table 50-100 cm	Water table 0-50 cm	Water table 0-20 cm
Successional Stage	Scarce	Uncommon	Common	Common	Common ¹	Common ²	MC	MC	MC	MC	MC (MS)	MC	MC
Occurrence	Scarce	Uncommon	Common	Common	Common ¹	Common ²	MC	MC	MC	Common ³	Scarce	Uncommon	Scarce

¹ Less common on plateau northeast of Clearwater.

² Widespread but most common at higher elevations.

³ Most common at lower elevations.

⁴ More common at higher elevations.

Environment Table

Site Units	Avalanche Tracks									
	92	74	75	76	77	78	79			
Soil Moisture Regime	M SHG	M SHG	M SHG	M SHG	M SHG	M SHG	M SHG			
Mesoslope Position	TO LW LV	UP MD	UP MD (LW)	LW TO	LW TO	LW TO	MD LW TO			
Slope Gradient	Variable	Steep	Steep	Gentle	Level Gentle	Gentle	Steep Gentle			
Aspect	Neutral	Cool	Cool	Neutral	Neutral	Neutral	Cool Neutral			
Parent Materials	Mb Fb	Cv Cb	Mb (Cb)	Cb Mb	Cb Mb	Cb	Cb			
Soil Texture Class	Medium Fine	Coarse Medium	Coarse Medium	Coarse Medium	Variable	Coarse Medium	Coarse Medium			
Important Features	Water table 0-50 cm	Seepage	Seepage	Seepage	Water table 0-50 cm	Meadow over old talus	Meadow within mix of forests and aval tracks			
Successional Stage	Uncommon	Uncommon ⁵	Common	Scarce	Uncommon	Common	Uncommon			
Occurrence	Uncommon	Uncommon ⁵	Common	Scarce	Uncommon	Common	Uncommon			

⁵ Most common at higher elevations and climatically wetter portions of subzone

72 Rocktripe lichens — Rock-moss

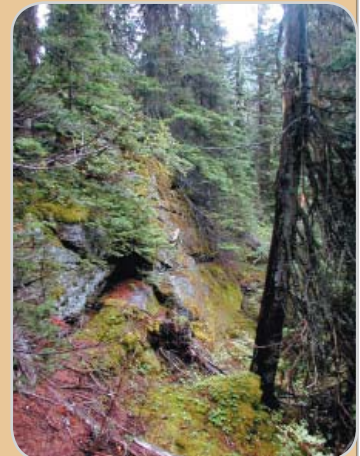
The 72 unit is very uncommon. It occurs on exposed talus on steep and warm, upper and middle slopes. Scattered individual PI, BI or Se trees may be present. The shrub and herb layers are very sparse and typically consist of scattered individuals that have become established on small pockets of humus or soil. Black huckleberry and mountain cliff fern are often present. The moss and lichen layer may be sparse to abundant. Common species include rock-moss and clad and rocktripe lichens.

**73 Huckleberry — Rock-moss**

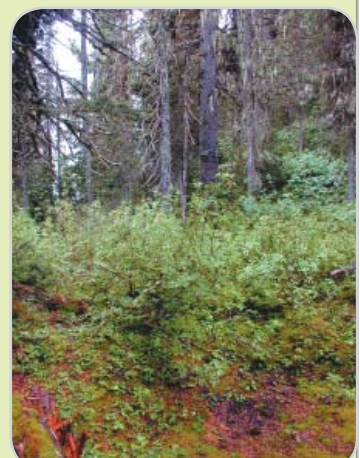
The 73 unit occurs infrequently and is found on exposed rock outcrops or gentle or steep upper slopes and crests. Scattered individual PI, BI and Se trees (<10% cover) may be present. Shrubs are sparse to absent; black huckleberry and false-box may be present. Occasionally, dry herbs such as arctic lupine and prince's pine, may be present. Clad lichens, heron's-bill moss, rock-moss and pelt lichens are some of the species that may be abundant and cover much of the exposed bedrock.

**02 BI — Huckleberry — Heron's-bill Moss**

This common site series occurs on upper slopes and crests where soils are very shallow and exposed bedrock may be present. BI and Sxw form an open canopy (>10% cover). The shrub layer is sparse to moderate and is often dominated by black huckleberry. The herb layer is sparse. The substrate is typically more shaded than that of the 73 unit so that mosses are more abundant and species, including red-stemmed feathermoss and mountain and leafy liverworts, frequently occur.

**03 BI — Rhododendron — Heron's-bill moss**

The 03 unit is very common and sometimes dominates the landscape, particularly on plateaus southeast of Wells Gray Park. Soils are typically coarse-textured and often have abundant coarse fragments. The tree and regeneration layers are dominated by BI with a small component of Se. White-flowered rhododendron usually dominates the shrub layer although false azalea may be the dominant shrub on sites near the lower elevational limits of the subzone. Black huckleberry is common and occurs as scattered patches. The herb layer is typically sparse and species-poor; five-leaved bramble is often the most abundant species. The bryophyte layer forms an extensive carpet that includes heron's-bill moss, red-stemmed feathermoss and common leafy liverwort.



01 BI — Azalea — Oak fern

The zonal site series is found on level areas and on middle and lower slopes on gentle and, less frequently, steep slopes. The forest canopy and regeneration layers are dominated by BI and Se. The shrub layer is dominated by abundant white-flowered rhododendron, false azalea and black huckleberry. Small amounts of oval-leaved blueberry are frequently present. Unlike the 03 unit, the herb layer is more extensive and is often dominated by Sitka valerian, one-leaved foamflower, oak fern, five-leaved bramble, Indian hellebore and rosy twistedstalk. Bryophytes form an extensive carpet and include heron's-bill moss, common leafy liverwort, ragged-moss and red-stemmed feathermoss.

**04 BI — Valerian — Oak fern**

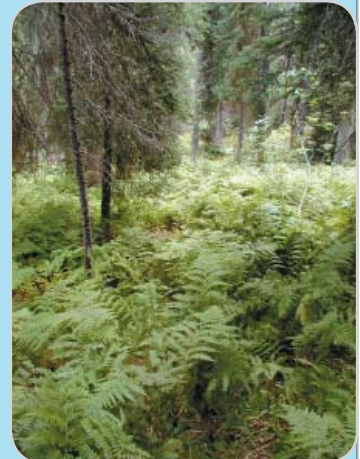
The 04 unit is widespread but occurs most often at higher elevations. It is found on middle and lower gentle slopes and level areas. The forest canopy and regeneration layers are dominated by BI and Se. Unlike the 01 and 03 site series, the shrub layer is much less extensive and white-flowered rhododendron and false azalea occur only as scattered individuals. The extensive herb layer is similar to the 01 unit and is dominated by a Sitka valerian, one-leaved foamflower, oak fern, five-leaved bramble, Indian hellebore and rosy twistedstalk. The extensive bryophyte layer is dominated by ragged-moss, red-stemmed feathermoss and heron's-bill moss. Common leafy liverwort is less common.

**05 BI — Devil's club — Lady fern**

This site series occurs infrequently and typically near the lower elevational limits of the ESSFwc2. It is found on gentle middle, lower and toe slopes and level areas where seepage is present. BI and Se form the open forest canopy and regeneration is usually sparse. Unlike other site units, devil's club is common and abundant. False azalea and, to a lesser extent, white-flowered rhododendron, are sometimes present. Black gooseberry is often present in minor amounts. Lady fern is usually the dominant species in the rich herb layer. Spiny wood fern is often present but is typically less abundant. The bryophyte layer is sparse to moderate and is often dominated by ragged-moss.

**06 BI — Lady fern — Oak fern**

The 06 unit is uncommon at lower elevations on middle and lower slopes where seepage is present. The open forest canopy is composed of BI and Se. Conifer regeneration is sparse. The moderate shrub layer is most often dominated by false azalea with minor components of black huckleberry, oval-leaved blueberry and black gooseberry. White-flowered rhododendron and devil's club are very sparse or absent. The rich herb layer and sparse to moderate bryophyte layer are similar to the 05 unit.



07 BI — Valerian — Arrow-leaved groundsel

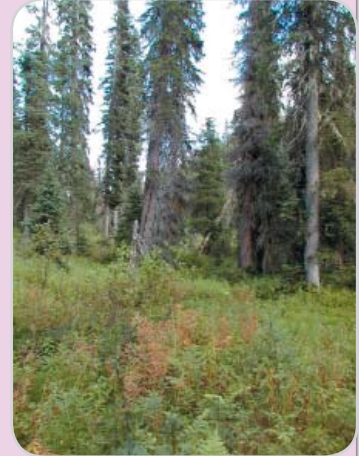
This common unit is found most often at higher elevations. It occurs on lower and toe slopes and level areas where seepage is present. BI and Se form an open canopy and sparse regeneration layer. The shrub layer is also sparse; the most common species are black huckleberry, oval-leaved blueberry and white-flowered rhododendron. The rich herb layer is dominated by Sitka valerian. Other species present include oak fern, one-leaved foamflower, rosy twist-stalk and Indian hellebore. Unlike the 05 and 06 units, large ferns are absent whereas arrow-leaved groundsel, sweet-cicely, mountain arnica, western meadowrue and fringed grass-of-Parnassus are frequently present. The bryophyte layer is highly variable; ragged-moss, bent-leaf moss and large-leaf leafy moss are usually the most abundant species.

**08 BI — Dwarf blueberry — Peat-moss**

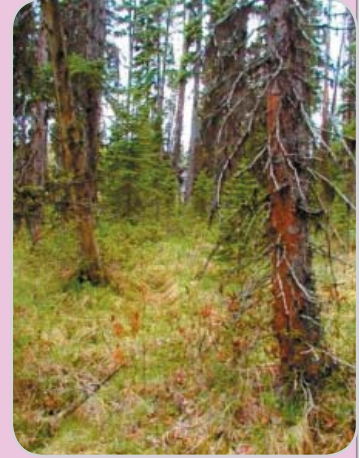
This is a very uncommon site series that is known only from the Mad and Raft Rivers area northeast of Clearwater. It occurs on level sites or depressions where organic veneers overlay fine-textured soils. The water table appears to fluctuate seasonally so that soils are very moist in the spring but are dry during the summer and fall. The forest canopy is usually dominated by very open PI stands with minor BI and Se. Shrubs are absent other than scattered individuals of black huckleberry or oval-leaved blueberry. The most distinctive feature of this site unit is that the herb and moss layers are dominated by dwarf blueberry and peat-moss, respectively. Minor amounts of bog and common haircap mosses are often present.

**09 BI — Horsetail — Peat-moss**

The 09 unit occur infrequently on toe slopes, level areas and in depressions. Soils are moist to wet and the water table is usually near the soil surface. Se and BI usually form a very open canopy and are often present in the regeneration layer on raised microsities. The shrub layer is typically sparse; oval-leaved blueberry is the most common and abundant species. Other species include black huckleberry, false azalea, black gooseberry and black twinberry. The rich herb layer is highly variable but is usually dominated by abundant common horsetail. The bryophyte layer is also variable. Peat-moss is often the most abundant species.

**10 BI — Bluejoint**

This site series is very uncommon. It is found on level areas or in depressions where the water table is at or near the soil surface. Se is the dominant species and occurs as scattered individuals or in clumps on raised microsities. Se and BI occur in the regeneration layer. Shrubs are absent except on raised microsities where oval-leaved blueberry or false azalea may be present. The herb layer is distinctive because of the extensive cover of bluejoint reedgrass. Common horsetail and arrow-leaved groundsel are usually present in minor amounts. The moderate moss layer is usually dominated by peat-moss.



92 Valerian — Subalpine daisy

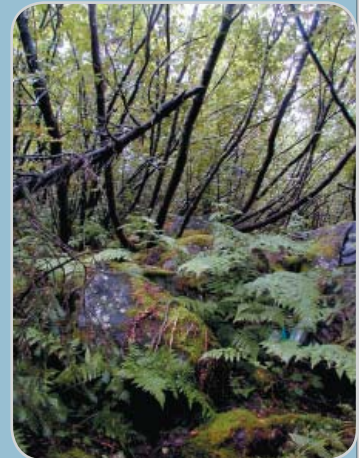
The 92 meadow unit is infrequent and typically occurs at higher elevations in forest openings. It is found on gentle lower and toe slopes and level areas where seepage is abundant. Trees and shrubs are absent except for scattered individuals of Bl, Se, black huckleberry, oval-leaved blueberry or white-flowered rhododendron. The rich herb layer is dominated by Sitka valerian, subalpine daisy and globeflower. Other common species include mitrewort, one-leaved foamflower, arrow-leaved groundsel, violets, showy sedge and white mountain marsh-marigold. The moderate bryophyte layer often contains peat-moss, bent-leaf moss and round-leaved leafy moss.

**74 Alder — Showy sedge**

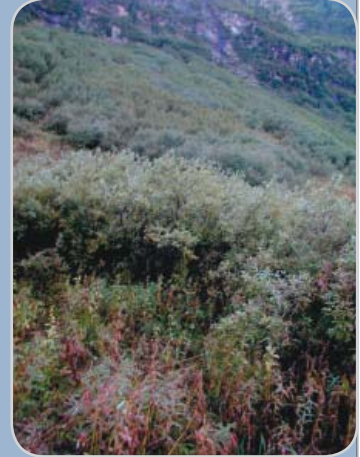
This is an uncommon avalanche track unit that is located at higher elevations and in climatically wetter portions of the ESSFwc2. It occurs on cool, steep upper and middle slopes on very rocky soils. It is dominated by very dense Sitka alder. The herb layer is dominated by showy sedge. Other herbaceous species are sparse or absent. The bryophyte layer is also sparse; heron's-bill moss and ragged-moss are common species.

**75 Alder — Lady fern**

This is probably the most common and widespread avalanche unit. It occurs on steep upper, middle and lower slopes. Like the 74 unit, the shrub layer is dominated by dense Sitka alder. The herb layer is usually dominated by lady fern. Other species present in minor amounts include spiny wood fern, Indian hellebore, one-leaved foamflower, rosy twisted stalk and showy sedge. The bryophyte layer is variable in composition and extent.

**76 Willow — Mitrewort**

This is a very uncommon avalanche track unit. It is usually found on moist lower or toe slopes near the base of avalanche tracks. The shrub layer is dominated by abundant serviceberry willow. The extensive herb layer is dominated by mitrewort, showy sedge and arrow-leaved groundsel. Other common species include fireweed and Sitka valerian. The moderate bryophyte layer is often dominated by bent-leaf moss.



77 Valerian — Showy sedge

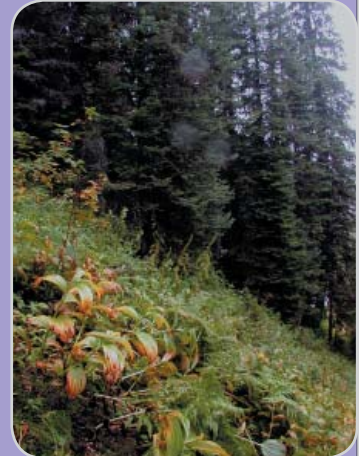
This uncommon avalanche unit is found on lower and toe slopes where abundant seepage is present. Shrubs are lacking and the rich herb layer is dominated by mitrewort, Indian hellebore, showy sedge, Sitka valerian and fireweed. The bryophyte layer is variable.

**78 Bluejoint — Fireweed**

The 78 avalanche track unit is uncommon and is found on gentle lower and toe slopes where seepage is present. Shrubs are absent and the rich herbaceous layer is dominated by bluejoint reedgrass, fireweed, cow-parsnip and yellow sedge. Other species present in minor amounts include Sitka valerian and showy sedge. The bryophyte layer is very sparse.

**79 Lady fern — Hellebore**

The 79 avalanche track unit is uncommon and appears to occur in the climatically wetter portions of the ESSFwc2. Shrubs are absent and the rich herbaceous layer is dominated by lady fern, Indian hellebore and Sitka valerian. Other common species include oak fern, mitrewort, one-leaved foamflower and showy sedge. The moss layer is usually extensive and ragged-moss, large-leaf leafy moss and bent-leaf moss are common species.

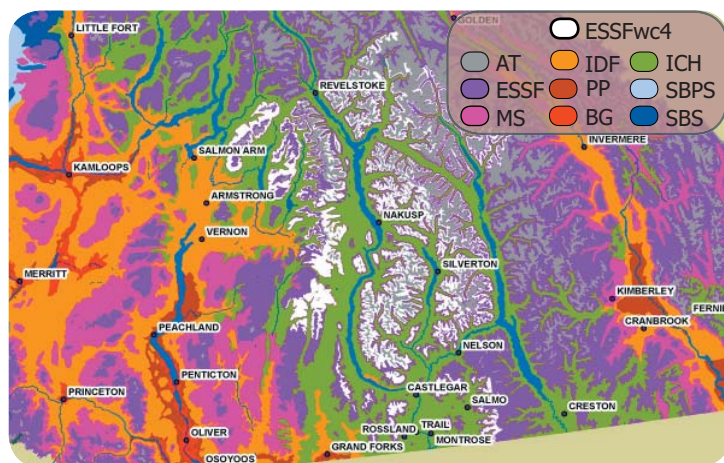


ESSFwc4

SELKIRK - MONASHEE WET COLD ENGELMANN SPRUCE — SUBALPINE FIR VARIANT

Distribution: The ESSFwc4 occurs in the southern Monashee and Selkirk Mountains. It extends north from the US border to the Trans-Canada Highway between Sicamous and the Rogers Pass. It primarily occurs west of Kootenay Lake to Mabel Lake. It occupies the interior "wetbelt" as an elevation band above several ICH biogeoclimatic units (ICHmw2, mw3, wk1, vk1) or the ESSFwc1.

Elevational Range: Due to the substantial latitudinal range of the ESSFwc4, there is considerable variation in the upper and lower elevational limits of this subzone. At the northwest limits, it starts at 1450-1500 m on north aspects and 1500-1600 m on south aspects. In the south, where it can occur above the ESSwc1, its lower limit begins at approximately 1600m on north aspects and 1650 on south aspects. Throughout its range it extends to 1750-1800 m on north slopes and 1800-1850 on south slopes.



ESSFwc4 - 1

Climate: The ESSF zone is characterized by long, cold winters with a deep snowpack and short, cool summers. It is estimated that the mean annual precipitation for the ESSFwc4 ranges from 1200-1500 mm and maximum snow depths range between 2 and 3 meters. Growing season moisture deficits are rare due to late snowmelt and frequent summer storms. The short growing season is likely the most limiting climatic factor for biological activity. Its southern distribution makes it is slightly warmer than the ESSFwc2 and wc3.

Forest Cover: Climax stands of Se and BI dominate the landscape. BI dominates the regeneration layer in most stands. PI occurs only at the drier geographical limits of the variant and occasionally on dry ridges and steep south slopes. Hw, Cw, Pw and Fd rarely occur and are generally limited to ICH - ESSF transitional areas. Fire return intervals are relatively long and most stands are greater than 200 years old. Stand structures are strongly influenced by patch dynamics where tree mortality is attributed to insects, disease and windthrow. Late seral and climax stands are typically 15-18 m tall.

Zonal Vegetation and Soils: Climax stands are dominated by Se and BI. The well developed shrub layer is dominated by white-flowered rhododendron, black huckleberry, and black gooseberry. The herb layer is moderately well developed and includes Sitka valerian, mountain arnica, oak fern, one-leaved foamflower and five-leaved bramble. The moss is dominated by ragged-moss, common leafy liverwort and heron's-bill moss. Soils are Humo-Ferric Podzols with a shallow Mor humus form.

Adjacent Biogeoclimatic Subzones: The ESSFwc4 typically lies above the the ESSFwc1 in areas of the former Nelson Forest Region. It also occurs in the Cherryville/Sugar Lake area above the ICHmk1 or ICHmw2. The ESSFwc4 occurs below the ESSFwcw throughout it's distribution.

ESSFwc4 - 2

Distinguishing adjacent Biogeoclimatic units from the ESSFwc4

On zonal sites:

ESSFdc1

- oak fern is absent and the herb layer is less developed
- grouseberry is often present
- Pl is commonly present

ESSFwc2

- false azalea is common, widespread and dominates many sites
- Utah honeysuckle is less common or absent

ESSFwm

- Lw, Pw and false azalea are more common
- small-flowered wood-rush is absent
- mountain hairgrass, Sitka valerian and Indian hellebore are less abundant

ESSFvc

- Hm present
- false azalea is often present

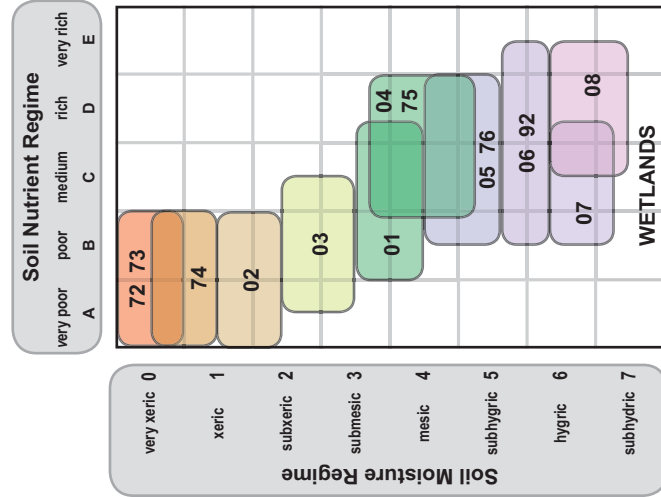
ESSFwcw

- stand structure is more open and clumpy
- partridge-foot and mountain-heathers are common

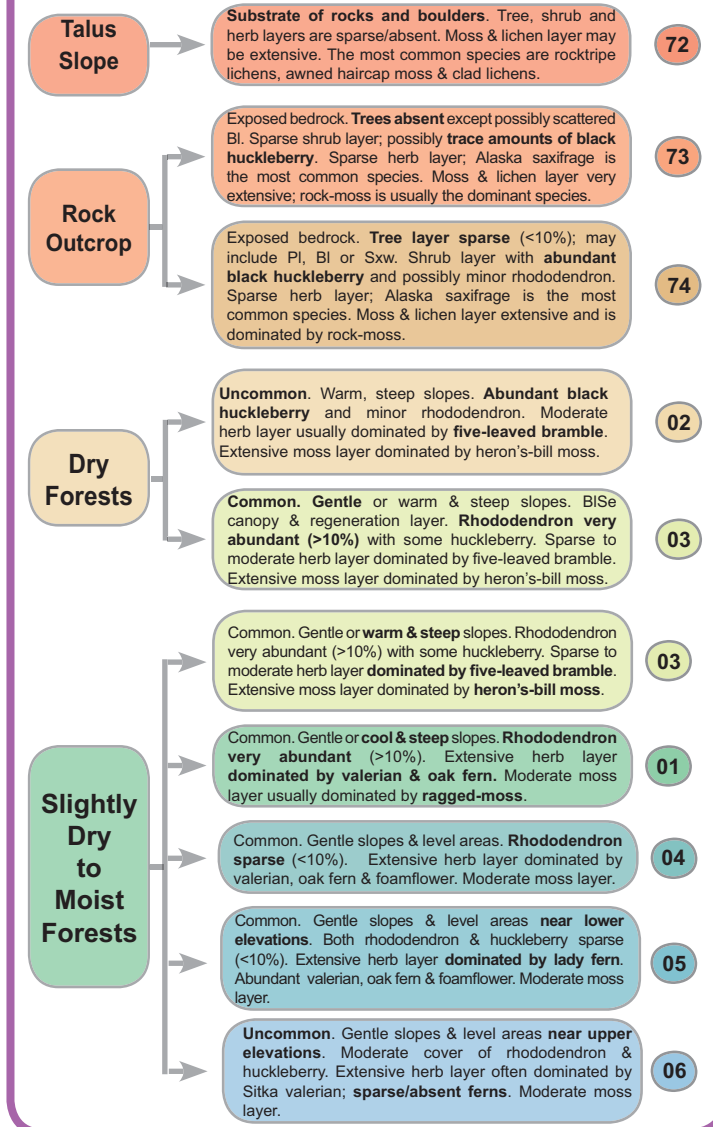
ICHmw2, mw3, wk1, vk1, mk1

- Hw and Cw dominate climax and late successional stands
- Fd, Lw, Pw, At, and Ep frequently occur in successional stands
- white-flowered rhododendron and Sitka valerian are absent

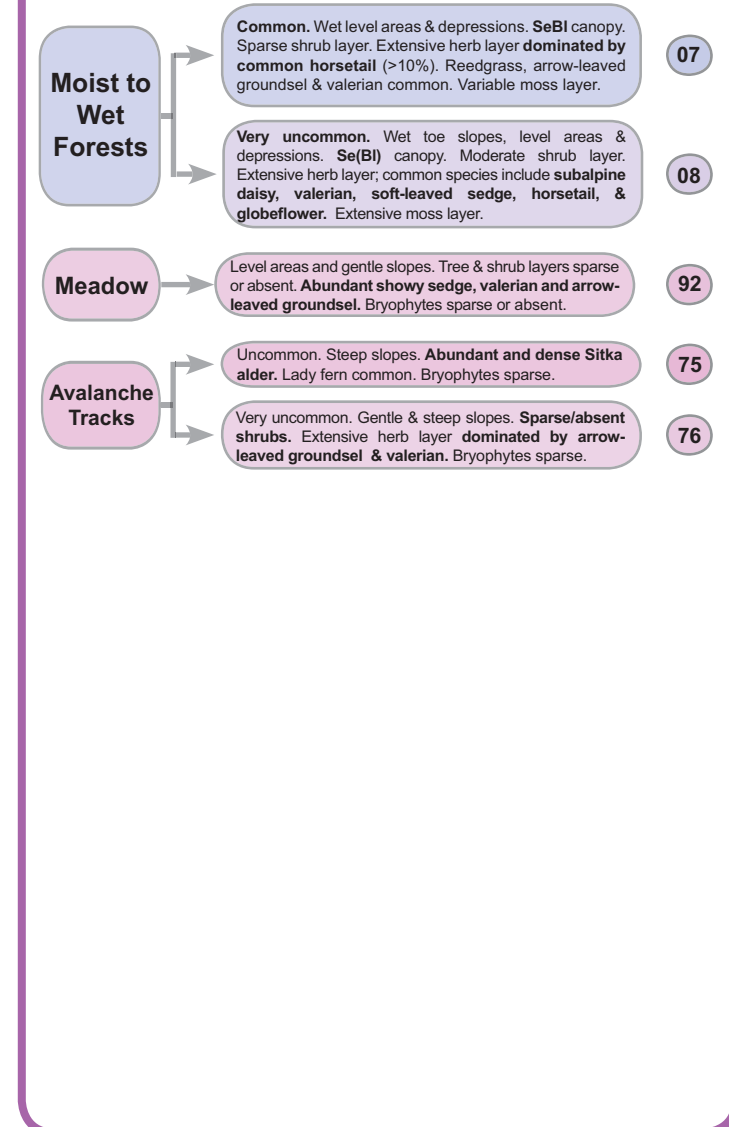
Edatopic Grid



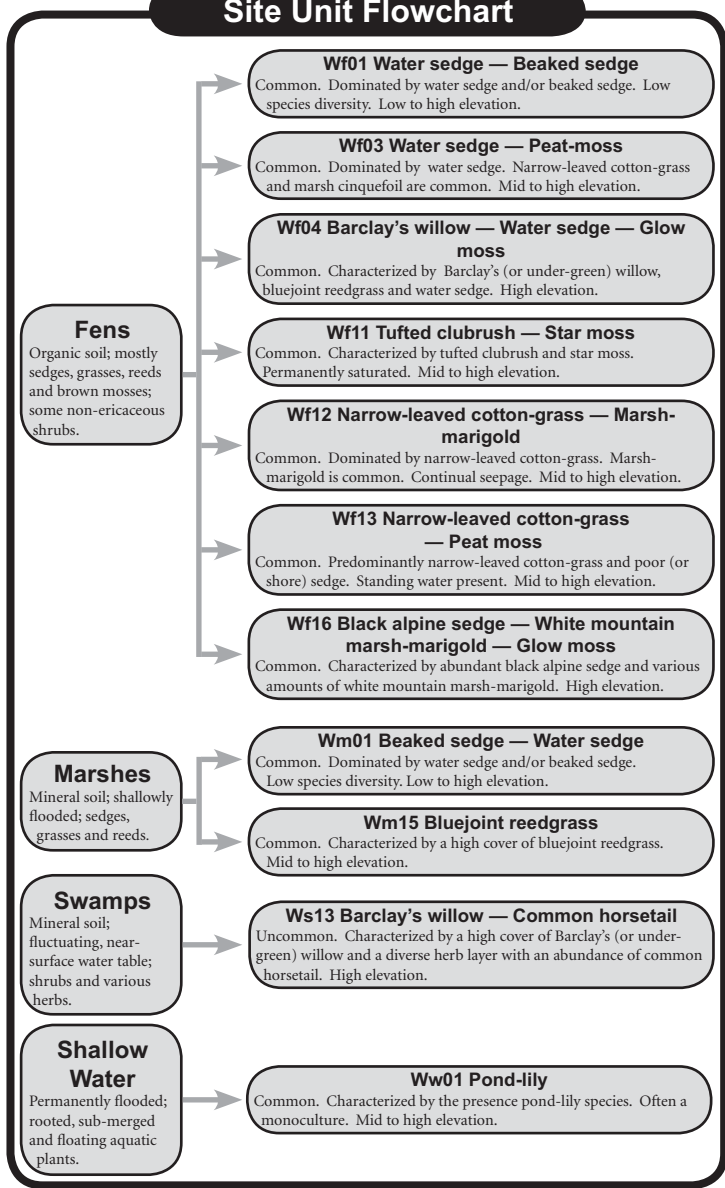
Site Series Flowchart



Site Series Flowchart



Site Unit Flowchart



Vegetation Table

	Forests										Meadow	Avalanche Tracks				
	72	73	74	01	02	03	04	05	06	07		08	92	75	76	76
Trees																
<i>Pinus contorta</i>																
<i>Abies lasiocarpa</i>																
<i>Picea engelmannii</i>																
<i>Abies lasiocarpa</i>																
<i>Picea engelmannii</i>																
<i>Lonicera utahensis</i>																
<i>Vaccinium membranaceum</i>																
<i>Rhododendron albiflorum</i>																
<i>Vaccinium ovalifolium</i>																
<i>Ribes lacustre</i>																
<i>Oxopanax homidus</i>																
<i>Lonicera involucrata</i>																
<i>Aritus viridis</i>																
<i>Saxifraga terrigena</i>																
<i>Oxalis serotina</i>																
<i>Tiarella trifoliata</i> var. <i>unifoliata</i>																
<i>Rubus pedatus</i>																
<i>Valeriana sitchensis</i>																
<i>Gymnocarpium diopteris</i>																
<i>Clintonia uniflora</i>																
<i>Streptopus lanceolatus</i>																
<i>Streptopus amplexifolius</i>																
<i>Althyrum filix-femina</i>																
<i>Dryopteris expansa</i>																
<i>Mitella</i> sp.																
<i>Veratrum viride</i>																
<i>Viola</i> sp.																
<i>Osmorhiza</i> sp.																
<i>Luzula</i> sp.																
<i>Parnassia limbrata</i>																
<i>Thalictrum occidentale</i>																
<i>Calla leptosepala</i>																
<i>Senecio triangulans</i>																
<i>Trollius adibras</i>																
<i>Equisetum arvense</i>																
<i>Callamagrostis</i>																
<i>Leptochloa affinis</i>																
<i>Eriogonum peregrinus</i>																
Shrubs																
<i>lodgepole pine</i>																
<i>subalpine fir</i>																
<i>Engelmann spruce</i>																
<i>subalpine fir</i>																
<i>Engelmann spruce</i>																
<i>Utah honeysuckle</i>																
<i>black huckleberry</i>																
<i>white-flowered rhododendron</i>																
<i>oval-leaved blueberry</i>																
<i>black gooseberry</i>																
<i>devil's club</i>																
<i>black twinberry</i>																
<i>Sitka alder</i>																
<i>Alaska saxifrage</i>																
<i>one-sided wintergreen</i>																
<i>crisp-leaved foamflower</i>																
<i>five-leaved bramble</i>																
<i>Sitka valerian</i>																
<i>oak fern</i>																
<i>queen's cup</i>																
<i>rosy twistedstalk</i>																
<i>clasping twistedstalk</i>																
<i>lacy fern</i>																
<i>spiny wood fern</i>																
<i>mitrewort</i>																
<i>Indian hellebore</i>																
<i>violet</i>																
<i>sweet-tcely</i>																
<i>fringed grass-of-Parnassus</i>																
<i>western meadowru</i>																
<i>white mountain marsh-marigold</i>																
<i>arrow-leaved groundsl</i>																
<i>globeflower</i>																
<i>Common horsetail</i>																
<i>blueberry saxifrage</i>																
<i>heatherleaf saxifrage</i>																
<i>subalpine daisy</i>																

	Forests										Meadow	Avalanche Tracks				
	72	73	74	01	02	03	04	05	06	07		08	92	75	76	76
Herbs																
<i>Carex dispersa</i>																
<i>Heracleum maximum</i>																
<i>Carex spectabilis</i>																
<i>Umbilicaria</i> sp.																
<i>Racomitrium</i> sp.																
<i>Polytrichum piliferum</i>																
<i>Barbilophozia foerkei</i>																
<i>Cladonia</i> sp.																
<i>Dicranum</i> sp.																
<i>Polytrichum juniperinum</i>																
<i>Pelligera</i> sp.																
<i>Pleurozium schreberi</i>																
<i>Barbilophozia lycopodioides</i>																
<i>Rhytidiopsis robusta</i>																
<i>Brachythecium</i> sp.																
<i>Rhizomnium nudum</i>																
<i>Rhizomnium magnifolium</i>																
<i>Rhytidiadelphus</i>																
<i>Sanioia urcinata</i>																
<i>Aulacomnium palustre</i>																
<i>Sphagnum</i> sp.																
Mosses & Lichens																
<i>soft-leaved sedge</i>																
<i>cow-parsnip</i>																
<i>showy sedge</i>																
<i>rocktripe lichens</i>																
<i>awned haircap moss</i>																
<i>mountain leafy liverwort</i>																
<i>clad lichens</i>																
<i>heron's-bill moss</i>																
<i>juniper haircap moss</i>																
<i>pell lichens</i>																
<i>red-stemmed feathermoss</i>																
<i>common leafy liverwort</i>																
<i>pipocleaner moss</i>																
<i>ragged-moss</i>																
<i>round-leaved leafy moss</i>																
<i>long-leaved leafy moss</i>																
<i>leafy moss</i>																
<i>stickle-moss</i>																
<i>glow moss</i>																
<i>peat-moss</i>																

Frequency of Occurrence: >80% >40% and >10% cover * <40% and <10% cover
 Abundances (Average Percent Cover): >40% and >10% cover <40% and <10% cover >15% and >1% cover >7-15% and >1% cover <1% cover

Environment Table

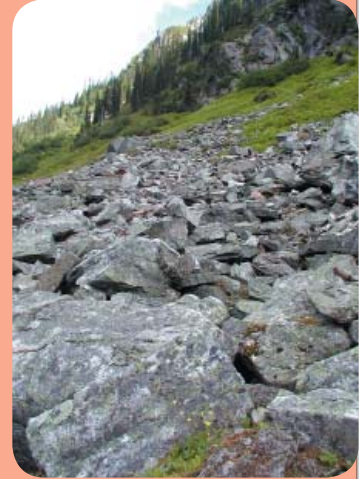
Site Units	Rock Outcrops			Forests							Meadow	Avalanche Tracks		
	72	73	74	01	02	03	04	05	06	07	08	92	75	76
Soil Moisture Regime	VX X	VX X	X VX	M SM	SX X	SX SM	M SH (SM)	SHG (M)	SHG (HG)	HG (SHD)	HG SHD	SHG (HG)	M SHG (SM)	M SHG
Mesotope Position	UP MD	CR UP	CR (UP)	MD (LW LV)	UP (MD)	MD (UP)	MD (LW LV)	MD (GU LW LV)	LW TO LV (MD)	LV DP	TO DP (LV)	LV (LV)	UP MD LV	MD LV
Slope Gradient	Steep	Variable	Steep Gentle	Gentle (Steep)	Steep Gentle	Steep Gentle	Gentle (Level)	Gentle (Level)	Gentle Level	Level	Level	Level (Gentle)	Steep	Steep Gentle
Aspect	Warm Cool	Warm (Neutral)	Variable	Neutral (Cool)	Warm (Neutral)	Warm Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Variable	Variable
Parent Materials	Cb	R	R (Cv)	Mb Cb	Mv Cv Mb Cb	Mb Cb	Mb (Cb)	Mb (Fb Cb)	Mb Fb	Fb	Fb Mb	Fb (Cb)	Cb	Cb
Soil Texture Class	Frag-mental	Variable	Coarse (Frag-mental Medium)	Medium Coarse	Coarse Medium	Coarse Medium	Medium (Coarse)	Medium (Coarse)	Medium	Medium Fine	Fine	Medium (Fine)	Medium (Frag-mental Coarse)	Variable
Important Features	Rocks & boulders	Bedrock 0-20 cm	Bedrock 10-30 cm		Some bedrock 20-100 cm			Seepage 50-100 cm	Some water tables 20-100 cm	Water 0-50 cm	Water table 0-20 cm	Water table 20-100 cm	Seepage	Seepage in runoff zone
Successional Stage			MC	MC	MC	MC	MC	MC	MC	MC				
Occurrence	Scarce	Un-common	Un-common	Common	Un-common	Common	Common	Common	Un-common ¹	Common	Scarce ¹	Un-common	Common ³	Un-common ^{3,4}

¹ Most common at upper elevations.
² Most common at lower elevations.

³ Most common in steep mountainous terrain.
⁴ A similar plant community may occur as upper elevation meadow associated with plateau forests.

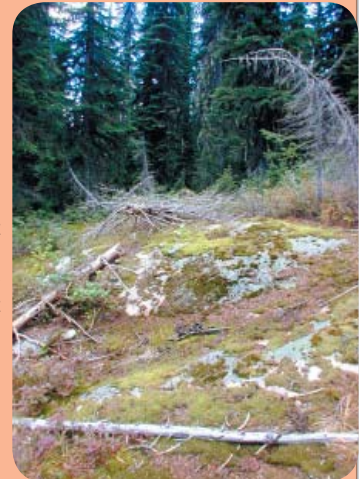
72 Rocktripe lichens — Rock-moss

This unit is uncommon and occurs on talus slopes on steep, middle and upper slopes. Trees, shrubs and herbs are sparse or absent. The moss and lichen layer may be extensive. Common species include rocktripe lichens, awned haircap moss and clad lichens.



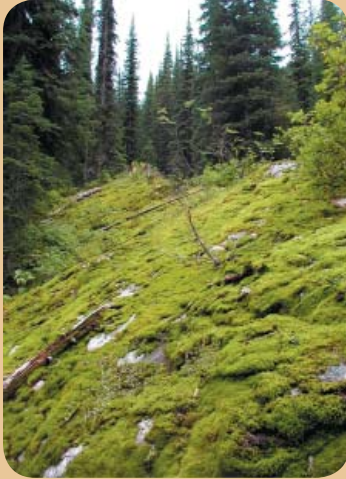
73 Rock-moss — Clad lichens

The 73 unit occurs infrequently and is found on exposed rock outcrops on upper slopes and crests. Trees are absent except BI which may be present as scattered individuals. The shrub layer is very sparse; black huckleberry may occur in small patches. The herb layer is also sparse; Alaska saxifrage is the most common species. The moss and lichen layer is very extensive. Rock-moss is usually the most abundant and common species. Other common species include awned haircap moss, clad lichens and heron's-bill moss.



74 Huckleberry — Rock-moss

This unit is uncommon and is found on exposed rock outcrops on upper slopes and crests. Trees are sparse (<10%) and may include PI, BI or Se. Unlike the 73 unit, the shrub layer is moderate and is dominated by patchy black huckleberry. White-flowered rhododendron may also be present in minor amounts. The herb layer is sparse and, like the 73 unit, Alaska saxifrage is a common species. The bryophyte and lichen layer is extensive and is dominated by rock-moss. Other common species include mountain leafy liverwort, heron's-bill moss, awned and juniper haircap mosses and clad lichens.

**02 BI — Huckleberry — Heron's-bill moss**

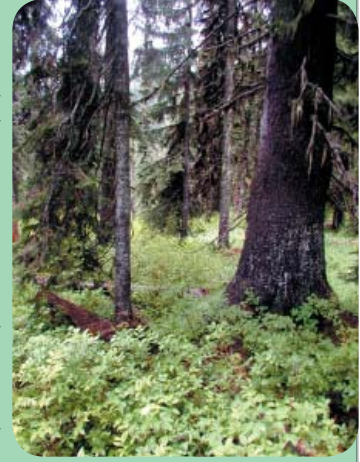
The 02 unit is uncommon. It occurs on warm, middle and upper slopes. The forest canopy and sparse regeneration layer are composed of BI and Se. Black huckleberry dominates the extensive shrub layer; minor amounts of white-flowered rhododendron are also present. The moderate herb layer is usually dominated by five-leaved bramble. Other common species include mountain arnica, one-sided wintergreen, one-leaved foamflower and violets. The extensive moss layer is dominated by heron's-bill moss. Other common species include clad lichens, common leafy liverwort, ragged-moss, red-stemmed feathermoss and pipecleaner moss.

**03 BI — Rhododendron — Heron's-bill moss**

This is a common unit found on gentle or steep and warm slopes. The closed canopy and sparse regeneration layer is dominated by BI with a smaller amount of Se. The extensive shrub layer is dominated by white-flowered rhododendron (>15%). Black huckleberry is also abundant. Small amounts of oval-leaved blueberry may also be present. The herb layer is sparse to moderate; the most abundant species is usually five-leaved bramble. Other common species include mountain arnica, one-sided wintergreen and one-leaved foamflower. The moss layer is dominated by heron's-bill moss. Other common species include clad and pelt lichens, mountain and common leafy liverworts, ragged-moss, red-stemmed feathermoss and pipecleaner moss.

**01 BI — Rhododendron — Oak fern**

The zonal site series occurs on gentle or steep and cool slopes. The canopy and regeneration layers are dominated by BI with a minor component of Se. The shrub layer is dominated by white-flowered rhododendron with abundant black huckleberry. Oval-leaved blueberry and black gooseberry may also be present. The herb layer is much more extensive than that of the 03 unit; oak fern and Sitka valerian are often the most abundant species. Other abundant species include five-leaved bramble and one-leaved foamflower. The moderate moss layer is usually dominated by ragged-moss. Other common species include heron's-bill moss, round-leaved leafy moss, pipecleaner moss, red-stemmed feathermoss and common leafy liverwort.



04 BI — Valerian — Oak fern

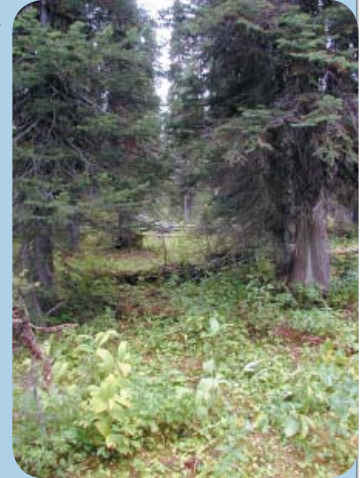
This site unit is common on gentle slopes and level areas. The canopy and regeneration layers are similar to drier units and are often dominated by BI with a minor component of Se. The shrub layer differs in that white-flowered rhododendron is sparse (<10%). Otherwise, the shrub layer resembles that of the 01 unit. The herb layer is extensive and is dominated by oak fern, Sitka valerian, one-leaved foamflower and five-leaved bramble. The moss layer is usually dominated by ragged-moss with minor components of pipecleaner moss, common leafy liverwort, heron's-bill moss

**05 BI — Lady fern — Oak fern**

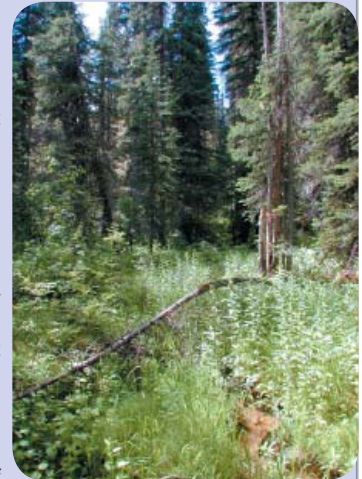
The 05 unit is common and is found on gentle slopes and level areas. It occurs more frequently near the lower elevation limits of the ESSFwc4. Either BI or Se may dominate the mixed forest canopy. As with drier units, the regeneration layer is sparse. Both white-flowered rhododendron and black huckleberry are relatively sparse (<10%). Other shrubs, including devil's club and black twinberry, may be present in trace amounts. The herb layer is similar to drier units and often has abundant oak fern, one-leaved foamflower and Sitka valerian. It differs in that lady fern is often the most abundant species. The moss layer is variable; ragged-moss is often the most common and abundant species.

**06 BI — Valerian — Arrow-leaved groundsel**

This is an uncommon unit that occurs most frequently near the upper elevation limits of the subzone. It is found on moist gentle slopes and level areas. The BISe forest canopy and regeneration layer are similar to those of drier units. The moderate shrub layer is often dominated by white-flowered rhododendron. Black huckleberry and oval-leaved blueberry may also be abundant. The herb layer is often dominated by Sitka valerian. Unlike drier units, ferns are not abundant. Instead, arrow-leaved groundsel, globeflower, and western meadowrue are often abundant species. The moderate bryophyte layer is often dominated by ragged-moss.

**07 BI — Horsetail**

The 07 unit occurs frequently on level areas and depressions where the water table is near the surface. Se tends to be more abundant than BI in the open forest canopy but like previous units, BI dominates the regeneration layer. The shrub layer is sparse and may contain minor amounts of white-flowered rhododendron, black huckleberry and oval-leaved blueberry. The herb layer differs from all other units in that common horsetail is the most common and abundant species (>10%). Other common species include bluejoint reedgrass and arrow-leaved groundsel. The variable bryophyte layer may include peat-moss, bent-leaf moss, large-leaf leafy moss or ragged-moss.



08 BI — Valerian — Subalpine daisy

This is the wettest forest unit and is very uncommon. It occurs on toe slopes, level areas and in depressions, usually at higher elevations. The open forest canopy is dominated by Se with a minor component of BI. The regeneration layer is very sparse and is usually dominated by BI. The moderate shrub layer contains white-flowered rhododendron, black huckleberry, oval-leaved blueberry and black twinberry. The herb layer is extensive; common species include subalpine daisy, Sitka valerian, soft-leaved sedge, common horsetail, globeflower, one-leaved foamflower and mitrewort. The extensive bryophyte layer includes large-leaf leafy moss, bent-leaf moss, sickle-moss, glow moss and peat-moss.

**92 Valerian — Showy sedge**

Meadows are uncommon. They are usually found on gentle slopes and level areas. Trees and shrubs are sparse or absent. The herb layer is dominated by a mixture of showy sedge, arrow-leaved groundsel and Sitka valerian. Other common species include mitrewort, wood-rush, globeflower, common horsetail and subalpine daisy. Bryophytes are sparse or absent.

**75 Alder — Lady fern**

This avalanche unit is uncommon and is found on steep slopes. The shrub layer is extensive and is dominated by a dense cover of Sitka alder. The herb layer is relatively well-developed and is usually dominated by lady fern. Other species present in minor amounts include mitrewort, oak fern, Sitka valerian and spiny wood fern. Bryophytes are sparse.

**76 Valerian — Arrow-leaved groundsel**

This is a very uncommon avalanche unit that is found on steep and gentle, middle and lower slopes. Shrubs are sparse or absent. The extensive herb layer is dominated by Sitka valerian and arrow-leaved groundsel. Other common species include mitrewort, Indian hellebore, violets, western meadowrue, cow-parsnip and showy sedge. Bryophytes are very sparse.



ESSFw_{cw}

WET COLD

ENGELMANN SPRUCE — SUBALPINE FIR WOODLAND SUBZONE

Distribution: The ESSF_{wcw} represents the northern distribution of the previously described ESSF_v, Lloyd et al. (1990). It occupies an elevational band between the ESSF_{wc} subzone/variants (ESSF_{wc2}, _{wc3}, _{wc4}) and the ESSF_{wcp}. It extends over a large area from the US border to north of Quesnel Lake, including the Quesnel and Shuswap Highlands and the Cariboo, Monashee and Selkirk Mountains.

Elevational Range: Given the substantial latitudinal range, there is considerable variation in the upper and lower elevational limits of this subzone. On dry plateaus and at the subzones southern extremes it occurs between 1750 and 1950m on north aspects and between 1800 and 2000m on south aspects. In wetter mountainous terrain, such as the Blue River and upper Columbia River areas, the lower elevational limit is 1600-1650m on north slopes and 1700-1750m on south aspects. The upper elevational limits extend to 1850-1900 m and 1950-2000 m on north and south slopes respectively.

Climate: The ESSF zone is characterized by long, cold winters with a deep snowpack and short, cool summers. It is estimated that the mean annual precipitation for the ESSF_{wcw} ranges from 1800-2200mm and maximum snow depths range between 3 and 4 meters. Late snowmelt and a very short frost-free period contribute to the short growing season. As a result, tree regeneration is slow to establish and is often widely dispersed or somewhat clumpy.

Forest Cover: Most f stands are dominated by BI and generally, contain less than 20% Se. Spruce is more common on steep south slopes that receive less intense summer frosts, have earlier snow melt and a slightly longer growing season. PI and Pa rarely occur and are restricted to drier exposed ridges. Stands are typically greater than 200 years old, have an open stand structure and average 10-13 meters in height. The wet climate and open stand structure results in fire return intervals that likely exceed 250–500 years. 1000-year-old trees have been observed. Balsam bark beetle, root rot and windthrow contribute to gap dynamic processes that ensure average stands ages are less than 350 years.

ESSFw_{cw} - 1

ESSFw_{cw}

Zonal Vegetation and Soils: Semi-open climax stands of BI with little or no Se dominate much of the ESSF_{wcw} landscape. BI is the primary regenerating species. The shrub layer has variable development but commonly includes black huckleberry and white-flowered rhododendron. The herb layer is moderately well developed and includes Sitka valerian, mountain arnica, wood-rush, mountain hairgrass and minor amounts of partridge-foot and mountain-heathers. The well developed moss layer is dominated by common and mountain leafy liverworts. Soils are Humo-Ferric Podzols or Ferro-Humic Podzols with a shallow Mor humus form. The abundance of mountain-heathers and partridge-foot increases significantly in areas subject to cold air drainage such as cirque basins.

Adjacent Biogeoclimatic Subzones: The ESSF_{wcw} occurs above the ESSF_{wc2}, _{wc3} or _{wc4} and below the ESSF_{wcp}. It adjoins the ESSF_v at similar elevations in the Revelstoke area.



ESSFw_{cw} - 2

Distinguishing adjacent Biogeoclimatic units from the ESSF_{wcw}**On zonal sites:****ESSF_{wc2}, _{wc3}, _{wc4}**

- late succession stands are taller and less open
- oak fern, lady fern, rosy twistedstalk, false azalea are more common
- lacks partridge-foot and heather species

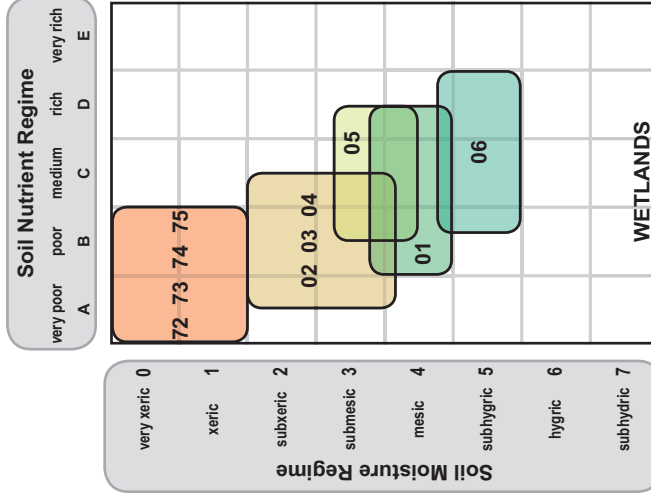
ESSF_{vcw}

- very similar to the ESSF_{wcw} but has Hm
- occurs elevationally above the ESSF_{vc}

ESSF_{wcp}

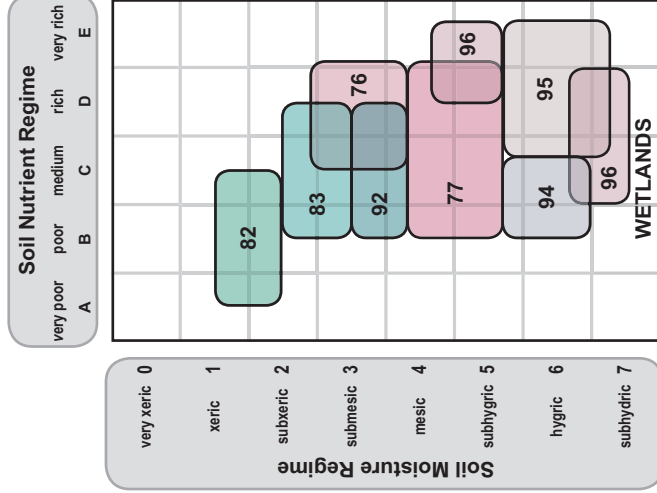
- has a clumpy discontinuous forest canopy
- herb rich meadows and mountain-heather-dominated ecosystems are common, widespread and not restricted to areas subject to cold air drainage.

Edatopic Grid



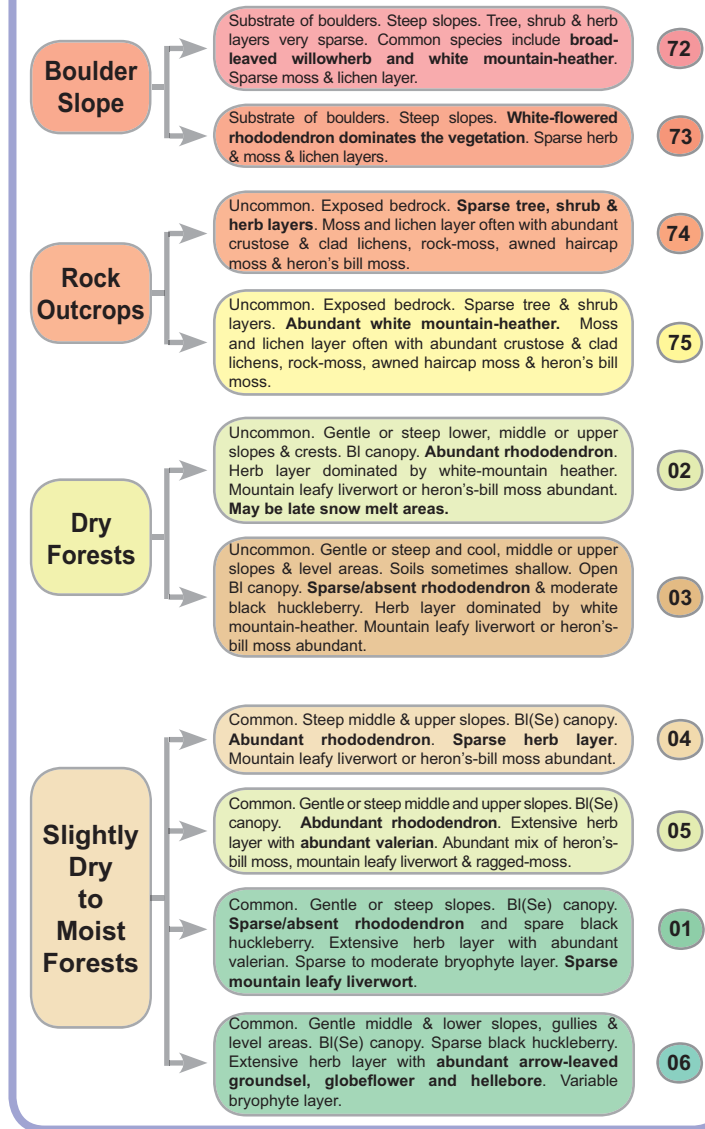
- 72 Broad-leaved willowherb
- 73 Rhododendron — Heron's-bill moss
- 74 Alaska saxifrage — Rock-moss
- 75 White mountain-heather — Rock-moss
- 02 BI — Rhododendron — White mountain-heather
- 03 BI — White mountain-heather — Partridge-foot
- 04 BI — Rhododendron — Heron's -bill moss
- 05 BI — Rhododendron — Valerian
- 01 BI — Huckleberry — Valerian
- 06 BI — Valerian — Arrow-leaved groundsel

Edatopic Grid

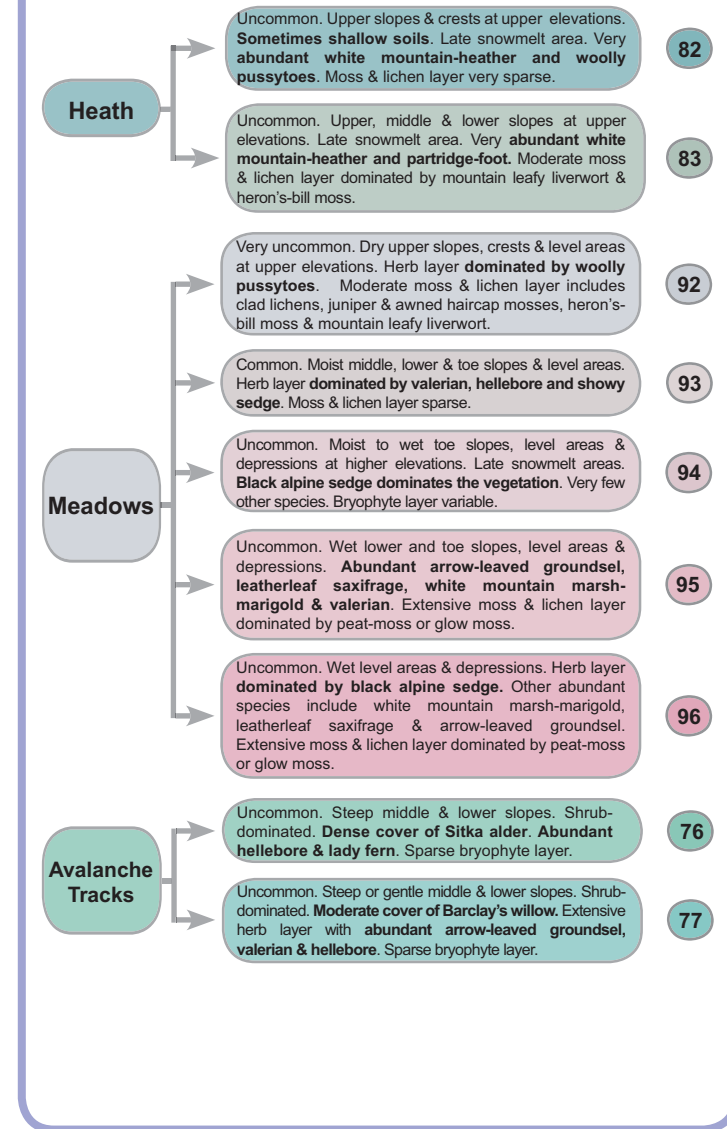


- 82 White mountain-heather — woolly pussytoes
- 83 White mountain-heather — Partridge-foot
- 92 Woolly pussytoes — Clad lichens
- 93 Valerian — Showy sedge
- 94 Alpine sedge
- 95 Arrow-leaved groundsel — Marsh marigold
- 96 Alpine sedge — Marsh marigold
- 76 Alder — Hellebore
- 77 Willow — Arrow-leaved groundsel
- Wf04 Barclay's willow — Water sedge — Glow moss
- Wf12 Narrow-leaved cotton-grass — Marsh-marigold
- Wf13 Narrow-leaved cotton-grass — Shore sedge
- Wf15 Barclay's willow — Black alpine sedge
- Wf16 Black alpine sedge — White mtn. marsh-marigold — Glow moss
- Wrm01 Beaked sedge — Water sedge
- Wst13 Barclay's willow — Common horsetail

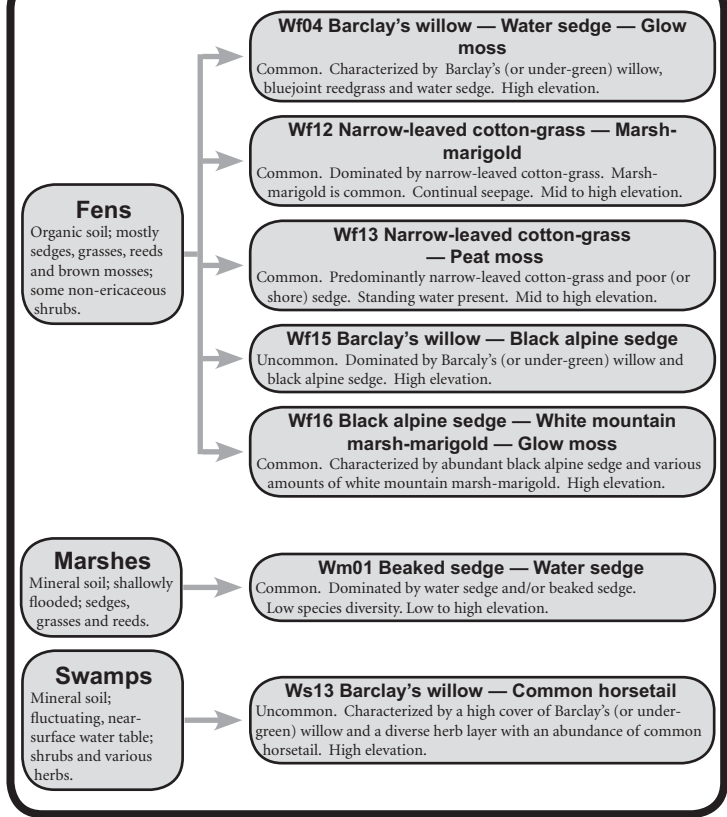
Site Series Flowchart



Site Series Flowchart



Site Unit Flowchart



Vegetation Table

Site Units	Boulder		Rock Outcrops					Forests				
	72	73	74	74	75	02	03	04	05	01	06	
No. of Plots	1	1	14	5	6	38	17	20	29	13		
Trees												
<i>Abies lasiocarpa</i>												
<i>Picea engelmannii</i>												
<i>Abies lasiocarpa</i>												
<i>Picea engelmannii</i>												
<i>Rhododendron albiflorum</i>												
<i>Vaccinium membranaceum</i>												
<i>Vaccinium ovalifolium</i>												
<i>Menziesia ferruginea</i>												
<i>Alnus viridis</i>												
<i>Salix barclayi</i>												
Herbs												
<i>Epiobium latifolium</i>												
<i>Saxifraga ferruginea</i>												
<i>Phyllocoe glanduliflora</i>												
<i>Rubus pedatus</i>												
<i>Cassiope mertensiana</i>												
<i>Phyllocoe empetriformis</i>												
<i>Luzula parviflora</i>												
<i>Pedicularis latifolia</i>												
<i>Arnica latifolia</i>												
<i>Luzula sp.</i>												
<i>Valeriana sitchensis</i>												
<i>Veratrum viride</i>												
<i>Vahlodea atropurpurea</i>												
<i>Mitella sp.</i>												
<i>Senecio triangularis</i>												
<i>Carex spectabilis</i>												
<i>Trollius albiflorus</i>												
<i>Viola sp.</i>												
<i>Athyrium filix-femina</i>												
<i>Thalictrum occidentale</i>												

Site Units	Boulder		Rock Outcrops					Forests				
	72	73	74	75	02	03	04	05	01	06		
Herbs												
<i>Gymnocarpium diopteris</i>												
<i>Equisetum arvense</i>												
<i>Leptarrhena pyrolifolia</i>												
<i>Eriogon peregrinus</i>												
<i>Anemone occidentalis</i>												
<i>Vaccinium caespitosum</i>												
<i>Danthonia intermedia</i>												
<i>Carex nigricans</i>												
<i>Callina leptosepala</i>												
Mosses & Lichens												
<i>Racomitrium sp.</i>												
<i>Polytrichum piliferum</i>												
<i>crustose lichens</i>												
<i>Polytrichum juniperinum</i>												
<i>Dicranum sp.</i>												
<i>Cladonia sp.</i>												
<i>Baileya sp.</i>												
<i>Baileya sp.</i>												
<i>Baileya sp.</i>												
<i>Pleurozia schreberi</i>												
<i>Rhytidiopsis robusta</i>												
<i>Rhytidiopsis squarrosa</i>												
<i>Aulacomnium palustre</i>												
<i>Sphagnum sp.</i>												

Frequency of Occurrence:
 Abundance (Average Percent Cover): * <40% and <10% cover

Vegetation Table

Site Units	Heaths		Meadows					Avalanche Tracks	
	82	83	92	93	94	95	96	76	77
Trees									
<i>Abies lasiocarpa</i>									
<i>Picea engelmannii</i>									
<i>Abies lasiocarpa</i>			■		*				
<i>Picea engelmannii</i>			■		*				
<i>Rhododendron albiflorum</i>									
<i>Vaccinium membranaceum</i>									
<i>Vaccinium ovalifolium</i>									
<i>Menziesia ferruginea</i>									
<i>Alnus viridis</i>									
<i>Salix barclayi</i>									
<i>Epiobium latifolium</i>									
<i>Saxifraga ferruginea</i>									
<i>Phyllodoce glanduliflora</i>									
<i>Rubus pedatus</i>									
<i>Cassiope mertensiana</i>									
<i>Phyllodoce empetriflora</i>									
<i>Picea jeffersonii</i>									
<i>Artemisia tridentata</i>									
<i>Pedicularis bracteosa</i>									
<i>Arnica latifolia</i>									
<i>Luzula</i> sp.									
<i>Valeriana sitchensis</i>									
<i>Veratrum viride</i>									
<i>Vahodea atropurpurea</i>									
<i>Mitella</i> sp.									
<i>Tiarella trifoliata</i> var. <i>unifoliolata</i>									
<i>Senecio triangularis</i>									
<i>Carex spectabilis</i>									
<i>Trollius abiflorus</i>									
<i>Viola</i> sp.									
<i>Athyrium filix-femina</i>									
<i>Thalictrum occidentale</i>									
Shrubs									
<i>subalpine fir</i>									
<i>Engelmann spruce</i>									
<i>subalpine fir</i>									
<i>Engelmann spruce</i>									
<i>white-flowered rhododendron</i>									
<i>black huckleberry</i>									
<i>oval-leaved blueberry</i>									
<i>false azalea</i>									
<i>Silka alder</i>									
<i>Barclay's willow</i>									
<i>broad-leaved willowherb</i>									
<i>Alaska saxifrage</i>									
<i>yellow mountain-heather</i>									
<i>five-leaved bramble</i>									
<i>white mountain-heather</i>									
<i>pink mountain-heather</i>									
<i>woolly grasses</i>									
<i>bracted rosewort</i>									
<i>mountain amica</i>									
<i>wood-rush</i>									
<i>Silka valerian</i>									
<i>Indian heliobore</i>									
<i>mountain hairgrass</i>									
<i>mitrewort</i>									
<i>one-leaved foamflower</i>									
<i>arrow-leaved groundsel</i>									
<i>showy sedge</i>									
<i>globeflower</i>									
<i>violet</i>									
<i>lady fern</i>									
<i>western meadowrue</i>									

Site Units	82	83	92	93	94	95	96	76	77
	Herbs								
<i>Gymnocarpium dryopteris</i>									
<i>Equisetum arvense</i>									
<i>Leptarrhena pyrolifolia</i>									
<i>Erigeron peregrinus</i>									
<i>Anemone occidentalis</i>									
<i>Vaccinium caespitosum</i>									
<i>Darlingtonia intermedia</i>									
<i>Carex nigricans</i>									
<i>Callitriche leptosepala</i>									
<i>Racomitrium</i> sp.									
<i>Polytrichum piliferum</i>									
<i>crusoeae lichen</i>									
<i>Polytrichum juniperinum</i>									
<i>Dicranum</i> sp.									
<i>Cladonia</i> sp.									
<i>Barbilophzia lycocodioides</i>									
<i>Brachythecium</i> sp.									
<i>Pleurozium schreberi</i>									
<i>Rhytidopsis robusta</i>									
<i>Rhytidelaphus squarrosus</i>									
<i>Aulacomnium palustre</i>									
<i>Sphagnum</i> sp.									
Mosses & Lichens									
<i>oak fern</i>									
<i>common horsetail</i>									
<i>leatherleaf saxifrage</i>									
<i>subalpine daisy</i>									
<i>western pasqueflower</i>									
<i>dwarf blueberry</i>									
<i>timber oatgrass</i>									
<i>black alpine sedge</i>									
<i>white mountain marsh-marigold</i>									
<i>rock-moss</i>									
<i>awned haircap moss</i>									
<i>juniper haircap moss</i>									
<i>heron's-bill moss</i>									
<i>clad lichens</i>									
<i>common leafy liverwort</i>									
<i>ragged-moss</i>									
<i>red-stemmed feathermoss</i>									
<i>pipecleaner moss</i>									
<i>bent-leaf moss</i>									
<i>glow moss</i>									
<i>peat-moss</i>									

Frequency of Occurrence: ■ >80% ■ 40-80% ■ 15-25% ■ 7-15% ■ 1-7% ■ <1%
 Abundance (Average Percent Cover): ■ >25% ■ 15-25% ■ 7-15% ■ 1-7% ■ <1%

Environment Table

Site Units	Boulder ¹			Rock Outcrops						Forests						
	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87
Soil Moisture Regime	VX X	VX X	VX (X)	VX X	SM SX (M)	SM (M SX)	SM (M)	SM (M)	SM (M)	SM (M)	SM (M SX)	SM (M)	SM (M)	SM (M)	M (SM)	SHG (M)
Mesoslope Position	UP MD	UP MD	CR UP	CR (UP)	UP MD LW	UP MD LV	UP MD	UP MD	UP MD	UP MD	UP MD LV	UP MD	UP MD	UP MD	Variable	LW GU (MD LV)
Slope Gradient	Steep	Steep	Steep (Gentle)	Steep (Gentle)	Variable	Variable	Steep (Gentle)	Steep (Gentle)	Steep (Gentle)	Steep (Gentle)	Variable	Steep (Gentle)	Steep (Gentle)	Steep (Gentle)	Variable	Gentle Level
Aspect	Variable	Variable	Variable	Neutral Cool	Neutral (Cool)	Neutral (Cool)	Neutral (Cool)	Neutral (Cool)	Variable	Variable	Neutral (Cool)	Neutral (Cool)	Variable	Variable	Neutral	Neutral
Parent Materials	Cb	Cb	R	R	Cb Mb	Mb Cb (Mv Cv)	Mb Cb	Mb Cb	Mb Cb	Mb Cb	Mb Cb	Mb Cb	Mb Cb	Mb Cb	Mb Cb	Cb Mb Fb
Soil Texture Class	Fragmental	Fragmental	Fragmental Coarse Medium	Fragmental Coarse Medium	Fragmental (Coarse)	Medium (Coarse)	Medium (Coarse)	Medium (Coarse)	Medium (Coarse)	Medium (Coarse)	Medium (Coarse)	Medium (Coarse)	Medium (Coarse)	Medium (Coarse)	Medium	Medium
Important Features	Rocks & boulders	Rocks & boulders	Bedrock 0-20 cm	Bedrock 0-20 cm	May be late snow ile	Some bedrock 50-100 cm										
Successional Stage	Scarce	Scarce	Uncommon	Uncommon	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Occurrence	Scarce	Scarce	Uncommon	Uncommon	Uncommon	Uncommon	Uncommon	Uncommon	Uncommon	Uncommon	Uncommon	Uncommon	Uncommon	Uncommon	Common	Uncommon

¹ Not true talus but more felseneer like, consisting of rubby material with a 10-25% soils matrix.

Environment Table

Site Units	Heaths			Meadows						Avalanche Tracks						
	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97
Soil Moisture Regime	X SX	SM M	SM M	SX SM	M (SHG)	SHG SHD HG	SHG SHD HG	SHG SHD HG	SHG SHD HG	SHG SHD HG	SHG SHD HG	SHG SHD HG	SHG SHD HG	SHG SHD HG	SHG SHD HG	M SHG
Mesoslope Position	CR UP	UP MD LW	UP MD LW	CR UP LV	LW TO MD	DP TO (LV)	DP TO (LV)	DP TO (LV)	DP TO (LV)	DP TO (LV)	DP TO (LV)	DP TO (LV)	DP TO (LV)	DP TO (LV)	DP TO (LV)	MD LW
Slope Gradient	Variable	Variable	Variable	Gentle Level	Variable	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Steep
Aspect	Neutral Cool	Neutral Cool	Neutral Cool	Neutral	Variable	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Variable
Parent Materials	Mv (Mb)	Mb Cb FG	Mb Cb FG	Mb (Mv)	Cb Mb Fb	Fb Ob	Fb Ob	Fb Ob	Fb Ob	Fb Ob	Fb Mb Cb Ov	Fb Mb Cb Ov	Fb Mb Cb Ov	Fb Mb Cb Ov	Fb Mb Cb Ov	Cb
Soil Texture Class	Coarse (Fragmental)	Coarse (Medium)	Coarse (Medium)	Coarse (Medium)	Medium (Fine)	Medium (Fine)	Medium (Fine)	Medium (Fine)	Medium (Fine)	Medium (Fine)	Medium (Coarse Organic)	Medium (Coarse Organic)	Medium (Coarse Organic)	Medium (Coarse Organic)	Medium (Coarse Organic)	Medium
Important Features	Some bedrock 20-100 cm & late snow melt	Late snow melt	Late snow melt	Some bedrock 20-100cm		Late snow melt	Late snow melt	Late snow melt	Late snow melt	Late snow melt	Water table 0-40 cm	Water table 0-40 cm	Water table 0-40 cm	Water table 0-40 cm	Water table 0-40 cm	Water table & late snow melt
Successional Stage	Uncommon ²	Uncommon ²	Uncommon ²	Scarce ²	Common	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Scarce ³
Occurrence	Uncommon ²	Uncommon ²	Uncommon ²	Scarce ²	Common	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Uncommon ²	Scarce ³

² More common at higher elevations and in cirque basins.

³ More common at lower elevations.

72 Broad-leaved willowherb

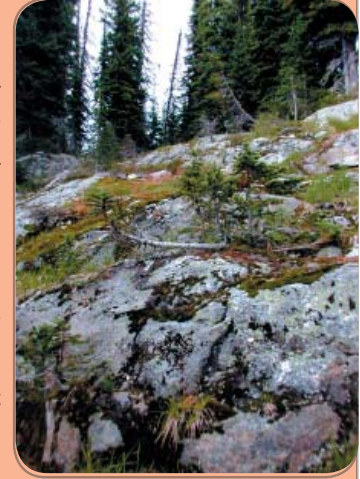
Boulder-dominated slopes are uncommon and are found on steep, upper and middle slopes. This site unit is very sparsely vegetated. Trees and shrubs are absent. The herb layer is sparse. Common species include broad-leaved willowherb, mountain hairgrass and white mountain-heather. The moss and lichen layer is extremely sparse.

**73 Rhododendron — Heron's-bill moss**

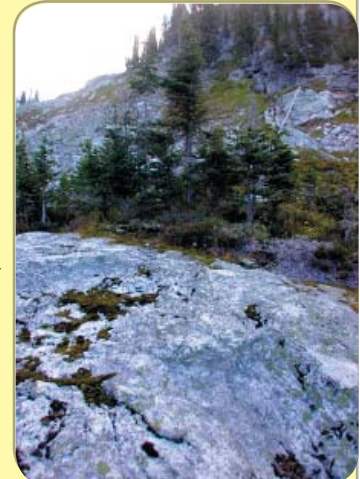
The 73 unit is uncommon and represents steep boulder slopes typically found on middle and upper slopes. Stunted Bl is often present as scattered individuals or in small dense patches. Abundant white-flowered rhododendron dominates the vegetation. The sparse herb layer may include minor amounts of wood-rush and mitrewort. The moss and lichen layer is very sparse.

**74 Alaska saxifrages — Rock-moss**

This site unit is uncommon and occurs on rock outcrops. It is found on steep upper slopes and crests. Bl and, less frequently, Se may occur as scattered individuals. Black huckleberry is present in small amounts. The sparse herb layer is variable; Alaska saxifrage is the most common species. Species typical of dry sites are sometimes present in minor amounts and include partridge-foot and dwarf blueberry. Lichens and bryophytes may be very extensive. Crustose and clad lichens, rock-moss, awned haircap moss and heron's-bill moss are usually the most common and abundant species.

**75 White mountain-heather — Rock-moss**

The 75 unit is uncommon and occurs on rock outcrops. It is found on steep upper slopes and crests. The tree and shrub layers are the same as those of the 73 unit. It differs in that white mountain-heather is a common and abundant species that dominates the herb layer. Yellow mountain-heather, partridge-foot and woolly pussytoes are often present in minor amounts. The moss and lichen layer is similar to the 74 unit.



02 BI — Rhododendron — White mountain-heather

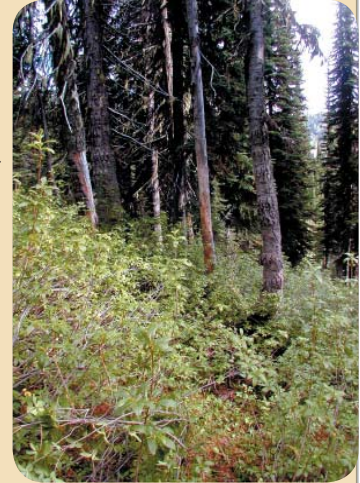
The 02 unit is uncommon and is the driest forested site series. It often occurs on gentle or steep lower, middle and upper slopes. BI dominates the patchy tree and sparse regeneration layer. Abundant white-flowered rhododendron with some black huckleberry dominates the shrub layer. The modest herb layer is dominated by white mountain-flower which is largely restricted to exposed areas between the patchy BI and rhododendron. Partridge-foot, five-leaved bramble and pink mountain-heather are present in small amounts. The extensive bryophyte and lichen layer is dominated by mountain leafy liverwort and heron's-bill moss. Clad lichens are often present in trace amounts.

**03 BI — White mountain-heather — Partridge-foot**

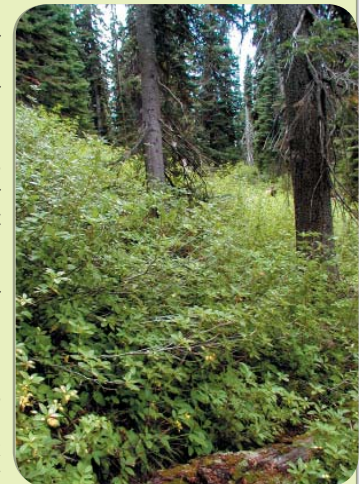
The 03 unit occurs infrequently and is found on cool and steep or gentle upper and middle slopes and level areas. The open tree and regeneration layers are dominated by patchy BI. Unlike the 02 unit, white-flowered rhododendron is sparse to absent. Black huckleberry is present in moderate amounts. The herb layer is usually extensive and is most often dominated by white mountain-heather. Pink mountain-heather or partridge-foot are usually minor components of the herb layer. As with the 02 unit, herbs are largely confined to exposed areas between the patches of BI. The extensive bryophyte layer is dominated either by mountain leafy liverwort or heron's-bill moss.

**04 BI — Rhododendron — Heron's-bill moss**

The 04 unit is common and is found on steep upper and middle slopes. The patchy tree and regeneration layers are dominated by BI. Se is often present in minor amounts in the tree layer. White-flowered rhododendron dominates the shrub layer with a minor component of black huckleberry. Unlike the 02 and 03 units, the herb layer is sparse. Common species present in small amounts include white and pink mountain-heathers, mountain arnica and wood-rush. The bryophyte layer is similar to that of the 02 and 03 units.

**05 BI Rhododendron — Valerian**

This common site unit is found on gentle or steep cool middle and upper slopes. It is dominated by BI in the tree and regeneration layers. A minor amount of Se is present in the tree layer. The shrub layer is similar to the 04 unit and is dominated by white-flowered rhododendron with a minor component of black huckleberry. It differs from the 04 unit in that the herb layer is much more extensive and is dominated by Sitka valerian. Other common species include mountain arnica, wood-rush, Indian hellebore, mountain hairgrass, mitrewort and one-leaved foamflower. Mountain-heathers are sparse or absent. The bryophyte layer is dominated by a mix of heron's-bill moss, mountain leafy liverwort and ragged-moss.



01 BI — Huckleberry — Valerian

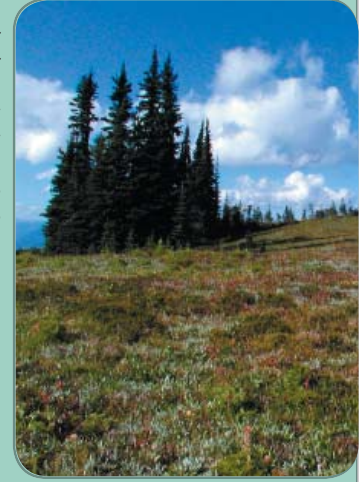
The zonal site series is found on gentle or steep slopes and level areas. The open tree and regeneration layers are dominated by BI with a minor amount of Se. The shrub layer is sparse to moderate and is dominated by black huckleberry. Unlike the 05 unit, white-flowered rhododendron is sparse or absent. The extensive herb layer is similar to the 05 unit. Sitka valerian is usually the most common and abundant species. Other common herbs include mountain arnica, wood-rush, Indian hellebore and mitrewort. The sparse to moderate bryophyte layer is similar to previous units except mountain leafy liverwort occurs less frequently and is rarely a dominant species.

**06 BI — Valerian — Arrow-leaved groundsel**

The 06 unit occupies moist soils on middle and lower slopes, gullies and level areas. As with other forested site series, BI dominates the open tree and regeneration layers with a minor component of Se. The shrub layer is very sparse; black huckleberry is sometimes present as scattered individuals. The extensive herb layer resembles the 01 unit but differs in that species other than Sitka valerian may be the most abundant species and include arrow-leaved groundsel, globeflower and Indian hellebore. Other common species include mountain arnica, bracted lousewort, wood-rush, mountain-hairgrass and mitrewort. The bryophyte layer is variable and may be sparse or very extensive.

**82 White mountain-heather — Woolly pussytoes**

The 82 unit represents dry heaths that are most often found at higher elevations in the ESSFwcv on upper slopes and crests on shallow soils. The herb layer is dominated by white mountain-heather and woolly pussytoes. Other abundant species may include pink or yellow mountain-heather, mountain arnica and wood-rush. Subalpine daisy, western pasqueflower, mountain hairgrass and Sitka valerian are often present in minor amounts. Mosses and lichens are very sparse.

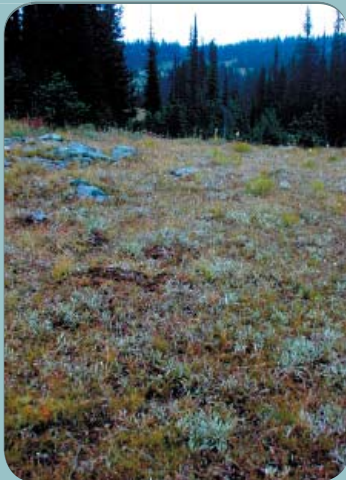
**83 White mountain-heather — Partridge-foot**

The 83 heath unit occurs infrequently and is mostly found on gentle or steep cool upper, middle and lower slopes. Like the 82 unit, white mountain-heather is the dominant species. Pink mountain-heather and partridge-foot are present and may be abundant. Other species present in small amounts include mountain arnica, wood-rush, mountain hairgrass and black alpine sedge. The bryophyte layer is moderately well developed and is dominated by mountain leafy liverwort and heron's-bill moss.

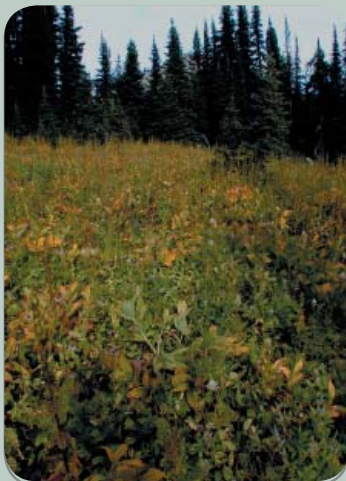


92 Woolly pussytoes — Clad Lichens

This meadow unit is very uncommon and is found on dry upper slopes, crests and level areas. It may be restricted to the upper elevations in the ESSFwcv. The herb layer is dominated by woolly pussytoes. Other abundant species include timber oatgrass, Sitka valerian and subalpine daisy. Other herbs present in minor amounts include pink mountain-heather, dwarf blueberry and black alpine sedge. The moderate lichen and moss layer includes clad lichens, juniper and awned haircap mosses, heron's-bill moss and mountain leafy liverwort.

**93 Valerian — Showy sedge**

This is a common and widespread meadow unit. It occurs on moist middle, lower and toe slopes and level areas. Occasionally, it may be associated with the toe position of avalanche tracks. These sites are dominated by a mix of Sitka valerian, Indian hellebore and showy sedge. Other abundant herbs may include mountain arnica, western pasqueflower and arrow-leaved groundsel. Herbs present in minor amounts include mountain hairgrass, wood-rush and mitrewort. The bryophyte layer is typically very sparse.

**94 Alpine sedge**

This meadow unit is uncommon. It occurs most often in late snowmelt areas on toe slopes, level areas and depressions. Black alpine sedge dominates the herb layer. Few other species are present except a minor amount of partridge-foot and mountain hairgrass. The bryophyte layer is moderately well-developed and variable. Mountain leafy liverwort is sometimes a dominant species.

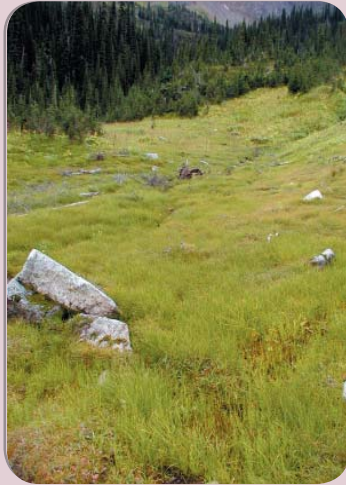
**95 Arrow-leaved groundsel**

The 95 unit is uncommon and is found on lower and toe slopes, level areas and in depressions where the water table is near the soil surface. They are characterized by the presence of abundant arrow-leaved groundsel, leatherleaf saxifrage, white mountain marsh-marigold and Sitka valerian. Other herbs which may be present in minor amounts include showy sedge, common horsetail, mitrewort and Indian hellebore. ce of showy sedge The bryophyte layer is moderate to extensive in area. Unlike drier site units, mountain leafy liverwort and heron's-bill moss are absent. The most common and abundant species are peat-moss and glow moss.



96 Alpine sedge — Marsh-marigold

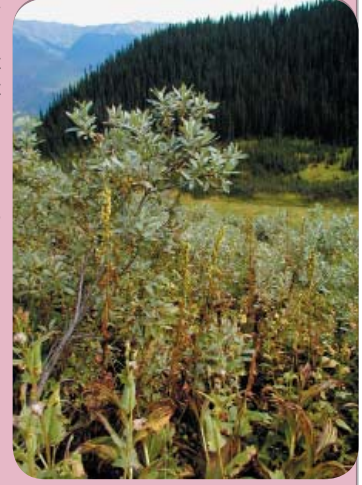
This wet meadow unit is uncommon. It is found on level areas and in depressions on organic or fine-textured soils with a water table that is near or at the surface. Unlike the 95 unit, black alpine sedge is often the most abundant species. Other abundant species include white mountain marsh-marigold, leatherleaf saxifrage and arrow-leaved groundsel. Globeflower and Sitka valerian are less common and abundant than in the 95 unit. The bryophyte layer is usually extensive and is dominated by either peat-moss or glow moss.

**76 Alder — Hellebore**

This avalanche track unit is very uncommon and is found on steep middle and lower slopes. The shrub layer is dominated by a dense cover of Sitka alder. The herb layer is well developed. Common and abundant species include Indian hellebore and lady fern. Other common herbs include arrow-leaved groundsel, mitrewort, and Sitka valerian. The bryophyte layer is very sparse. Ragged-moss is often present in trace amounts.

**77 Willow — Arrow-leaved groundsel**

This avalanche track unit is very uncommon. It is found on steep to gentle middle and lower slopes. It differs from the 76 unit in that it lacks Sitka alder. Instead, the shrub layer is dominated by a moderate cover of Barclay's willow. The herb layer is extensive and common and abundant species include arrow-leaved groundsel, Sitka valerian and Indian hellebore. The bryophyte layer is very sparse and may contain trace amounts of heron's-bill moss, ragged-moss and bent-leaf moss.



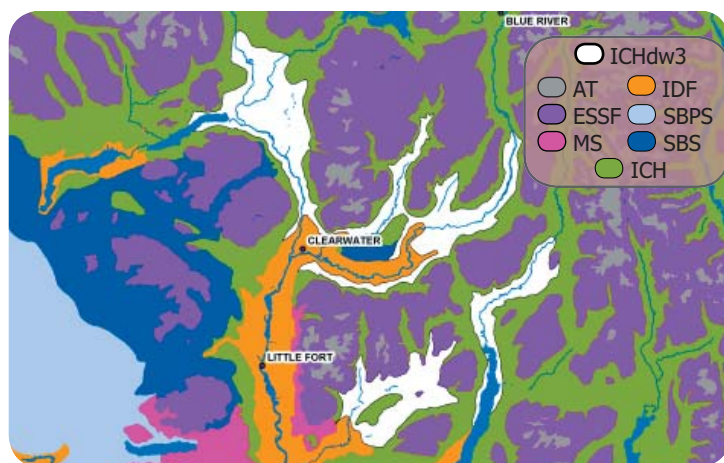
ICHdw3

NORTH THOMPSON DRY WARM INTERIOR CEDAR — HEMLOCK VARIANT

Distribution: The ICHdw3 occurs in the Shuswap and Quesnel Highlands where it occupies valley bottoms of the Clearwater, Raft and Mad River drainages and the North Thompson River between Clearwater and Avola and the Barriere Lakes area. It also occurs adjacent to the north end of Adams Lake. The ICHdw3 encompasses lower elevational areas of the former ICHmw3 (Lloyd et al. 1990).

Elevational Range: Throughout much of its range, the ICHdw3 occupies valley bottoms at elevations of 450-500 m. The exception is between Clearwater and Vavenby along the North Thompson River where it occurs above the IDFmw2, starting at approximately 850-900 m. It borders the ICHmw3 at about 1000m on north aspects and at 100-1200m on south aspects.

Climate: The ICHdw3 is warmer than the MS, ESSF and ICHmw3 and wetter than the MS and IDF. It is the driest variant of the ICH and summer soil moisture deficits occur frequently. It receives about 600-700 mm of annual precipitation and snowpacks rarely exceed 75-100 cm. Spring frost events contribute to the reduced occurrence and regeneration of Hw. On logged or burned sites, Hw generally requires partial shade and overstory protection to become established on zonal sites.



ICHdw3 - 1

Forest Cover: Mixed mid-seral stands dominate this variant. Stands are mixtures of broadleaf and conifer species and include PI, Fd, Pw, Cw, Ep and At. The abundance of pure At/Ep stands distinguish the ICHdw3 from the adjacent ICHmw3. Hw and Cw are the most common regeneration species and would dominate climax stands. However, a fire return interval of less than 150 yrs has restricted development of climax stands to small isolated occurrences. These climax stands, such as those in Sphats Creek Provincial Park, are likely maintained by cold air drainage and the associated increase in relative humidity. Most ICHdw3 stands are 60-120 years old. Fd and PI dominate steep south slopes and Sxw is commonly associated with seepage sites. Act is common on large floodplains along the North Thompson River.

Zonal Vegetation and Soils: Mixed mature seral stands of Fd, PI, Pw, Cw, Ep and At dominate zonal sites throughout this variant. Hw and Cw dominate the regeneration layer. The understory has a moderately well developed shrub layer containing falsebox, birch-leaved spirea, black huckleberry, thimbleberry, and a poorly developed herb layer containing twinflower, wild sarsaparilla, bunchberry, prince's pine, and queen's cup. The well developed moss layer is dominated by red-stemmed feathermoss, step moss and electrified cat's-tail moss. Soils are characteristically Dystric Brunisols with Mor humus forms.

Adjacent Biogeoclimatic Subzones: The ICHdw3 occupies the valley bottom or occurs above the IDFmw2. It always lies below the ICHmw3.

Distinguishing adjacent Biogeoclimatic units from the ICHdw3

On zonal sites:

IDFmw2

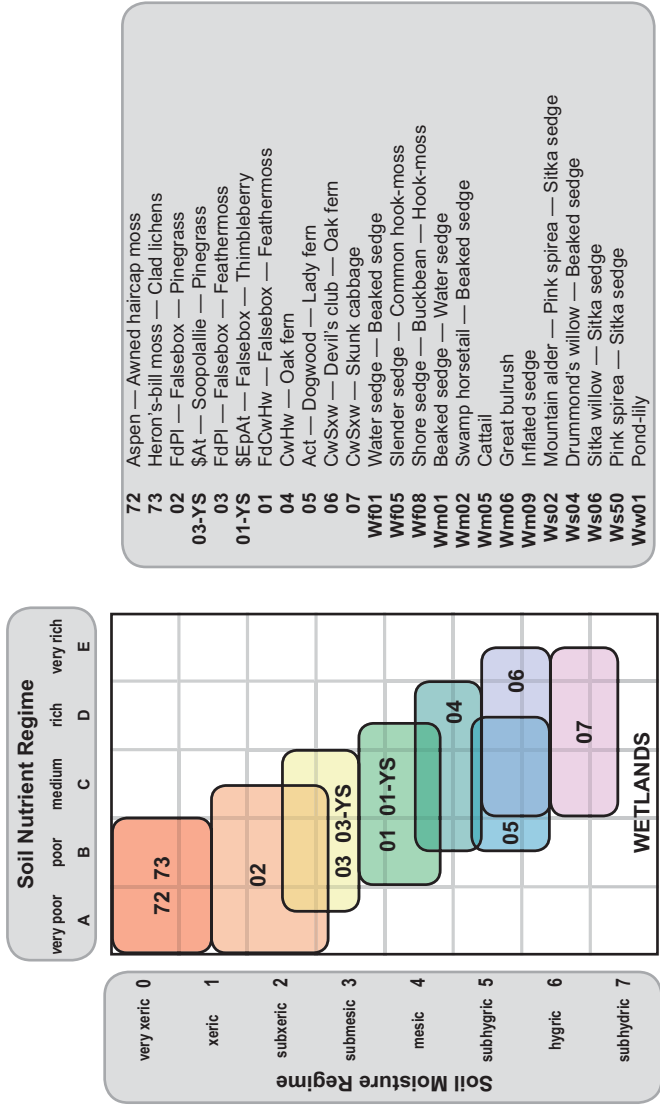
- Hw and Pw absent
- pinegrass and saskatoon are common

ICHmw3

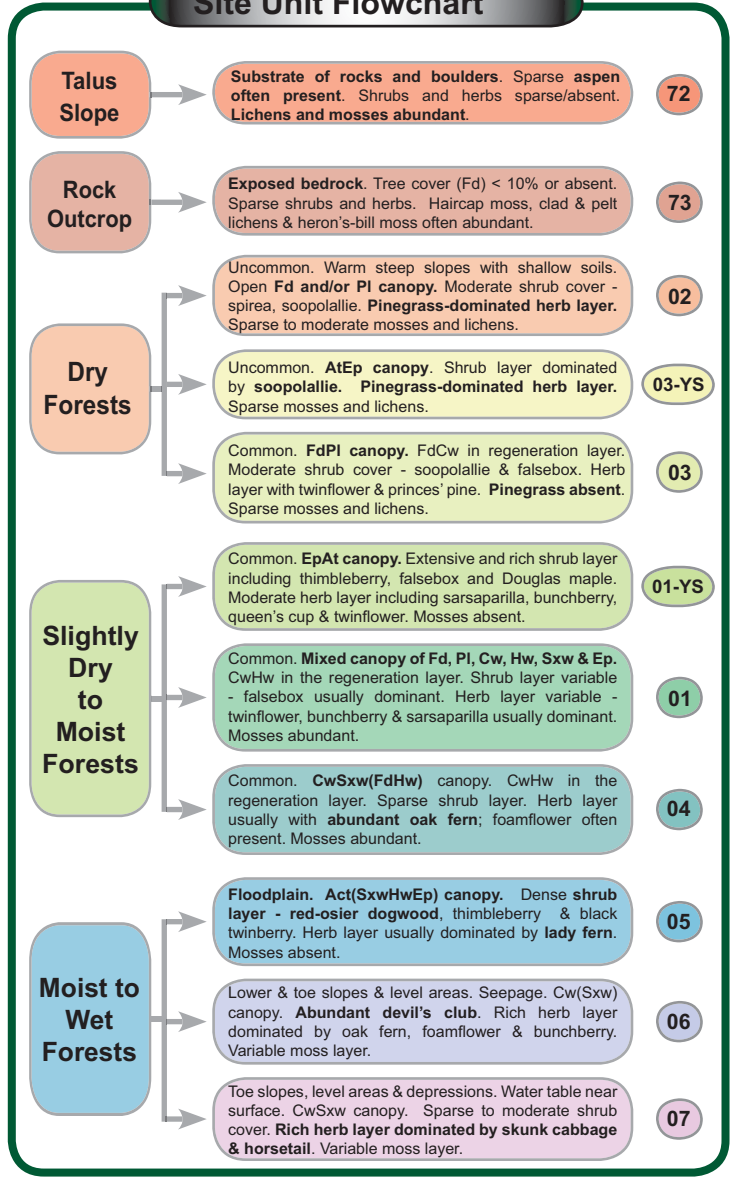
- Hw common in climax and seral stands.
- Ep and At are generally absent
- late successional stands are common and widespread

ICHdw3- 2

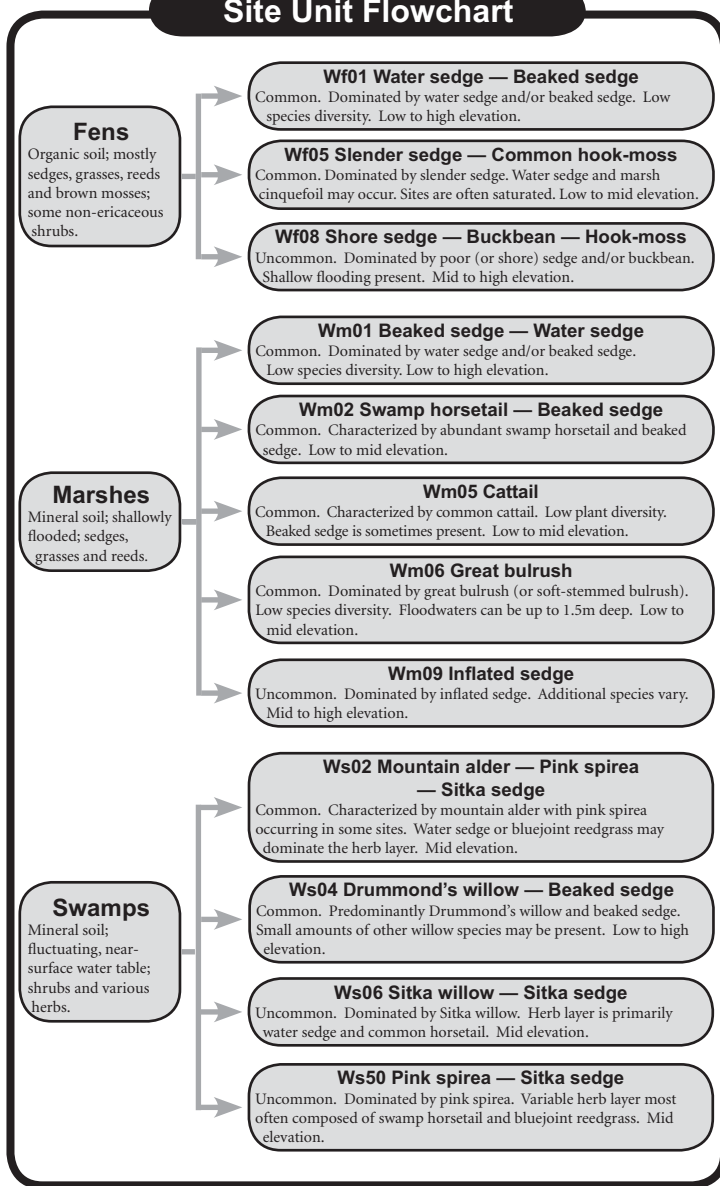
Edatopic Grid



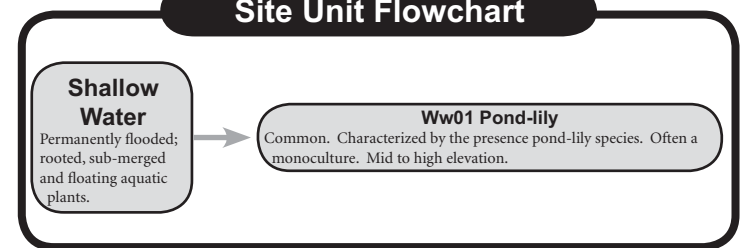
Site Unit Flowchart



Site Unit Flowchart



Site Unit Flowchart



Refer to the wetland section in the package of BEC materials for a more thorough characterization of wetland ecosystems.

Vegetation Table

Site Units	Beck Outcrop		Forests									
	72	73	02	03-YS	03	01-YS	01	04	05	06	07	
No. of Plots	1	8	11	2	42	10	36	20	6	10	5	
Trees												
<i>Pseudotsuga menziesii</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Pinus contorta</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Tsuga heterophylla</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Thuja plicata</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Picea engelmannii</i> x <i>glauca</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Populus tremuloides</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Betula papyrifera</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Abies lasiocarpa</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Pseudotsuga menziesii</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Picea engelmannii</i> x <i>glauca</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Tsuga heterophylla</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Thuja plicata</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Populus tremuloides</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Betula papyrifera</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Juniperus communis</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Alnus viridis</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Spiraea betulifolia</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Amelanchier canadensis</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Shepherdia canadensis</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Salix</i> sp.	■	■	■	■	■	■	■	■	■	■	■	
<i>Mahonia aquifolium</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Symphoricarpos albus</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Rosa</i> sp.	■	■	■	■	■	■	■	■	■	■	■	
<i>Acer glabrum</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Paxistima myrsinites</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Rubus paviflorus</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Vaccinium membranaceum</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Corylus cornuta</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Oplopanax horridum</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Ribes lacustris</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Lonicera involucrata</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Cornus stolonifera</i>	■	■	■	■	■	■	■	■	■	■	■	
<i>Alnus incana</i>	■	■	■	■	■	■	■	■	■	■	■	
Shrubs												
Douglas-fir	■	■	■	■	■	■	■	■	■	■	■	
lodgepole pine	■	■	■	■	■	■	■	■	■	■	■	
western hemlock	■	■	■	■	■	■	■	■	■	■	■	
hybrid white spruce	■	■	■	■	■	■	■	■	■	■	■	
trembling aspen	■	■	■	■	■	■	■	■	■	■	■	
paper birch	■	■	■	■	■	■	■	■	■	■	■	
black cottonwood	■	■	■	■	■	■	■	■	■	■	■	
subalpine fir	■	■	■	■	■	■	■	■	■	■	■	
Douglas-fir	■	■	■	■	■	■	■	■	■	■	■	
hybrid white spruce	■	■	■	■	■	■	■	■	■	■	■	
western hemlock	■	■	■	■	■	■	■	■	■	■	■	
western redcedar	■	■	■	■	■	■	■	■	■	■	■	
trembling aspen	■	■	■	■	■	■	■	■	■	■	■	
paper birch	■	■	■	■	■	■	■	■	■	■	■	
common juniper	■	■	■	■	■	■	■	■	■	■	■	
Sitka alder	■	■	■	■	■	■	■	■	■	■	■	
birch-leaved spirea	■	■	■	■	■	■	■	■	■	■	■	
black hawthorn	■	■	■	■	■	■	■	■	■	■	■	
scouabille	■	■	■	■	■	■	■	■	■	■	■	
tall Oregon-grape	■	■	■	■	■	■	■	■	■	■	■	
common snowberry	■	■	■	■	■	■	■	■	■	■	■	
rose	■	■	■	■	■	■	■	■	■	■	■	
Douglas maple	■	■	■	■	■	■	■	■	■	■	■	
falsebox	■	■	■	■	■	■	■	■	■	■	■	
thimbleberry	■	■	■	■	■	■	■	■	■	■	■	
black huckleberry	■	■	■	■	■	■	■	■	■	■	■	
beaked hazelnut	■	■	■	■	■	■	■	■	■	■	■	
devil's club	■	■	■	■	■	■	■	■	■	■	■	
black gooseberry	■	■	■	■	■	■	■	■	■	■	■	
black twinberry	■	■	■	■	■	■	■	■	■	■	■	
red-osier dogwood	■	■	■	■	■	■	■	■	■	■	■	
mountain alder	■	■	■	■	■	■	■	■	■	■	■	

Site Units	Forests										
	72	73	02	03-YS	03	01-YS	01	04	05	06	07
No. of Plots	1	8	11	2	42	10	36	20	6	10	5
Herbs											
<i>Achillea millefolium</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Arctostaphylos uva-ursi</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Galium aparine</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Aster conspicuus</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Cornus canadensis</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Viola</i> sp.	■	■	■	■	■	■	■	■	■	■	■
<i>Linnaea borealis</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Chimaphila umbellata</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Aralia nudicaulis</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Goodyera oblongifolia</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Maianthemum racemosum</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Clintonia uniflora</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Streptopus amplexifolius</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Tiarella trifoliata</i> var. <i>unifoliata</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Gymnocarpium dryopteris</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Streptopus lanceolatus</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Osmorhiza</i> sp.	■	■	■	■	■	■	■	■	■	■	■
<i>Mitella</i> sp.	■	■	■	■	■	■	■	■	■	■	■
<i>Galium triflorum</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Phlox pilularis</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Equisetum</i> sp.	■	■	■	■	■	■	■	■	■	■	■
<i>Lysichiton americanus</i>	■	■	■	■	■	■	■	■	■	■	■
Mosses & Lichens											
<i>Polytrichum</i> sp.	■	■	■	■	■	■	■	■	■	■	■
<i>Cledonia</i> sp.	■	■	■	■	■	■	■	■	■	■	■
<i>Brachythecium</i> sp.	■	■	■	■	■	■	■	■	■	■	■
<i>Dicranum</i> sp.	■	■	■	■	■	■	■	■	■	■	■
<i>Peltigera</i> sp.	■	■	■	■	■	■	■	■	■	■	■
<i>Pleurozium schreberi</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Rhytidelaphus triquetrus</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Ptilium crista-castrensis</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Hypocmium splendens</i>	■	■	■	■	■	■	■	■	■	■	■
<i>Plagiomnium</i> sp.	■	■	■	■	■	■	■	■	■	■	■
<i>Rhizomnium magnifolium</i>	■	■	■	■	■	■	■	■	■	■	■
yarrow	■	■	■	■	■	■	■	■	■	■	■
knirknick	■	■	■	■	■	■	■	■	■	■	■
pinegrass	■	■	■	■	■	■	■	■	■	■	■
showy aster	■	■	■	■	■	■	■	■	■	■	■
bunchberry	■	■	■	■	■	■	■	■	■	■	■
violet	■	■	■	■	■	■	■	■	■	■	■
twinnflower	■	■	■	■	■	■	■	■	■	■	■
prince's pine	■	■	■	■	■	■	■	■	■	■	■
wild sasaparilla	■	■	■	■	■	■	■	■	■	■	■
rattlesnake-plantain	■	■	■	■	■	■	■	■	■	■	■
false Solomon's-seal	■	■	■	■	■	■	■	■	■	■	■
clueen's cup	■	■	■	■	■	■	■	■	■	■	■
claspng twistedstalk	■	■	■	■	■	■	■	■	■	■	■
one-leaved foamflower	■	■	■	■	■	■	■	■	■	■	■
oak fern	■	■	■	■	■	■	■	■	■	■	■
rosy twistedstalk	■	■	■	■	■	■	■	■	■	■	■
sweet-wicely	■	■	■	■	■	■	■	■	■	■	■
mitrewort	■	■	■	■</							

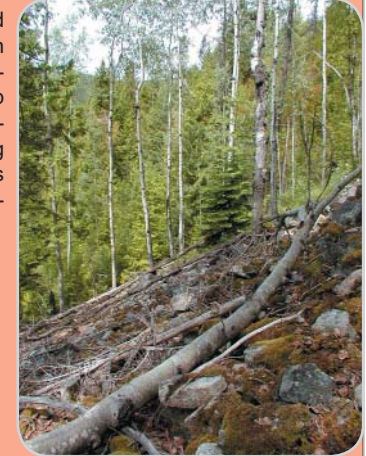
Environment Table

Site Units	Forests										
	Talus	Rock Outcrop	02	03-YS	03	01-YS	01	04	05	06	07
Soil Moisture Regime	VX X	VX X	X (SX SM)	SX SM	SX SM	M (SM)	M (SM)	SHG (M)	SHG (HG)	SHG (HG)	HG SHD
Mesoslope Position	UP MD	CR UP (MD)	UP (MD)	UP (MD)	MD UP LV	MD (LV LW)	MD (LV LW)	LV (TO LW)	LV (DP)	LV (LW TO)	LV (TO DP)
Slope Gradient	Steep	Steep Gentle	Variable	Steep (Gentle)	Variable	Gentle (Level)	Variable	Level Gentle	Level	Level (Gentle)	Level
Aspect	Warm	Warm (Cool)	Warm	Warm (Neutral)	Warm Neutral	Neutral	Neutral (Cool)	Neutral	Neutral	Neutral	Neutral
Parent Materials	Cb	R	Mb Cb (Cv Mv)	Mb (FG Cb)	Mb Cb (FG)	Mb Cb (FG)	Mb Cb (FG)	Fb Mb (FG)	Fb (Lb)	Fb (Mb FG)	FG Lb (Ob)
Soil Texture Class	Fragmental	Fragmental Coarse Medium	Coarse (Fragmental Medium)	Variable	Coarse (Medium)	Coarse Medium	Coarse Medium	Medium (Coarse)	Fine (Medium)	Coarse Medium	Fine
Important Features	Rocks & boulders	Bedrock 0-20 cm	Some bedrock 20-100 cm						Seepage 50-100 cm	Seepage 50-100 cm	Water table 0-40 cm
Successional Stage	Scarce	Uncommon	Common ¹	Uncommon	MS	YS	MS	MS	MS	MC	MC
Occurrence						Common	Dominant	Common	Uncommon ²	Uncommon	Uncommon

¹ Most common at the drier geographic range of the biogeoclimatic unit approaching the IDF. ² Generally restricted to large valley bottom floodplains.

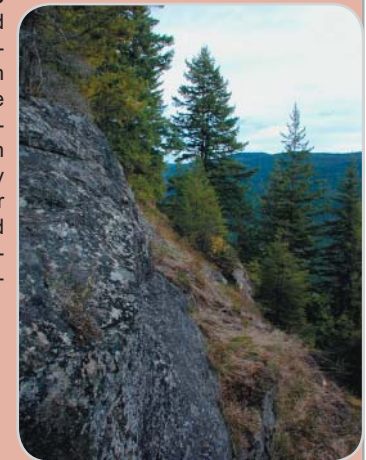
72 Aspen – Awned haircap moss

This site unit is very uncommon and occurs on talus on steep slopes with warm aspects. Individuals or patches of At are often present. Shrub and herb species are sparse to absent. Mosses and lichens, including haircap moss, clad and pelt lichens and heron's-bill moss are often abundant.



73 Heron's-bill moss – Clad lichens

The 73 site unit is uncommon and occurs on non-forested rock outcrops. In general, Douglas-fir is often present as scattered individuals. The shrub layer is sparse and often includes saskatoon, rose, and common juniper. Herbs are sparse and may include pinegrass, yarrow and other dry-indicator species. The moss and lichen layer is often extensive and includes clad and pelt lichens, heron's-bill moss, and haircap moss.



02 FdPI – Falsebox – Pinegrass

The 02 site series is common and occurs on warm steep slopes with shallow soils. The canopy is dominated by Douglas-fir and/or lodgepole pine with Douglas-fir regenerating in the understory. The shrub layer has a moderate cover and includes birch-leaved spirea, soopolallie, saskatoon, common juniper, tall Oregon-grape, falsebox and rose. The herb layer is dominated by abundant pinegrass; minor kinnikinnick and twinflower may be present. Mosses and lichens include red-stemmed feathermoss, pelt and clad lichens, heron's-bill moss and haircap moss.

**03-YS \$At – Soopolallie – Pinegrass**

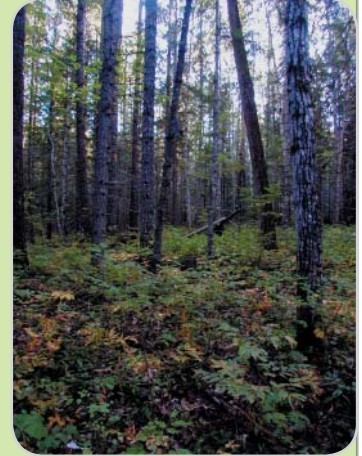
The 03-YS site unit occurs on gentle to steep, middle and upper warm slopes. At and Ep dominate the overstory. The shrub layer is relatively extensive and is dominated by soopolallie. Other common species include Scouler's willow, birch-leaved spirea, tall Oregon-grape, common snowberry, saskatoon, Douglas maple and rose. Other than a large cover of pinegrass, few other species are found in the herb and moss layers. Eventually, these sites will likely reach a successional stage in which the vegetation resembles that of the 03 site series.

**03 FdPI – Falsebox – Feathermoss**

The 03 is a common site series and often occurs on level areas and gentle to steep slopes with warm or neutral aspects. Fd and PI dominate the open to closed canopy with, occasionally, a minor component of Ep or At. Fd and Cw occur in the sparse regeneration layer. The shrub layer includes moderate covers of soopolallie and falsebox. The moderate herb layer is usually dominated by twinflower and prince's pine. Unlike the 02 unit, pinegrass is sparse or absent. Red-stemmed feathermoss is frequently the most abundant species in the poorly-developed moss and lichen layer. Other common species include heron's-bill moss and pelt lichens.

**01-YS \$At – Falsebox – Thimbleberry**

The 01-YS is a common site unit that occurs on middle and lower gentle slopes and level areas. It is characterized by a dense canopy of Ep and At with minor amounts of Cw and Sxw in the regeneration layer. The extensive shrub layer contains a wide variety of species including falsebox, thimbleberry, Douglas maple, soopolallie, saskatoon, birch-leaved spirea and rose. The herb layer is moderate to abundant and is usually dominated by a mix of bunchberry, wild sarsaparilla, queen's cup and twinflower. Mosses are sparse to absent. Unlike the 03-YS unit, this site unit lacks pinegrass.



01 FdCwHw – Falsebox – Feathermoss

The zonal site series is common on gentle or steep and cool slopes and level areas. The mixed forest canopy is composed of Fd, Pl, Cw, Hw, Sxw and Ep. Conifer regeneration is typically dominated by Cw and Hw. The shrub layer is sparse to moderate and may include a wide variety of species of which falsebox is usually the most abundant. The variable herb layer is typically dominated by twinflower, bunchberry, and sometimes, wild sarsaparilla. Less abundant herbs include queen's cup, rattlesnake-plantain, and prince's pine. Red-stemmed feathermoss is the dominant species in the moderately well-developed moss layer. The abundance of Cw and Hw and the higher covers of herbs and mosses generally distinguish the 01 from the 03 site series.



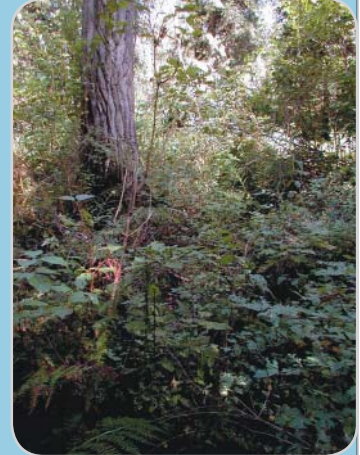
04 CwHw – Oak fern

The 04 site series occurs primarily lower and toe slopes and level areas that may have intermittent seepage. Cw and Sxw dominate the canopy. Fd and Hw may also be present. Cw and Hw usually occur in the regeneration layer. Shrubs are generally sparse but may contain a several species including falsebox, black huckleberry, rose, thimbleberry, black gooseberry, black twinberry and red-osier dogwood. Herb cover is generally greater than on dry sites and often includes abundant oak fern and commonly twinflower, wild sarsaparilla, bunchberry, one-leaved foamflower and clasping twistedstalk. The moss layer is well-developed and includes red-stemmed feathermoss, knight's plume, step moss and electrified cat's-tail moss.



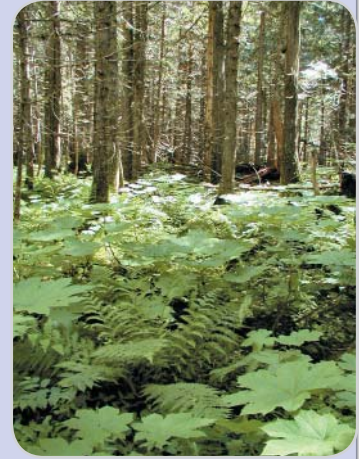
05 Act – Dogwood – Lady fern

This infrequent site series occurs primarily on floodplains. These sites have open stands of Act and Sxw and occasionally minor amounts of Hw and Ep. The heterogenous understory often contains a dense thicket of shrubs including red-osier dogwood, thimbleberry, black twinberry and rose. Lady fern with minor amounts of wild sarsaparilla and sweet-scented bedstraw usually dominates the herb layer. Mosses are usually sparse or absent.



06 CwSxw – Devil's club – Oak fern

The 06 site series includes lower and toe slopes and level areas that have seepage. The forest canopy is dominated by Cw and minor Sxw. The sparse conifer regeneration is composed of Cw. The dense shrub layer is dominated by devil's club. Other common species include black gooseberry, thimbleberry, beaked hazlenut and rose. The rich herb layer is dominated by a mixture of one-leaved foamflower, oak fern and bunchberry. The moss layer is variable and may include electrified cat's-tail, knight's plume, red-stemmed feathermoss and step moss.



07 CwSxw – Skunk cabbage

This infrequent site series is found on level sites, toe slopes and depressions that have a water table near the surface. The forest canopy varies but is usually dominated by Cw and Sxw with a minor component of Bl, Hw and, occasionally, Ep. Regeneration is primarily Cw and Hw with a minor Sxw. Devil's club, mountain alder, red-osier dogwood, black twinberry and black gooseberry are present in sparse to moderate amounts. Skunk cabbage is the dominant herb. Common or wood horsetail, oak fern, lady fern and one-leaved foamflower are also common. Moss cover is variable but typically includes large-leaf leafy moss, leafy moss, step moss and knight's plume.



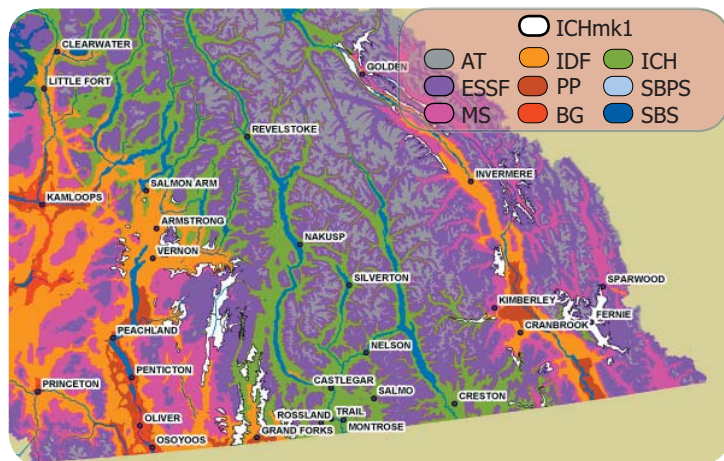
ICHmk1

KOOTENAY MOIST COOL INTERIOR CEDAR-HEMLOCK VARIANT

Distribution: The ICHmk1 represents a geographic area with characteristics that are transitional between the MS and the ICH. It occupies north and east facing middle slopes east of Okanagan Lake from Armstrong to south of Kelowna and includes Mission Creek, its tributaries, and Coldstream Creek. On the west side of Okanagan Lake, it extends from Fintry to the Salmon River and includes Whiteman, Bouleau, Equisis and Naswhito Creeks. In the west Kootenays it occurs in the Grandy and Kettle drainages. In the East Kootenays, it occurs on the west side of the Rockies in lower Bull, lower Elk, upper Kootenay, Beaverfoot and Kickinghorse Rivers. In the Rocky Mountain Trench, it occurs between the Spillimacheen and Blaeberry Rivers. In the southern Purcell Mountains, it occurs in the St. Mary, Moyie and Yahk drainage basins.

The ICHmk1 encompasses a substantially greater geographical area than most BGC units and may represent more than one variant. Additional field sampling is required in the East Kootenays to determine if this area represents the ICHmk1 or an undescribed variant.

Elevational Range: West of the Monashee Mountains, the ICHmk1 typically occurs above the IDFmw1, starting at 1000-1050 m on north aspects and 1100-1200 m on south aspects. In many instances, it extends upslope



ICHmk1 - 1

to about 1450-1550 m where it borders the ESSF. The ICHmk1 also occurs on steep north and east slopes adjacent to broad plateaus dominated by the MSdm1 or MSdm2.

In the West Kootenays, the ICHmk1 occupies valley bottoms at elevations of 750-900 m. It may also occur above the IDFdm2 and ICHdw starting at an elevation that is highly variable. The ICHmk1 extends upslope to the ESSF boundary at 1500m on north aspects and 1550 m on south aspects.

Climate: The ICH is warmer than the MS and ESSF, and wetter than the MS and IDF. The ICHmk1 receives about 600-1000 mm of annual precipitation and mid-winter snow accumulations vary between 75 and 150 cm. It is drier, warmer and has a longer growing season than the ICHwk1 and ICHvk1. It is generally cooler than the ICHmw and ICHdw. Prolonged summer droughts often lead to soil moisture deficits and a short growing season that likely contributes to the lack of Hw and Pw in the ICHmk. The general lack of early snow cover and resulting ground freezing in the late fall may also contribute to the lack of Hw.

Forest Cover: Mature seral stands containing various mixtures of PI, Sxw, BI, Fd, Lw, Ep, At, and Cw dominate the ICHmk1. Stands are typically 18-24 meters tall and have relatively closed canopies. Fire history and logging have contributed to the general absence of climax stands. We believe climax stands, if allowed to develop would be dominated by BI and Cw with a small amount of Sxw.

PI and Fd are often the most dominant species on dry southern slopes. Fd is likely the climax species in the 02 and 03 site units. Cw is usually absent on dry sites and steep warm slopes but is common on mesic and subhygric sites.

Zonal Vegetation and Soils: Mature seral stands have a mixed composition of Fd, Sxw, BI, Cw, Lw and PI. The regeneration layer is dominated by BI and Cw. The understory has a moderately well developed shrub layer dominated by falsebox, black huckleberry and Sitka alder. The poorly developed herb layer contains twinflower, bunchberry, one-sided wintergreen, queen's cup, five-leaved bramble and prince's pine. The moss layer is moderately well developed and dominated by red-stemmed feathermoss, knights plume and heron's-bill moss. Soils are characteristically Dystric Brunisols and weak Humo-Ferric Podzols with a Mor humus form. Early climax stands are often very dense on steep north slopes and toe slopes. The resulting low light levels contribute to a sparse to nudum understory.

Adjacent Biogeoclimatic Subzones: West of the Monashee Mountains, the ICHmk1 lies below the ICHmw2, MSdm2, ESSFdc1 and ESSFdc2. The IDFmw1 always occurs below the ICHmk1. The ICHmk1 occupies a similar elevation band as the more northerly distributed ICHmk2. Falkland and Armstrong represent the northern limits of the ICHmk1.

ICHmk1 - 2

In the West Kootenays, the ICHmk1 usually occurs adjacent to the IDFdm or ICHdw at lower elevations and the MSdm1 and ESSFdc1 or ESSFwc1 at higher elevations. In the East Kootenays the ICHmk1 is associated with the IDFdm2, ICHmw1 and ICHmw2 at lower elevations and the ESSFdk, ESSFdm and MSdm2 at higher elevations.

Distinguishing adjacent Biogeoclimatic units from the ICHmk1

On zonal sites:

IDFmw1

- Bl and Sxw are not dominant
- Fd occurs in climax stands
- snowberry, saskatoon, oregon-grape are more common
- Py may be present on steep south slopes (non zonal)

IDFdm1 and IDFdm2

- Fd is the dominant climax tree species
- pinegrass dominates most mesic and submesic sites
- snowberry, saskatoon and oregon grape are more common
- black huckleberry, queen's cup and five-leaved bramble are absent

ICHmk2

- Lw absent in seral stands
- Utah honeysuckle generally absent

ICHmw1, mw2, mw3 and dw1 and dw2

- Hw dominates climax stands
- Pw is more common in seral stands
- western yew and oval-leaved blueberry are common

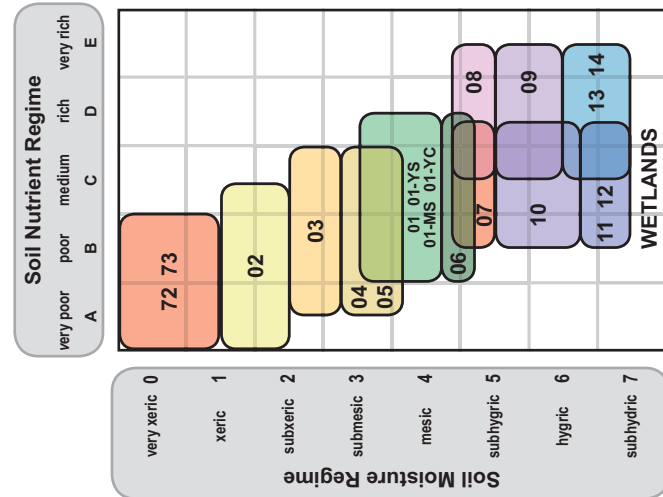
MSdm1 and MSdm2

- Cw absent on zonal and drier sites
- pinegrass dominated ecosystems are more common

ESSFwc1, wc2, dc1 and dc2

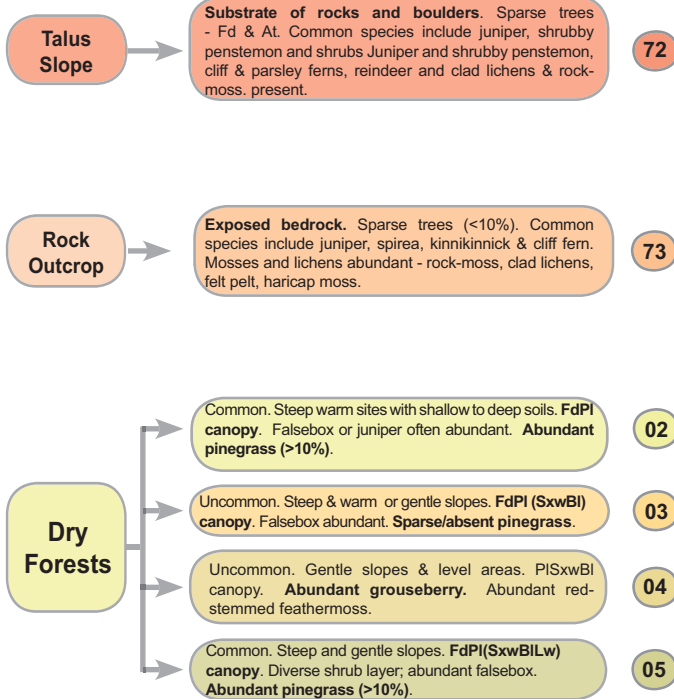
- Cw absent except where approaching ICH transition
- Fd is generally absent
- white-flowered rhododendron and Sitka valerian are present

Edatopic Grid

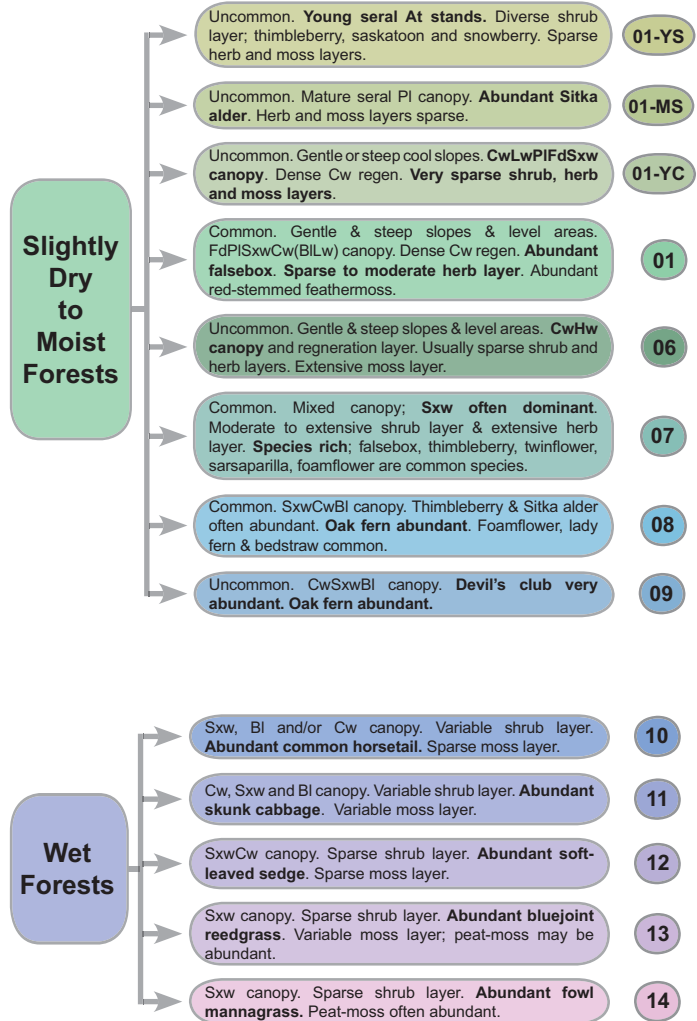


72	Juniper — Shrubby penstemon
73	Juniper — Clad lichens
02	FdPl — Juniper — Pinegrass
03	FdPl — Falsebox
04	SxwPl — Grouseberry — Twinflower
05	FdPl — Falsebox — Pinegrass
01-YS	\$At — Thimbleberry — Snowberry
01-MS	\$Pl — Alder — Feathermoss
01-YC	\$CwSxw — Nudem
01	CwSxw — Falsebox
06	HwCw — Feathermoss
07	CwSxw — Thimbleberry — Feathermoss
08	Sxw — Oak fern
09	CwSxw — Devil's club — Oak fern
10	Sxw — Horsetail
11	CwSxw — Skunk cabbage
12	CwSxw — Soft-leaved sedge
13	Sxw — Bluejoint
14	Sxw — Mannagrass
Wf01	Water sedge — Beaked sedge
Wf02	Scrub birch — Water sedge
Wf11	Tufted clubrush — Star moss
Wm01	Beaked sedge — Water sedge
Wm02	Swamp horsetail — Beaked sedge
Wm05	Cattail
Wm06	Great bulrush
Wm15	Bluejoint reedgrass
Ws02	Mountain alder — Pink spirea — Sitka sedge
Ws04	Drummond's willow — Beaked sedge
Ww01	Pond-lily

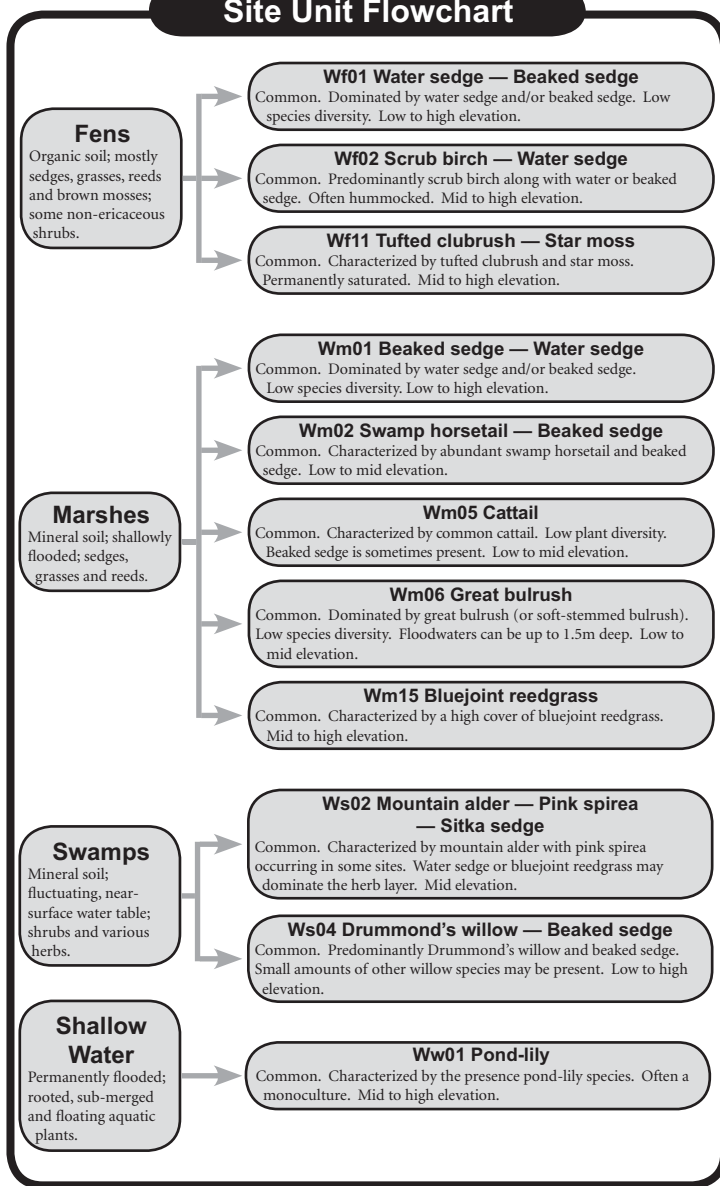
Site Series Flowchart



Site Series Flowchart



Site Unit Flowchart



Vegetation Table

Site Units	Rock Outcrop		Forests											
	72	73	01	02	03	04	05	01-YS	01-MS	01-YC	06	07		
No. of Plots	3	10	63	8	24	9	6	23	9	4	9	8	24	
Trees														
<i>Pseudotsuga menziesii</i>														
<i>Pinus contorta</i>														
<i>Picea engelmannii</i> x <i>glauca</i>														
<i>Abies lasiocarpa</i>														
<i>Larix occidentalis</i>														
<i>Thuja plicata</i>														
<i>Tsuga heterophylla</i>														
<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>														
<i>Populus tremuloides</i>														
Shrubs														
<i>Pseudotsuga menziesii</i>														
<i>Pinus contorta</i>														
<i>Picea engelmannii</i> x <i>glauca</i>														
<i>Abies lasiocarpa</i>														
<i>Thuja plicata</i>														
<i>Tsuga heterophylla</i>														
<i>Populus tremuloides</i>														
<i>Juniperus communis</i>														
<i>Menziesia ferruginea</i>														
<i>Rubus idaeus</i>														
<i>Paxillima myrsinites</i>														
<i>Shepherdia canadensis</i>														
<i>Vaccinium membranaceum</i>														
<i>Lonicera utahensis</i>														
<i>Spiraea betulifolia</i>														
<i>Symphoricarpos abrus</i>														
<i>Amelanchier alnifolia</i>														
<i>Mahonia aquilifolium</i>														
<i>Rosa</i> sp.														
<i>Lonicera involucrata</i>														
<i>Rubus parviflorus</i>														
<i>Acer glabrum</i>														
<i>Alnus viridis</i>														
<i>Alnus incana</i>														
<i>Ribes lacustre</i>														
<i>Oxopanax horridus</i>														
<i>Cornus stolonifera</i>														
<i>Ledum glandulosum</i>														

Site Units	Forests											
	72	73	01	02	03	04	05	01-YS	01-MS	01-YC	06	07
Herbs												
<i>Actinostaphylos uva-ursi</i>												
<i>Cystopteris fragilis</i>												
<i>Saxifraga bronchialis</i>												
<i>Penstemon fruticosus</i>												
<i>Lupinus arcticus</i>												
<i>Calamagrostis rubescens</i>												
<i>Linnaea borealis</i>												
<i>Vaccinium scoparium</i>												
<i>Chimaphila umbellata</i>												
<i>Aralia nudicaulis</i>												
<i>Clinocoma uniflora</i>												
<i>Rubus pedatus</i>												
<i>Cornus canadensis</i>												
<i>Galium triflorum</i>												
<i>Thalictrum flavum</i>												
<i>Athyrium filix-femina</i>												
<i>Diapentesis evax</i>												
<i>Eriosealum arvense</i>												
<i>Gymnocarpium dryopteris</i>												
<i>Lysichiton americanus</i>												
<i>Carex diandra</i>												
<i>Calamagrostis canadensis</i>												
<i>Glyceria striata</i>												
<i>Stereocaulon</i> sp.												
<i>Polytrichum piliferum</i>												
<i>Racomitrium</i> sp.												
<i>Cladonia</i> sp.												
<i>Dicranum</i> sp.												
<i>Brachythecium</i> sp.												
<i>Pleurozium schreberi</i>												
<i>Platium arista-castrensis</i>												
<i>Rhytidopsis robusta</i>												
<i>Hylocomium splendens</i>												
<i>Rhizomium magnitolum</i>												
<i>Pleurozium</i> sp.												
Mosses & Lichens												
Kimikinnick												
fragile fern												
spotted saxifrage												
shrubby penstemon												
arctic lupine												
pinegrass												
twinflower												
grouseberry												
prince's pine												
one-sided wintergreen												
wild sarsaparilla												
queen's cup												
five-leaved bramble												
bunchberry												
sweet-scented bedstraw												
five-leaved foamflower												
lady wood fern												
oak fern												
skunk cabbage												
soft-leaved sedge												
bluejoint reedgrass												
foxtail mangrass												
foam lichens												
awned haircap moss												
rock-moss												
clad lichens												
heron's-bill moss												
ragged-moss												
red-stemmed feathermoss												
knights plume												
pipe-cleaner moss												
step moss												
large-leaf feathery moss												
leaty moss												
peat-moss												

Frequency of Occurrence:
 Abundance (Average Percent Cover): * -40% and <10% cover

Environment Table

Site Units	Forests													
	Talus	Rock Outcrop	72	73	02	03	04	05	01-YS	01-MS	01-YC	01	06	07
Soil Moisture Regime	VX X	VX X	X SX	SX SM	SM M	SM (M)	M (SM)	M (SM)	M (SM)	M (SM)	M (SM)	M (SM)	M (SHG)	SHG (M)
Mesoslope Position	MD UP	CR (UP)	UP (CR MD)	MD (UP)	MD (LV)	MD (UP LV)	MD LW	MD LW LV	MD LW LV	MD LW LV	MD LW LV	MD (LW LV)	MD (LW LV)	MD (LW TO)
Slope Gradient	Steep	Variable	Steep (Gentle)	Steep (Gentle)	Level Gentle	Gentle (Steep)	Variable	Variable	Variable	Variable	Variable	Variable	Level (Gentle)	Variable
Aspect	Warm	Neutral (Warm)	Warm (Neutral)	Neutral	Neutral	Neutral (Warm)	Neutral	Neutral	Neutral	Neutral	Neutral	Variable	Cool Neutral	Neutral
Parent Materials	Cb	R (Cv)	Cv Mv (Mb Cb)	Cb Mb	FG (Cb Mb)	Mb (Cb)	Mb (Cb)	Mb (Cb)	Mb (Cb)	Mb Cb	Mb Cb	Mb (Cb)	Mb	Mb (Fb)
Soil Texture Class	Fragmental	Fragemetal Coarse Medium	Coarse Medium	Coarse (Medium)	Variable	Medium (Coarse)	Coarse Medium	Coarse Medium	Coarse Medium	Coarse Medium	Coarse Medium	Coarse (Medium)	Medium (Fine)	Medium (Coarse)
Important Features	Rocks & boulders	Bedrock 0 - 20 cm	Often bedrock 20-100 cm		Often FG Terraces									Minor seepage 50-100 cm
Successional Stage	Scarce	Uncommon	MS	MS	MS	MS	MS	MS	MS	MS	MS	MS	MC (MS)	MS
Occurrence	Scarce	Uncommon	Common	Uncommon	Uncommon ¹	Common	Uncommon	Uncommon	Uncommon	Uncommon ¹	Uncommon ²	Dominant	Uncommon	Common

¹ Most common at upper elevations.

² Most common on north slopes geographically near the ICHmw2.

Environment Table

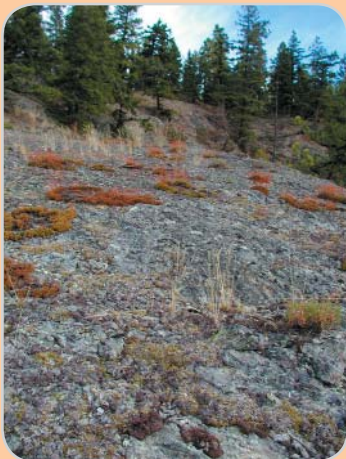
Site Units	Forests													
	08	09	10	11	12	13	14							
Soil Moisture Regime	SHG (M)	SHG HG	HG SHG	HG SHD	HG SHD	HG SHD	HG SHD							
Mesoslope Position	LW TO LV	LW TO LV DP	DP (LV TO)	LV DP	LV DP	LV DP	LV DP							
Slope Gradient	Gentle (Level)	Level Gentle	Level	Level	Level	Level	Level							
Aspect	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral							
Parent Materials	Fb (FG Mb)	Fb (FG Mb)	Fb	Ob (Fb)	Fb	LG Fb	Lb							
Soil Texture Class	Medium (Coarse)	Medium (Fine)	Coarse Medium Fine	Organic Fine	Fine	Medium Fine	Fine (Organic)							
Important Features	Some seepage 20-100ccm	Some seepage 20-100cm	Water table 0-40 cm	Water table 0-20 cm	Water table 0-20 cm	Water table 0-20 cm	Water table 0-20 cm							
Successional Stage	MC	MC	MC	MC	MC	MC	MC							
Occurrence	Common	Uncommon	Uncommon	Scarce	Scarce	Scarce	Scarce							

72 Juniper – Shrubby penstemon

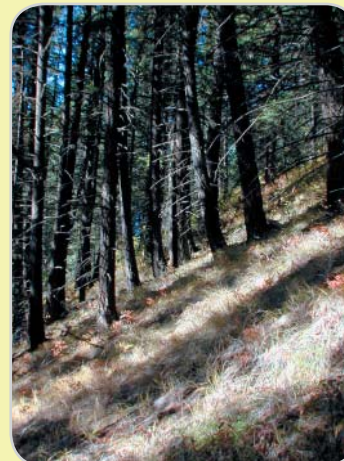
This site unit is very uncommon. It is found on exposed talus slopes on steep, warm, middle and upper slopes. Fd and At are usually present as scattered individuals. Common juniper is often abundant where available mineral soil is present. Herbs are sparse; common species include shrubby penstemon, spotted saxifrage, kinnikinnick and pinegrass. Mosses and lichens are sparse to abundant; common species include clad lichens.

**73 Juniper – Clad lichens**

The 73 unit is infrequent. It occurs on upper slopes and crests where exposed bedrock is present and soils are very shallow. The tree layer is sparse (<10%) or absent; Fd or PI may occur as scattered individuals. The shrub layer is dominated by common juniper and falsebox. Other common species include spirea, saskatoon and rose. The sparse herb layer includes shrubby penstemon, spotted saxifrage, kinnikinnick and pinegrass. The moss and lichen layer is sparse to abundant and includes awned haircap moss, rock-moss, clad lichens and heron's-bill moss.

**02 FdPI – Juniper – Pinegrass**

This is a common site series found on shallow to deep soils on steep and warm, middle and upper slopes and crests. Fd and PI dominate the open canopy. The sparse regeneration layer is also dominated by Fd. The shrub layer is often extensive and is usually dominated by falsebox or common juniper. Other common species include black huckleberry, birch-leaved spirea, saskatoon, Utah honeysuckle and soopolallie. The herb layer is dominated by a high cover (>10%) of pinegrass. Other species include kinnikinnick, arctic lupine and twinflower. The sparse moss and lichen layer contains clad lichens, heron's-bill moss, ragged-moss and red-stemmed feathermoss.

**03 FdPI – Falsebox**

The 03 site series is uncommon. It is similar to the 02 unit in that it is usually found on steep and warm or gentle middle and upper slopes. Fd and PI dominate the open forest canopy but, unlike the 02 unit, BI is often present. The regeneration layer is often dominated by BI; Sxw and Fd may also be present. The moderate shrub layer often contains numerous species of which falsebox is usually the most abundant species. Other common species include black huckleberry, Utah honeysuckle, birch-leaved spirea, snowberry and Douglas maple. Common juniper is usually absent. Unlike the 02 unit, the herb layer is sparse; common species include twinflower, prince's pine, one-sided wintergreen and pinegrass. The moss and lichen layer is usually sparse.



04 SxwPI — Grouseberry — Twinflower

This unit is uncommon and is found on gentle middle slopes and level areas. Stands are dominated by a mixture of PI, Sxw and Bl. The moderate regeneration layer contains Sxw and Bl. The shrub layer is sparse to moderate; usually falsebox or black huckleberry are the most abundant species. Other common species include birch-leaved spirea and black twinberry. Unlike other units, the extensive herb layer is dominated by grouseberry. Other species, including twinflower, bunchberry, one-sided wintergreen, prince's pine and pinegrass, are usually sparse. The moss layer is usually extensive and is dominated by red-stemmed feathermoss.

**05 FdPI Falsebox — Pinegrass**

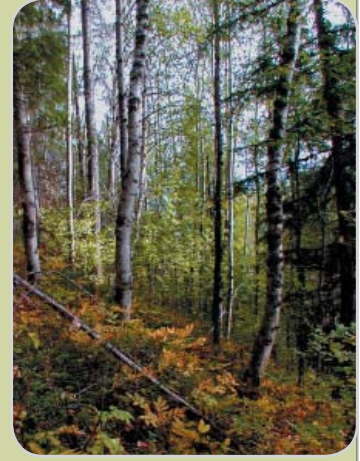
The 05 unit is common and occurs on gentle or steep slopes. The canopy is dominated by Fd and/or PI with minor amounts of Sxw or Lw. The regeneration layer is usually sparse and Fd is usually the most abundant species. The shrub layer is often extensive and diverse. Falsebox is usually the most abundant species. Other common species include Sitka alder, black huckleberry, Utah honeysuckle, birch-leaved spirea, saskatoon, tall Oregon-grape, rose, thimbleberry and Douglas maple. A high cover (>10%) of pinegrass dominates the herb layer. Other common species include twinflower, prince's pine, one-sided wintergreen and bunchberry. The moss layer is variable; red-stemmed feathermoss is often the most abundant species.



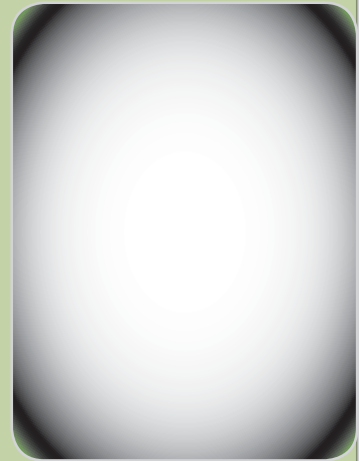
ICHmk1 - 17

01-YS \$At — Thimbleberry — Snowberry

This site unit is uncommon and occurs on middle and lower slopes. It is characterized by young seral forests dominated by At. Small amounts of Fd, Bl and Sxw may be present. The shrub layer is diverse; thimbleberry, saskatoon and common snowberry are the most abundant species. Douglas maple, red-osier dogwood, rose and falsebox are often present in small amounts. The herb and moss layers are typically very sparse.

**01-MS \$PI — Alder — Feathermoss**

The 01-MS unit is uncommon. It occurs on middle and lower slopes and level areas at upper elevations. PI usually dominates the tree layer. Unlike other units, the shrub layer is dominated by abundant Sitka alder. Other shrubs are sparse to moderate and include falsebox, black huckleberry, Utah honeysuckle and birch-leaved spirea. The herb layer is typically sparse; common species include minor amounts of pinegrass, twinflower, grouseberry, prince's pine and one-sided wintergreen. The moss and lichen layer is sparse.



ICHmk1 - 18

01-YC \$CwSxw — Nudum

This is an uncommon site unit that is found most often on north slopes in areas adjacent to the ICHmw2. The forest canopy is heterogenous and includes PI, Fd, Sxw, Cw and Lw of which the latter two species are usually the most abundant. The most distinctive feature of this site unit is the paucity of understory vegetation. Other than abundant conifer regeneration of which Cw is usually the most abundant species, the shrub, herb and moss layers are very sparse.

**01 CwSxw — Falsebox**

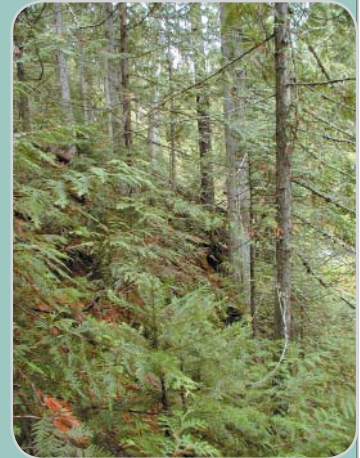
The zonal site series occurs on gentle to steep, middle and lower slopes and level areas. The canopy is a mixture of Fd, PI, Sxw or Cw often with a minor component of Bl or Lw. The regeneration layer is often extensive and is usually dominated by Cw with minor amounts of Sxw and Bl. The shrub layer is often dominated by abundant falsebox. Other common species include black huckleberry, Utah honeysuckle, birch-leaved spiraea, and Sitka alder. The herb layer is sparse to moderate and includes twinflower, queen's cup, one-sided wintergreen, prince's pine and bunchberry. Red-stemmed feathermoss dominates the moderate moss layer. Other species include heron's bill moss, ragged-moss and knight's plume.

**06 HwCw — Feathermoss**

The 06 unit is infrequent and occurs on gentle middle, lower and toe slopes and level areas. Unlike all other units, the tree and regeneration layers are dominated by Cw and Hw. Minor amounts of Bl and Sxw are present but Fd and PI are scarce or absent. The shrub layer is usually sparse although falsebox is sometimes abundant. The herb layer is typically sparse; the most common species are twinflower, queen's cup, one-leaved foamflower, bunchberry and five-leaved bramble. Red-stemmed feathermoss, pipecleaner moss, knight's plume and step moss often form a continuous carpet.

**07 CwSxw — Thimbleberry — Feathermoss**

This site series frequently occurs on middle, lower and toe slopes. The closed canopy is heterogenous and may contain Sxw, Lw, Cw, Fd, and Bl. Sxw is often the dominant species. The moderate regeneration layer usually contains Sxw, Bl and Cw. The moderate to extensive shrub layer includes falsebox, Utah honeysuckle, Sitka alder, thimbleberry, Douglas maple and black gooseberry. The herb layer is usually extensive and contains twinflower, wild sarsaparilla, queen's cup, bunchberry, sweet-scented bedstraw and one-leaved foamflower. The moss layer is variable in extent; common species include red-stemmed feathermoss, ragged-moss and knight's plume.



08 Sxw — Oak fern

This is a common site series and occurs on moist lower and toe slopes and level areas. The closed canopy and regeneration layer contains Sxw, Cw and BI. The moderate to extensive shrub layer often contains abundant thimbleberry and Sitka alder. Other common species include minor amounts of black gooseberry, Douglas maple, black huckleberry, falsebox and devil's club. Unlike drier site units, the herb layer is usually characterized by a high cover of oak fern. Other common species which may also be abundant include one-leaved foamflower, lady fern, sweet-scented bedstraw, five-leaved bramble and queen's cup. The moss layer is variable; common species include red-stemmed feathermoss, ragged-moss and leafy moss.

**09 CwSxw — Devil's club — Oak fern**

The 09 site series occurs infrequently and is usually found on lower and toe slopes, level areas and depressions with imperfect to poor drainage. Cw, Sxw and BI dominate the canopy. Cw is often the dominant species in the regeneration layer. Unlike all other site units, devil's club is very abundant (>10%). Other shrubs present in minor amounts include black gooseberry and Utah honeysuckle. The sparse to moderate herb layer is often dominated by oak fern. Other common species include one-leaved foamflower, lady fern, queen's cup and sweet-scented bedstraw. The moss layer is variable in terms of composition and extent.



ICHmk1 - 21

10 Sxw — Horsetail

This site series is infrequent and is found on toe slopes, level areas and depressions on fluvial deposits and where the water table is at or near the surface. The tree layer is variable in cover and may be dominated by Sxw, Cw or BI which also occur in the regeneration layer. The shrub layer is variable; common species include thimbleberry, Sitka alder, black gooseberry and red-osier dogwood. The extensive herb layer is characterized by a high cover of common horsetail. Other common species include one-leaved foamflower, oak fern, lady fern, sweet-scented bedstraw, bunchberry and queen's cup. The moss layer is usually sparse.

**11 CwSxw — Skunk cabbage**

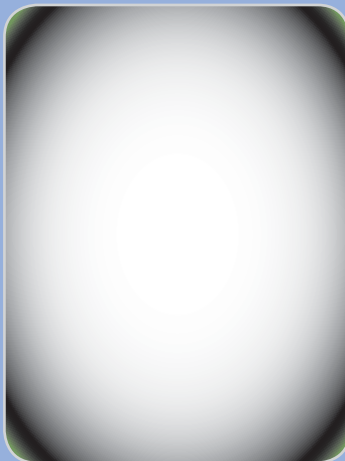
The 11 site unit is very uncommon and is found on level sites and depressions where the water table is at or near the surface. Open tree layer often contains Cw, Sxw and BI. The shrub layer includes those species typically found on wet sites and include minor amounts of devil's club, black gooseberry, mountain alder and red-osier dogwood. The extensive herb layer is dominated by skunk cabbage (>10%). Other common species include common horsetail, one-leaved foamflower, lady fern and sweet-scented bedstraw. The moss layer is variable; common species include large-leaf leafy moss, step moss, ragged-moss and red-stemmed feathermoss.



ICHmk1 - 22

12 CwSxw — Soft-leaved sedge

This site series is very uncommon and occurs in depressions and level sites where the water table is at or near the surface. The tree and regeneration layers are dominated by Sxw and Cw. The shrub layer is usually sparse; common species include red-osier dogwood, black gooseberry and rose. The herb layer is characterized by a large cover of soft-leaved sedge. (>10%). Other common species include sweet-scented bedstraw, bunchberry, twinflower and wild sarsaparilla. The moss layer is typically sparse.

**13 Sxw — Bluejoint**

This site series is very uncommon and occurs on level areas and depressions where the water table is at or near the surface. The open forest is dominated by Sxw. The sparse regeneration layer often includes Bl and Sxw on raised microsites. The shrub layer is typically sparse and includes black gooseberry, black twinberry and black huckleberry on raised microsites. The herb layer is dominated by bluejoint reedgrass. Other common species include those present on other wet forested sites including bunchberry and common horsetail. The moss layer is variable and is sometimes dominated by abundant peat-moss.

**14 Sxw — Mannagrass**

This unit is very uncommon and is usually located in very wet forests adjacent to wetlands. Sxw occurs as scattered individuals or in clumps on raised microsites. Minor amounts of rose, black gooseberry and red-osier dogwood may be present. The herb layer is dominated by abundant fowl mannagrass. Peat-moss may occupy much of the substrate.

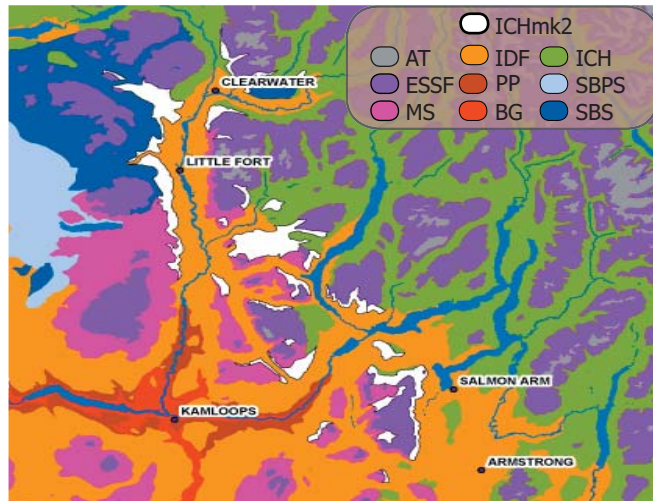


ICHmk2

THOMPSON MOIST COOL INTERIOR CEDAR-HEMLOCK VARIANT

Distribution: The ICHmk2 has a relatively limited distribution; it represents geographic areas that are transitional between the MS or SBS and the ICH. It occupies mid slopes on the west side of the North Thompson River from Barriere to Clearwater, encompassing Peterson, Powder, Eakin, Darlington, Lemieux and Mann creeks. At mid-elevations directly east of Barriere, the ICHmk2 occurs between Sinmax Creek and the Barriere River. Similarly, it occurs above the IDFmw2 on the west slopes of Raft Mountain. West of Salmon Arm, it occupies the north and east slopes leading to Fly Hills and Mount Hillman.

Elevational Range: The ICHmk2 occurs above the IDFmw2 beginning at 950-1000 m on north aspects and 1050-1200m on south aspects. Usually the ICHmk2 extends up slope where it borders the ESSF at 1450-1550m. However, in some areas the ICHmk2 occurs on steep east and north slopes that lead to high-elevation plateaus where it borders the MS at elevations between 1350 and 1500 m.



ICHmk2 - 1

Climate: The ICH is warmer than the MS and ESSF, and wetter than the MS and IDF. The ICHmk2 receives about 550-700 mm of annual precipitation and mid-winter snow accumulations vary between 75 and 125cm. It is drier, warmer and has a longer growing season than ICHwk1 and ICHvk1. Prolonged summer droughts often lead to short growing seasons. This likely contributes to the lack of Hw and Pw in the ICHmk. The lack of early snow cover and resulting ground freezing conditions in late fall may also contribute to the lack of Hw.

Forest Cover: Mature seral stands containing mixtures of Pl, Sxw, Bl, Fd, Ep, At and Cw dominate this variant. Fire history and logging have contributed to the near absence of climax stands. Stand ages are typically between 100 and 140 years. We believe climax stands if allowed to develop, would be dominated by Bl and Cw with small amount of Sxw. Pl and Fd are the dominant species on dry southern slopes. Fd is likely the climax species on the 02 and 03 site series. Cw is more common on mesic and subhygric sites. Small pure stands of Ep and At have also been observed on submesic and mesic sites. Mature seral stands are generally 18-24 meters tall and have relatively closed canopies.

Zonal Vegetation and Soils: Mature seral stands have a mixed composition of Fd, Sxw, Bl, Cw, and Pl. As stands mature and begin to open up due to inter-tree competition, Bl and Cw quickly fill gaps and form a well developed regeneration layer. The understory has a moderately well developed shrub layer dominated by falsebox, black huckleberry, Sitka alder and birch-leaved spirea. The poorly developed herb layer contains twinflower, bunchberry, one-sided wintergreen, queen's cup, rattlesnake-plantain and prince's pine. The moss layer is moderately well developed and dominated by red-stemmed feathermoss, knights plume and heron's-bill moss. Soils are characteristically Dystric Brunisols and weak Humo-Ferric Podzols with a Mor humus form. Young successional stands are often very dense on steep north slopes and toe slopes. The resulting low light levels contribute to very sparse understories in these stands. In contrast, broadleaf-dominated stands have a well developed understory.

Adjacent Biogeoclimatic Subzones: The ICHmk2 occurs below the ICHmw3, MSdm2, ESSFdc2 or the ESSFwc2. The IDFmw2 always occurs below the ICHmk2. The ICHmk2 occupies a similar elevation band to the more southerly distributed ICHmk1. Falkland and Armstrong represent the most southern limits of the ICHmk2.

ICHmk2 - 2

Distinguishing adjacent Biogeoclimatic units from the ICHmk2**On zonal sites:****IDFmw2**

- Bl and Sxw not dominant species
- Fd occurs in climax stands
- snowberry, saskatoon, Oregon-grape are more common

ICHmk1

- Lw present in most seral stands
- Py may be present on dry sites
- Fd is more dominant in seral stands

ICHmw3

- Hw dominates climax stands
- Pw is often present in seral stands

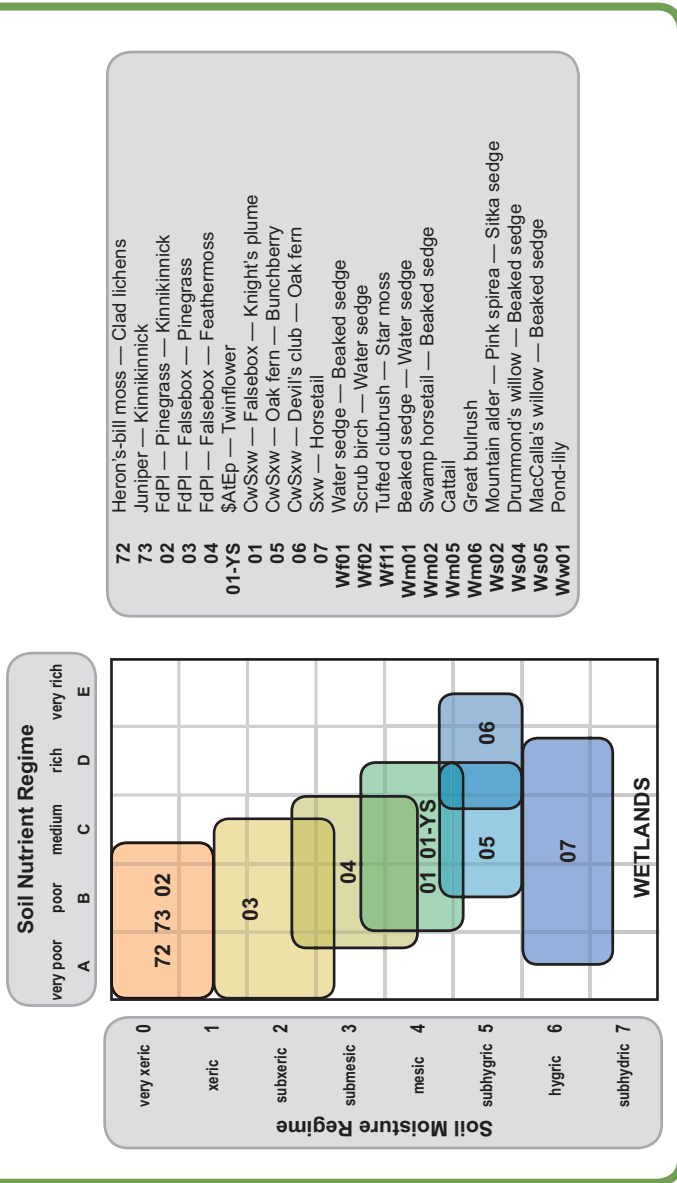
MSdm2

- Cw and Ep absent on zonal and drier sites

ESSFwc2 and dc2

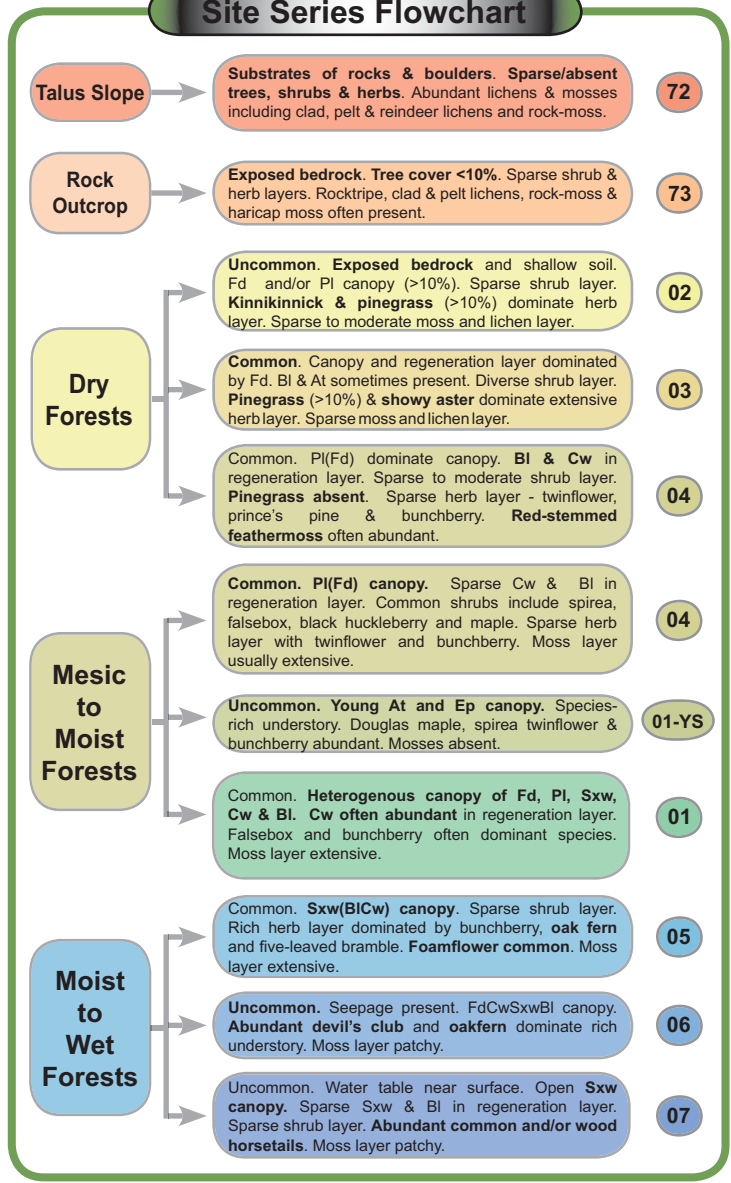
- Cw absent except in transitional areas between the ICH and ESSF
- Fd generally absent
- White-flowered rhododendron and Sitka valerian common

Edatopic Grid



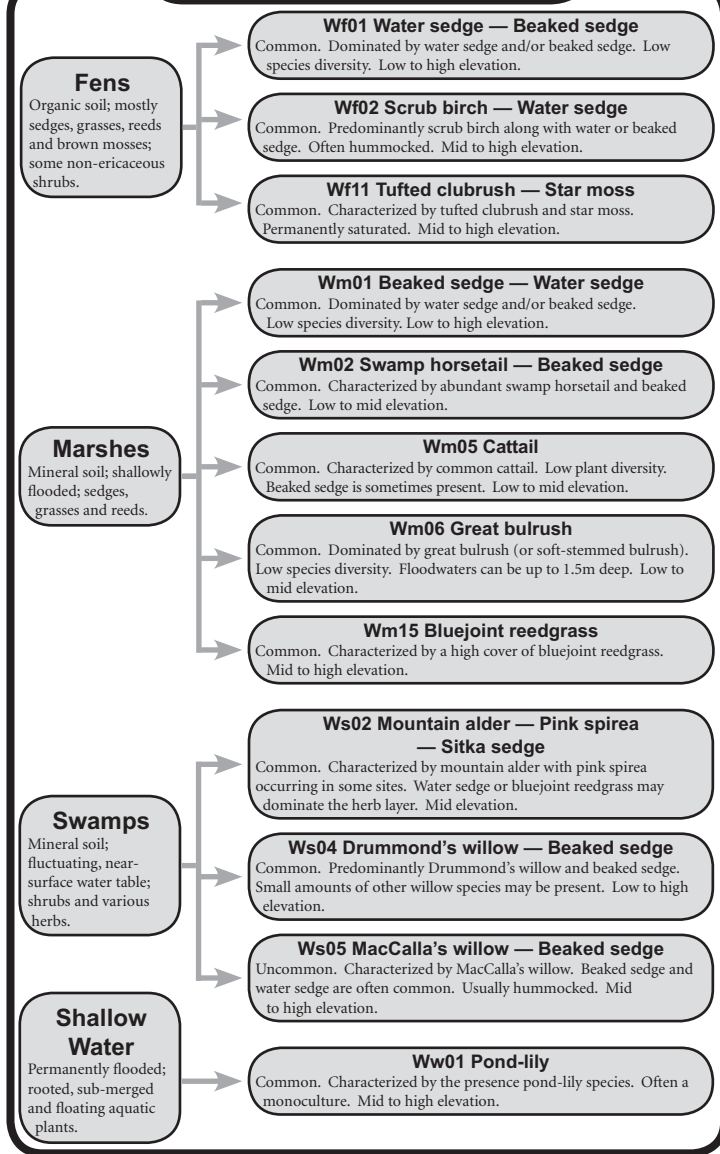
ICHmk2 - 5

Site Series Flowchart



ICHmk2 - 6

Site Unit Flowchart



Vegetation Table

Site Units No. of Plots	Rock Outcrop		Forests							
	72	73	02	03	04	01-YS	01	05	06	07
Trees										
<i>Pseudotsuga menziesii</i>										
<i>Pinus contorta</i>										
<i>Thuja plicata</i>										
<i>Picea engelmannii</i> x <i>glauca</i>										
<i>Abies lasiocarpa</i>										
<i>Populus tremuloides</i>										
<i>Betula papyrifera</i>										
<i>Pseudotsuga menziesii</i>										
<i>Pinus contorta</i>										
<i>Thuja plicata</i>										
<i>Picea engelmannii</i> x <i>glauca</i>										
<i>Abies lasiocarpa</i>										
<i>Juniperus communis</i>										
<i>Shepherdia canadensis</i>										
<i>Spiraea betulifolia</i>										
<i>Paxistima myrsinites</i>										
<i>Mahonia aquifolium</i>										
<i>Vaccinium membranaceum</i>										
<i>Acer glabrum</i>										
<i>Rosa</i> sp.										
<i>Rubus parviflorus</i>										
<i>Alnus viridis</i>										
<i>Alnus incana</i>										
<i>Ribes lacustre</i>										
<i>Lonicera involucrata</i>										
<i>Opopanax horridus</i>										
<i>Cornus stolonifera</i>										
<i>Viburnum edule</i>										
Herbs										
<i>Saxifraga bronchialis</i>										
<i>Pentstemon triflorus</i>										
<i>Arctostaphylos uva-ursi</i>										
<i>Calamagrostis rubescens</i>										
<i>Aster conspicuus</i>										
<i>Chamaenerion angustifolium</i>										
<i>Chimaphila umbellata</i>										
<i>Orthilia secunda</i>										

Site Units	Rock Outcrop		Forests							
	72	73	02	03	04	01-YS	01	05	06	07
Herbs										
<i>Goodyera oblongifolia</i>										
<i>Aralia nudicaulis</i>										
<i>Clintonia uniflora</i>										
<i>Cornus canadensis</i>										
<i>Rubus pedatus</i>										
<i>Elymus glaucus</i>										
<i>Taraxacum officinale</i> var. <i>unifoliate</i>										
<i>Maianthemum racemosum</i>										
<i>Streptopus lanceolatus</i>										
<i>Streptopus amplexifolius</i>										
<i>Gymnocarpium dryopteris</i>										
<i>Gallium triflorum</i>										
<i>Petasites fragilis</i>										
<i>Equisetum arvense</i>										
<i>Equisetum telmateium</i>										
<i>Umbellifera</i> sp.										
<i>Cledonia</i> sp.										
<i>Racomitrium</i> sp.										
<i>Barbilophozia barbata</i>										
<i>Barbilophozia lycopodioides</i>										
<i>Cledonia</i> sp.										
<i>Polytrichum juniperum</i>										
<i>Dicranum</i> sp.										
<i>Pelligera</i> sp.										
<i>Rhytidia delphus triquetrus</i>										
<i>Hylocomium splendens</i>										
<i>Pleurozium schreberi</i>										
<i>Ptilium crista-castrensis</i>										
<i>Brachythecium</i> sp.										
Mosses & Lichens										
<i>rattlesnake-plantain</i>										
<i>wild sarsaparilla</i>										
<i>queen's cup</i>										
<i>bunchberry</i>										
<i>five-leaved bramble</i>										
<i>blue wildrye</i>										
<i>one-leaved foamflower</i>										
<i>false Solomon's-seal</i>										
<i>rosy twistedstalk</i>										
<i>draping twistedstalk</i>										
<i>oak fern</i>										
<i>sweet-scorted bedstraw</i>										
<i>sweet coltsfoot</i>										
<i>common horsetail</i>										
<i>rock-lobelia</i>										
<i>reindeer lichens</i>										
<i>rock-lichens</i>										
<i>square leafy liverwort</i>										
<i>common leafy liverwort</i>										
<i>clad lichens</i>										
<i>juniper haircap moss</i>										
<i>heron s-bill moss</i>										
<i>pelt lichens</i>										
<i>electricified cat's-tail moss</i>										
<i>step moss</i>										
<i>red-stemmed feathermoss</i>										
<i>knights plume</i>										
<i>ragged-moss</i>										

Frequency of Occurrence: ■■■■■ >80% ■■■■■ >25% ■■■■■ >15-25% ■■■■■ >10% cover * <40% and <10% cover

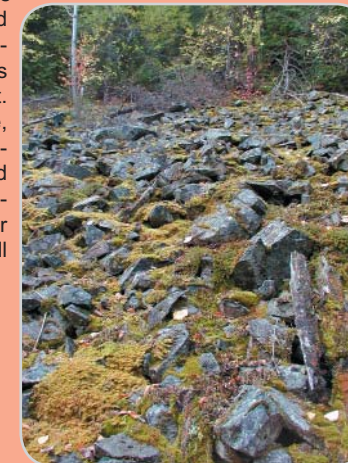
Abundance (Average Percent Cover): ■■■■■ >40% and > 10% cover ■■■■■ <40% and > 10% cover ■■■■■ <1% cover

Environment Table

Site Units	Rock Outcrops			Forests						
	72	73	02	03	04	01-Y5	01	05	06	07
Soil Moisture Regime	VX X	VX X	VX X	SX X (SM)	SM (SX M)	M SM (SHG)	M SM (SHG)	SHG (M)	SHG (M)	HG (SHD)
Mesoslope Position	UP MD	CR (UP)	CR (UP)	UP (CR)	MD (UP)	MD LV (LW)	MD LV (LW)	LV LW DP	LV LW DP	LV DP
Slope Gradient	Steep	Variable	Variable	Steep (Gentle)	Steep Gentle	Gentle Level	Variable	Gentle Level	Gentle Level	Level
Aspect	Cool	Variable	Variable	Warm (Neutral)	Warm Neutral	Neutral	Neutral (Cool)	Neutral	Neutral	Neutral
Parent Materials	Cb	R	R	Cv Mv (Cb Mb)	Mb Cb (Cv Mv)	Mb (FG)	Mb (FG Cb)	Fb (Mb Cb)	Fb (Mb Cb)	Fb Ob (Mb)
Soil Texture Class	Fragmental	Fragmental Coarse	Fragmental Coarse	Coarse Medium	Coarse Medium	Fine Medium	Variable	Variable Medium Fine	Medium Fine	Fine Organic
Important Features	Rocks & boulders	Bedrock 0-20 cm	Bedrock 0-20 cm	Often bedrock 20-100 cm	Bedrock rarely at <100 cm			Seepage	Seepage 20-100cm	Water table 0-50 cm
Successional Stage	Scarce	Uncommon	MS	MS	MS	YS	MC (MS)	MC	MS	MC
Occurrence	Scarce	Uncommon	Uncommon	Common	Common	Uncommon	Dominant	Common	Uncommon	Scarce

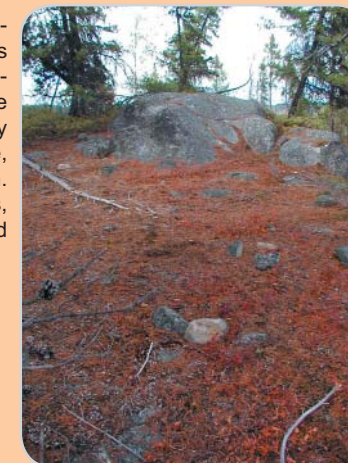
72 Heron's-bill moss — Clad lichens

The 72 unit is very uncommon and occurs on talus slopes on steep, middle and upper slopes. Trees, shrubs and herbs are sparse to absent. Sxw, paper birch, Douglas maple, black gooseberry, and spotted saxifrage may be present as scattered individuals. Common mosses and lichens include clad, pelt and reindeer lichens, leafy liverworts, heron's-bill moss and step-moss.



73 Juniper — Kinnikinnick

This site series is uncommon and occurs on non-forested rock outcrops on crest and upper slopes. Scattered Fd or PI may be present. The sparse shrub and herb layers may contain common juniper, soopolallie, kinnikinnick and shrubby penstemon. Rocktripe, clad and pelt lichens, rock-moss, juniper haircap moss and heron's bill moss are often present.



02 FdPI — Pinegrass — Kinnikinnick

This site unit is uncommon and represents forested rocky knolls on crests or upper slopes that typically have significant amounts of exposed bedrock and very shallow soil. Tree cover (>10%) varies from scattered individuals to open stands of Fd and/or PI. Conifer regeneration consists of sparse Fd. Common juniper, soopolallie, tall Oregon-grape and falsebox may occupy the shrub layer. The species-poor herb layer is dominated by abundant kinnikinnick and pinegrass (>10%). The sparse to moderate moss and lichen layer may include clad and pelt lichens and red-stemmed feathermoss.



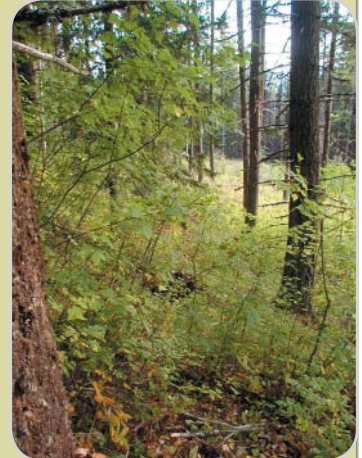
03 FdPI — Falsebox — Pinegrass

This common site series occurs on crests and warm, upper slopes with shallow soils. Fd dominates the tree and regeneration layers. PI and At may also be present. The shrub layer is diverse and includes falsebox, soopolallie, tall Oregon-grape, birch-leaved spirea, rose, common juniper, Douglas maple, and black huckleberry. Herb cover is moderate to high and is dominated by pinegrass (>10%) and, to a lesser extent, showy aster. The moss layer is poorly developed; it includes heron's-bill moss, red-stemmed feathermoss, and pelt and clad lichens. The abundance of pinegrass and lack of exposed bedrock distinguishes this site series from all others in this subzone.



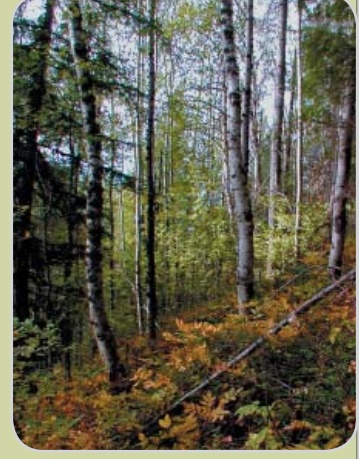
04 FdPI — Falsebox — Feathermoss

The 04 site series is common and occurs on gentle or steep and warm, middle and upper slopes with deep soils. PI and, less often, Fd, are the dominant tree species. Conifer regeneration is sparse and is primarily BI and Cw. Several shrubs occur with low to moderate covers and include birch-leaved spirea, falsebox, black huckleberry and Douglas maple. The relatively sparse herb layer contains twinflower, prince's pine and bunchberry. Unlike the 03 unit, pinegrass is absent. Red-stemmed feathermoss dominates the moderately well developed moss layer. Knight's plume, and to a lesser extent, heron's-bill moss and pelt lichens, may be present in minor amounts.



01-YS \$AtEp — Twinflower

The 01-YS unit is uncommon and represents young seral deciduous stands dominated by Ep and At. The dense understory is species-rich. Douglas maple and birch-leaved spirea are dominant species in the shrub layer with minor amounts of rose, thimbleberry and other species. The herb layer is dominated by twinflower, bunchberry and blue wildrye. Mosses and lichens are typically absent. Given sufficient time, the vegetation on these sites will likely reach a successional stage in which the vegetation resembles that of the 01 site series.



01 CwSxw — Falsebox — Knight's plume

The 01 site series occurs on gentle or steep middle and lower slopes and level areas. The heterogenous canopy may include Fd, Pl, Cw, Bl and Sxw. Unlike drier sites, Cw regeneration is often abundant. The shrub layer is dominated by falsebox with lesser amounts of birch-leaved spirea, black huckleberry and, occasionally, Sitka alder. The herb layer is similar to that of the 04 unit but may be more extensive and includes bunchberry, with minor amounts of twinflower, prince's pine, rattlesnake-plantain, queen's cup, and one-sided wintergreen. The moss layer is dominated by red-stemmed feathermoss and knight's plume with a minor amount of heron's-bill moss.



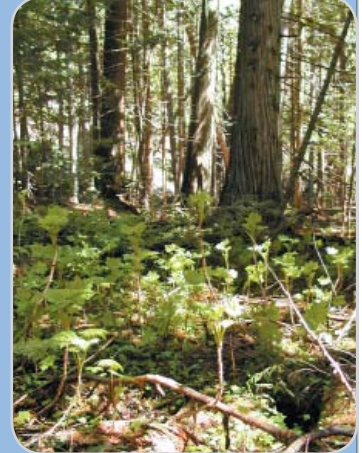
05 CwSxw — Oak fern — Bunchberry

This common site series often occurs on gentle, middle and lower slopes and level areas. Sxw usually dominates the closed canopy with lesser amounts of Bl and Cw and occasionally minor Fd. Bl and Cw are prevalent in the regeneration layer. Several shrub species may be present in minor amounts including black huckleberry, thimbleberry, black gooseberry, and black twinberry. The rich herb layer is dominated by bunchberry, oak fern, and five-leaved bramble. Other common species include twinflower, queen's cup, one-leaved foamflower, false Solomon's-seal, and rosy twistedstalk. The moderately well developed moss layer is dominated by knight's plume and red-stemmed feathermoss.



06 CwSxw — Devil's club — Oak fern

The 06 site series is uncommon. It often occurs adjacent to streams on lower slopes, level areas and in depressions. Seepage is present. The mixed open canopy contains Fd, Cw, Sxw and Bl. Cottonwood, paper birch and trembling aspen may also be present in minor amounts. Cw dominates the regeneration layer with lesser amounts of Bl and Ep. Abundant devil's club distinguishes this site series from all other units. Other common shrubs include red-osier dogwood, black gooseberry and black twinberry. Oak fern dominates the herb layer with lesser amounts of one-leaved foamflower, queen's cup and bunchberry. The moss layer is patchy and discontinuous.



07 Sxw — Horsetail

This site series is very uncommon and is found on level areas and depressions where the water table is at or near the surface. Stands are typically open and dominated by Sxw. Other common species include Cw and Bl. Conifer regeneration is relatively sparse and often includes Bl and Sxw. The sparse shrub layer may include mountain alder, red-osier dogwood, black twinberry, black gooseberry, and highbush-cranberry. The moderate to abundant cover of common horsetail or wood horsetail characterizes this site unit. Several other common species include bunchberry, oak fern, clasping twistedstalk, one-leaved foamflower, five-leaved bramble and sweet coltsfoot. Moss cover is patchy and discontinuous.



ICHmw2

SHUSWAP MOIST WARM INTERIOR CEDAR - HEMLOCK VARIANT

Distribution: The ICHmw2 occurs southeast of Salmon Arm and north of Cherryville in the lower Shuswap River basin including areas around Mabel Lake, Sugar Lake and the Larch hills. Further east, it occupies middle and lower slopes surrounding Arrow and Trout Lakes, and occur in the Lardeau, upper St. Mary's, Goat, Slocan, Kettle, upper Granby and southern Moyie Drainage basins.

Elevational Range: In the north the ICHmw2 occurs above the IDFmw1 starting at about 1100 meters and in the south, above the ICHdw at 1200m. It can occupy valley bottoms as low as 450-500m. Throughout its geographic range, its upper limits are 1450-1500m on north aspects and 1500-1600m on steep south slopes.

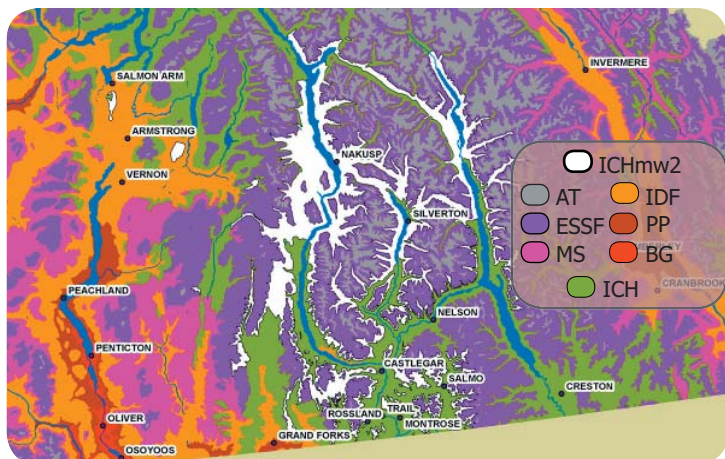


Figure X. Distribution of the ICHmw2.

ICHmw2 - 1

Climate: The ICH is warmer than the MS and ESSF and wetter than the IDF and MS. The ICHmw2 has warm, moist summers and mild, moist, snowy winters. Annual precipitation ranges from 600-800mm and maximum snow depths average 75-100cm and rarely exceed 150 cm. The climate is generally favourable for tree growth and soil moisture is limiting only on dry sites with a southern exposure or shallow soils. Extended summer droughts may lead to short periods of soil moisture deficits. The ICHwk and ICHvk receive considerably more precipitation than the ICHmw2. The ICHmw3 and ICHdw3 have cooler mean annual temperatures and experience shorter frost free periods.

Forest Cover: Late succession stands are typically dominated by Hw and Cw. Swx and BI are common on wetter site series, sites subject to cold air drainage and at upper elevations which are transitional to the ESSF. Fire history and human disturbance have led to the widespread development of successional stands dominated by Fd, PI, Pw, Lw, Ep and At. Wildfires are often stand destroying, although individual large diameter Fd vets are common in many successional stands. Most stands range in age from 80-140 years suggesting a normal fire return of similar frequency. At upper elevations and at the wetter geographic extremes of this variant late succession, climax stands are more common and are typically 180-240 years old.

Zonal Vegetation and Soils: Climax stands are dominated by Cw and Hw in the tree and regeneration layers. The shrub layer is sparse and typically consists of scattered falsebox and black huckleberry. Herbs include small amounts of prince's pine, twinflower, bunchberry and queen's cup. The bryophyte layer forms an extensive carpet. Young climax stands are characterized by dense coniferous stands with almost no understory vegetation. Mature seral stands are similar to mature climax stands but contain a larger component of the seral tree species Fd, Pm, Lw and Ep. Soils are characteristically Humo-Ferric Podzols or Dystric Brunisols with Mor humus forms.

Adjacent Biogeoclimatic Subzones: The ICHmw2 often occurs above the IDFmw1 at its northwestern geographic limits and above the ICHdw at its southernmost geographic limits. It usually occurs below the ESSF wc1 or wc4 except in wetter areas where it lies below the ICHwk1. The ICHmw2 abuts the ICHmw3 at its northern limits is close to the ICHmk1 near areas that are transitional to the MS.

ICHmw2 - 2

Distinguishing adjacent Biogeoclimatic units from the ICHmw2

On zonal sites:

IDFmw1

- lacks Hw and Pw
- pinegrass and saskatoon are often present
- Fd common in climax stands

ICHmw3

- Lw is absent from successional stands

ICHmk1

- Hw is absent
- Swx and BI are more common on zonal sites

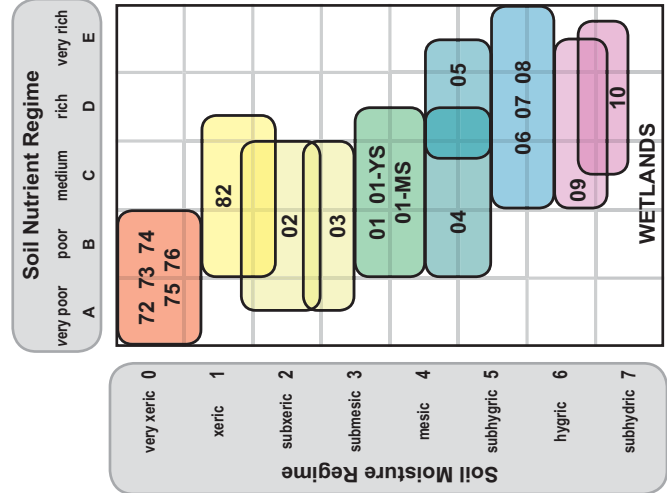
ICHwk1

- has a herb-dominated understory with oak fern, one-leaved foamflower and rosy twistedstalk

ESSFwc4 and ESSFwc1

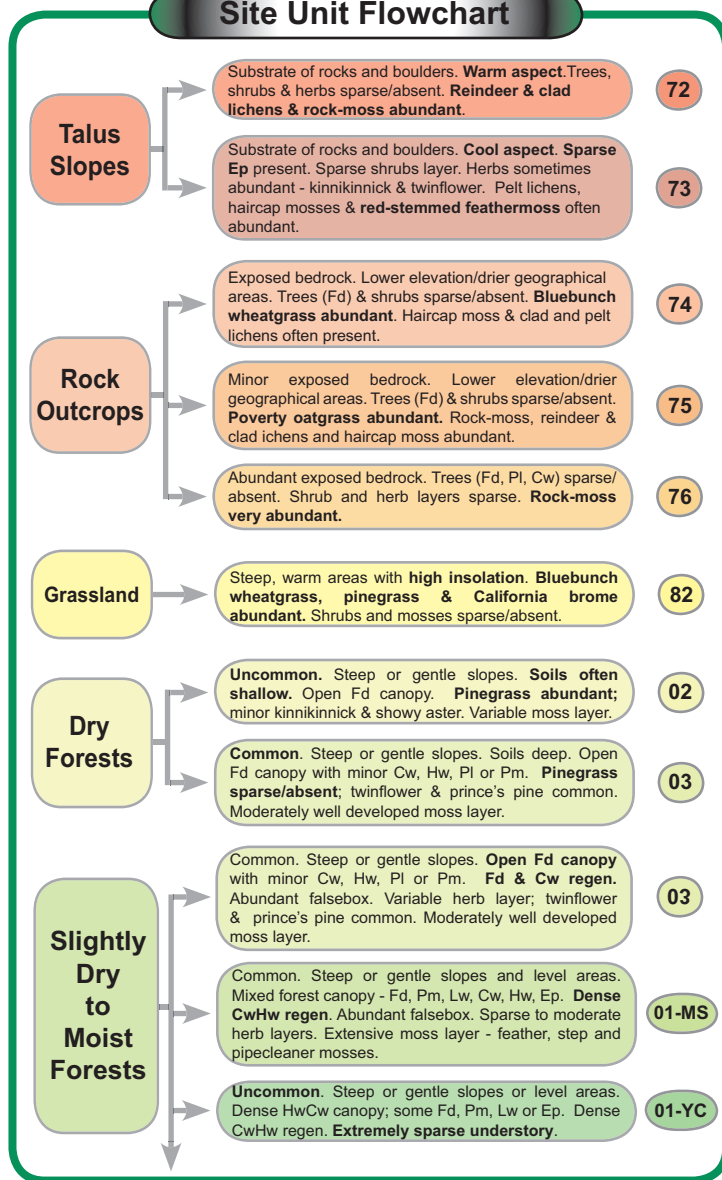
- stands dominated by BI and Se
- white-flowered rhododendron and Sitka valerian are common on zonal sites

Edatopic Grid

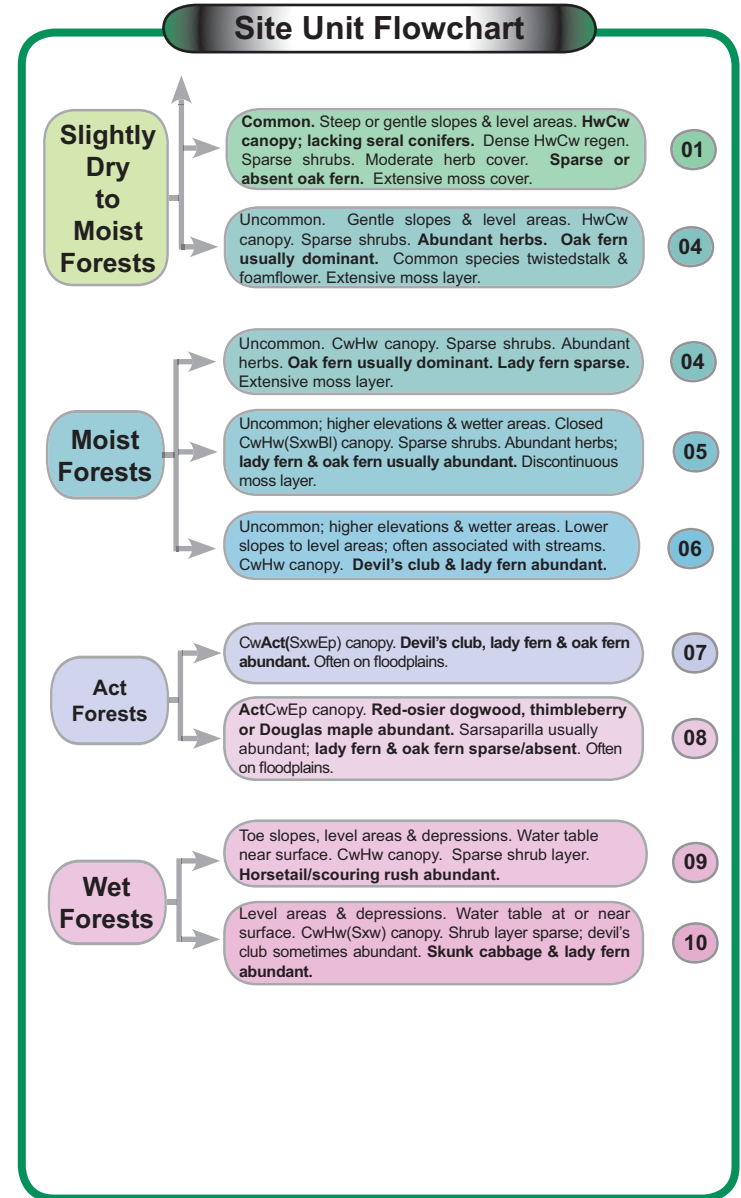


- 72 Rocktripe lichens — Rock-moss
- 73 Huckleberry — Kinnikinnick
- 74 Bluebunch wheatgrass — Salaginella
- 75 Oatgrass — Rock-moss
- 76 Rock-moss — Clad lichens
- 82 Bluebunch wheatgrass — Pinegrass
- 02 FdPl — Falsebox — Pinegrass
- 03 FdCw — Falsebox — Prince's pine
- 01-MS \$FdHwCw — Falsebox — Twinflower
- 01-YS \$FdHwCw — Nudlum
- 01 HwCw — Falsebox — Feathermoss
- 04 CwHw — Oak fern
- 05 CwHw — Lady fern — Oak fern
- 06 CwHw — Devil's club — Lady fern
- 07 Act — Devil's club
- 08 Act — Thimbleberry — Sarsaparilla
- 09 CwHw — Horsetail
- 10 CwHw — Skunk cabbage
- Wb02 Pl — Bog rosemary — Peat-moss
- Wf01 Water sedge — Beaked sedge
- Wf05 Slender sedge — Common hook-moss
- Wf06 Tufted clubrush — Buckbean
- Wf11 Beaked sedge — Star moss
- Wm01 Swamp horsetail — Water sedge
- Wm02 Cattail
- Wm05 Great bulrush
- Wm06 Initiated sedge
- Wm09 Bluejoint reedgrass
- Wm15 Mountain alder — Skunk cabbage — Lady fern
- Ws01 Drummond's willow — Pink spirea — Sitka sedge
- Ws02 Sitka willow — Sitka sedge
- Ws04 Pink spirea — Sitka sedge
- Ws06 Pond-lily
- Ww01

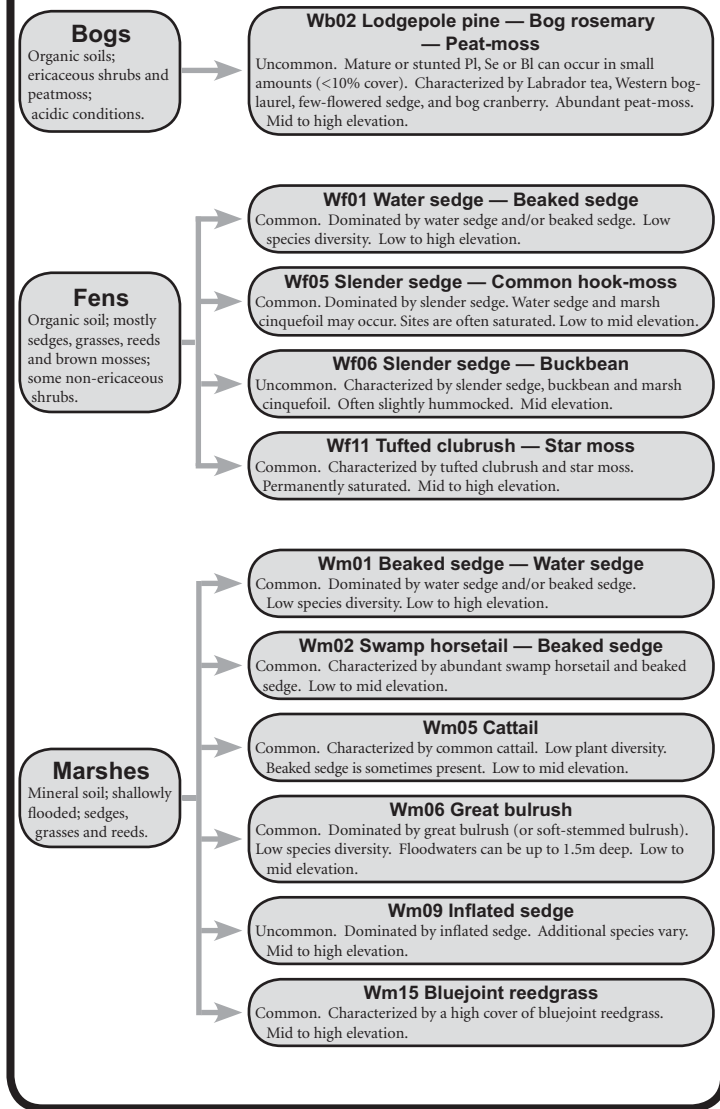
Site Unit Flowchart



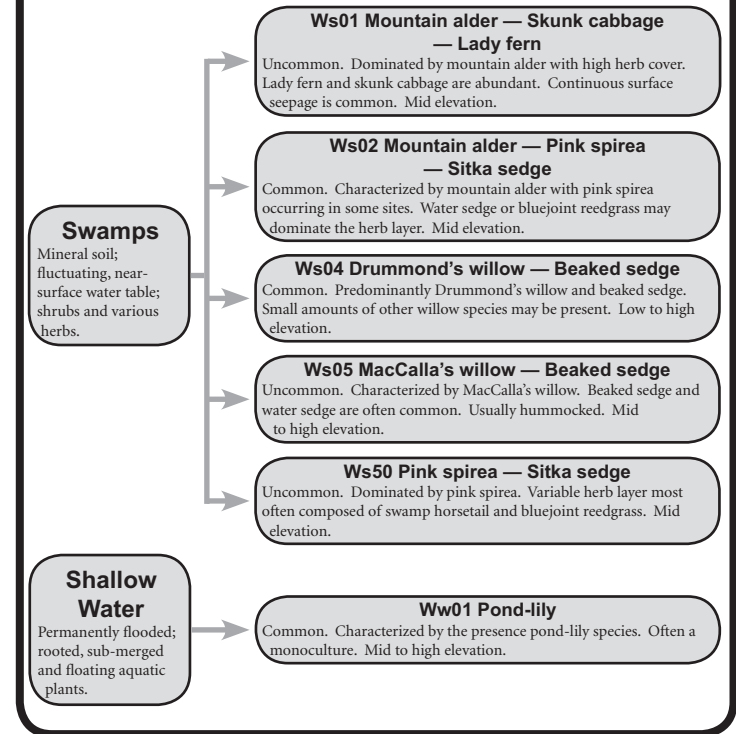
Site Unit Flowchart



Site Unit Flowchart



Site Unit Flowchart



Refer to the wetland section in the package of BEC materials for a more thorough characterization of wetland ecosystems.

Vegetation Table

Forests

Site Units	Forests									
	04	05	06	07	08	09	10			
Trees	77	8	24	3	4	9	14			
<i>Pseudotsuga menziesii</i>	*									
<i>Pinus contorta</i>	*	*	*	*						
<i>Pinus monticola</i>										
<i>Larix occidentalis</i>										
<i>Picea engelmannii</i> x <i>glauca</i>										
<i>Thuja plicata</i>										
<i>Tsuga heterophylla</i>										
<i>Abies lasiocarpa</i>										
<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>										
<i>Betula papyrifera</i>										
Shrubs										
<i>Pseudotsuga menziesii</i>										
<i>Thuja plicata</i>										
<i>Tsuga heterophylla</i>										
<i>Taxus brevifolia</i>										
<i>Picea engelmannii</i> x <i>glauca</i>										
<i>Betula papyrifera</i>										
<i>Juniperus communis</i>										
<i>Hibiscus discolor</i>										
<i>Amelanchier alnifolia</i>										
<i>Ribes lacustre</i>										
<i>Salix glauca</i>										
<i>Salix glauca</i>										
<i>Salix glauca</i>										
<i>Shepherdia canadensis</i>										
<i>Rosa gymnocarpa</i>										
<i>Lonicera utahensis</i>										
<i>Vaccinium membranaceum</i>										
<i>Acer glabrum</i>										
<i>Alnus viridis</i>										
<i>Rubus parviflorus</i>										
<i>Ribes lacustre</i>										
<i>Oplopanax horridus</i>										
<i>Cornus stolonifera</i>										
Herbs										
<i>Arctostaphylos uva-ursi</i>										
<i>Pseudocnemia spicata</i>										
<i>Selaginella densa</i>										
<i>Cryptogramma acrostichoides</i>										
<i>Danthonia spicata</i>										
<i>Setum stenopetalum</i>										

Site Units	Forests									
	04	05	06	07	08	09	10			
Herbs										
<i>Phacelia linearis</i>	*									
<i>Bromus carinatus</i>										
<i>Calamagrostis rubescens</i>										
<i>Aster consocius</i>										
<i>Vaccinium caespitosum</i>										
<i>Pteridium aquilinum</i>										
<i>Linnaea borealis</i>										
<i>Chimaphila umbellata</i>										
<i>Clintonia uniflora</i>										
<i>Goodyera oblongifolia</i>										
<i>Cornus canadensis</i>										
<i>Rubus pedatus</i>										
<i>Osmorhiza</i> sp.										
<i>Aralia nudicaulis</i>										
<i>Maianthemum racemosum</i>										
<i>Tiarella trifoliata</i> var. <i>unifoliata</i>										
<i>Streptopus lanceolatus</i>										
<i>Gymnocarpium dryopteris</i>										
<i>Althium mixylenia</i>										
<i>Galium triflorum</i>										
<i>Actaea rubra</i>										
<i>Dryopteris expansa</i>										
<i>Asarum caudatum</i>										
<i>Equisetum scopoides</i>										
<i>Equisetum arvense</i>										
<i>Lysichiton americanus</i>										
Mosses & Lichens										
<i>Umbilicaria</i> sp.										
<i>Polypodium</i> sp.										
<i>Racomitrium</i> sp.										
<i>Cladonia</i> sp.										
<i>Pelligera</i> sp.										
<i>Brachythecium</i> sp.										
<i>Dicranum</i> sp.										
<i>Rhytidiadelphus triquetrus</i>										
<i>Pleurozium schreberi</i>										
<i>Rhytidiopsis robusta</i>										
<i>Hylocomium splendens</i>										
<i>Ptilium prisa-caeransis</i>										
<i>Pleurozium</i> sp.										

Frequency of Occurrence:
 Abundance (Average Percent Cover): * <40% and <10% cover

Environment Table

Site Units	Talus			Rock Outcrops			Grassland			Forests			
	72	73	74	75	76	77	82	82	82	01-MS	01-MS	01-MS	
Soil Moisture Regime	VX X	X VX	VX X	X VX	X VX	X VX	SX X	SX X	SX X	M (SM)	M (SM)	M (SM)	
Mesoslope Position	UP MD LW	UP MD LW	CR UP MD	CR UP MD	CR UP MD	CR UP MD	UP MD	UP MD	UP MD	UP MD LW LV	UP MD LW LV	UP MD LW LV	
Slope Gradient	Steep	Steep	Steep (Gentle)	Gentle Steep	Variable	Variable	Steep	Steep	Steep (Gentle)	Steep (Gentle)	Variable	Variable	
Aspect	Warm	Cool	Warm (Neutral)	Neutral Warm	Neutral (Warm)	Neutral (Warm)	Warm	Warm	Warm (Neutral)	Variable	Variable	Variable	
Parent Materials	Cb	Cb	R	R	R	R	Cb Mb (Mv)	Cb Mb (Mv)	Cv Mb (Mv)	Mb Cb FG	Mb Cb FG	Mb Cb FG	
Soil Texture Class	Fragmental	Fragmental	Fragmental Coarse Medium	Fragmental Coarse Medium	Fragmental Coarse Medium	Fragmental Coarse Medium	Medium Fine	Medium Fine	Medium (Fine)	Coarse (Medium)	Coarse (Medium)	Coarse (Medium)	
Important Features	Rocks & boulders	Rocks & boulders	Bedrock 0-20 cm	Bedrock 0-20 cm	Bedrock 0-20 cm	Bedrock 0-20 cm	Some bedrock 20-100 cm	Some bedrock 20-100 cm	Some bedrock 20-100 cm				
Successional Stage	Uncommon	Uncommon	Scarce ¹	Scarce ¹	Uncommon	Uncommon	Scarce	Scarce	Uncommon	MS MC	MS	YC	
Occurrence	Uncommon	Uncommon	Scarce ¹	Scarce ¹	Uncommon	Uncommon	Scarce	Scarce	Uncommon	Common	Dominant	Uncommon	Common

¹ Generally restricted to lower elevations at the drier geographic range of the subzone.

Environment Table

Site Units	Forests									
	04	05	06	07	08	09	10			
Soil Moisture Regime	M SHG	SHG M	SHG (HG)	SHG HG	HG (SHG)	HG (SHD)	SHD (HG)			
Mesoslope Position	LW TO (LV MD)	LW TO (LV MD)	LW TO LV	LV (TO)	LV DP	LV DP	LV DP			
Slope Gradient	Level Gentle	Level Gentle	Level (Gentle)	Level	Level	Level	Level			
Aspect	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral			
Parent Materials	Mb Fb FG	Fb (Mb)	Fb	Fb Lb	Fb	Fb	Ob Ov Fb			
Soil Texture Class	Medium (Coarse)	Variable	Coarse Medium	Medium	Medium Fine	Medium Fine	Fine Organic			
Important Features	Some seepage	Some seepage	Seepage 20-100 cm	Seepage 20-100 cm	Water table 0-40 cm	Water table 0-40 cm	Water table 0-20 cm			
Successional Stage	MC	MC	MC	MS	MS	MC	MC			
Occurrence	Uncommon	Uncommon ²	Uncommon ²	Scarce ³	Scarce ³	Uncommon	Scarce			

² More common at higher elevations of the subzone.

³ Generally restricted to large valley bottom floodplains.

72 Rocktripe lichens — Rock-moss

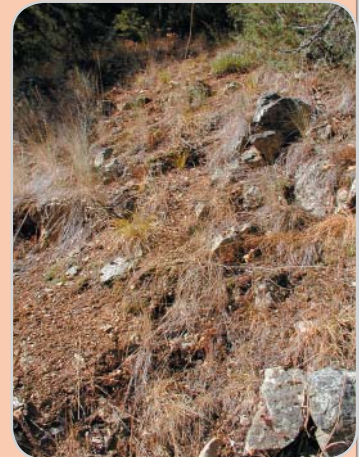
The 72 site series is uncommon and occurs on steep talus slopes with a warm aspect. Trees are absent or occur as scattered individuals. Shrubs are sparse or absent. Herb cover is very low and includes species such as parsley fern that are restricted to small pockets of humus or mineral soil. Lichens and dry mosses are dominant of which the most abundant species are usually rock-moss, reindeer lichens and clad lichens.

**73 Huckleberry — Kinnikinnick**

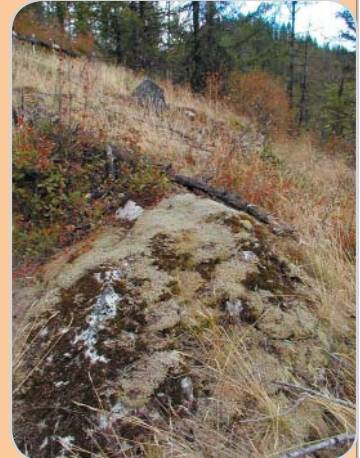
The 73 unit is uncommon and occurs on steep talus slopes with a cool aspect. Ep may occur in scattered patches. The sparse shrub layer may include black huckleberry, falsebox, saskatoon or thimbleberry. The herb layer may be extensive depending on the availability of exposed soil; kinnikinnick and twinflower may be abundant. The moss and lichen layer is often extensive and may include haircap moss, pelt lichens, and red-stemmed feathermoss. Other large moss species may be abundant, particularly in shaded microsites. The vegetation is usually more extensive on talus slopes with a cool aspect than those with a warm aspect.

**74 Bluebunch wheatgrass — Selaginella**

The 74 site unit is very uncommon and occurs most often at lower elevations or in drier geographical areas of the subzone. It occurs on non-forested rock outcrops on crest positions or upper slopes with a warm aspect. These sites are very dry, typically have significant amounts of exposed bedrock and very shallow soils. Trees are generally absent but Fd may be present as scattered individuals. Shrubs are sparse and may include tall Oregon-grape, falsebox and birch-leaved spirea. A moderate cover of bluebunch wheatgrass dominates the herb layer. Other herbs include compact selaginella, worm-leaved stonecrop, and kinnikinnick. Haircap moss, clad lichens and pelt lichens are often present.

**75 Oatgrass — Rock-moss**

This site series is very uncommon and most often occurs at lower elevations and in drier geographical areas of the subzone. It occupies non-forested rock outcrops on crests and upper slopes. These sites are very dry, but they typically have less exposed bedrock and greater soil development compared to the 74 and 76 units. Trees are usually absent. The sparse shrub layer often consists of falsebox, saskatoon and birch-leaved spirea. The herb layer is dominated by a large cover of poverty oatgrass. Other herbs may include kinnikinnick and parsley fern. The moss and lichen layer is often extensive and includes rock-moss, reindeer and clad lichens and haircap moss.

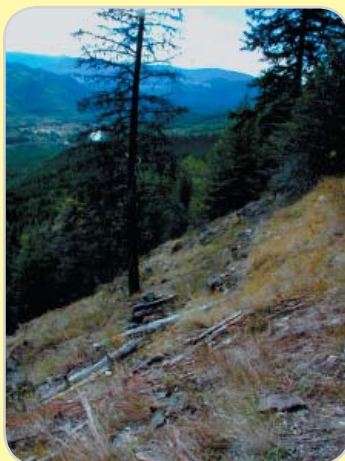


76 Rock-moss — Clad lichens

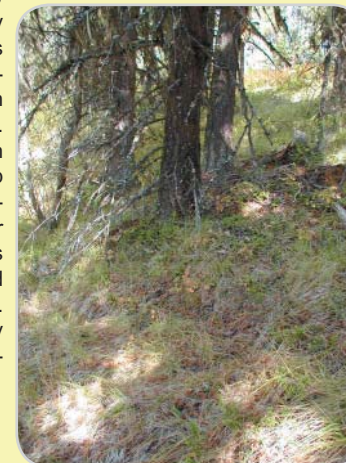
This site series is uncommon. It occurs on non-forested rock outcrops on crests or upper and middle slopes. These sites typically have significant amounts of exposed bedrock and very shallow soils. Trees are generally absent but stunted Fd, PI or Cw may be present. Minor amounts of falsebox, common juniper, saskatoon, pinegrass and other dry species may be present. The moss layer is represented by abundant rock-moss.

**82 Bluebunch wheatgrass — Pinegrass**

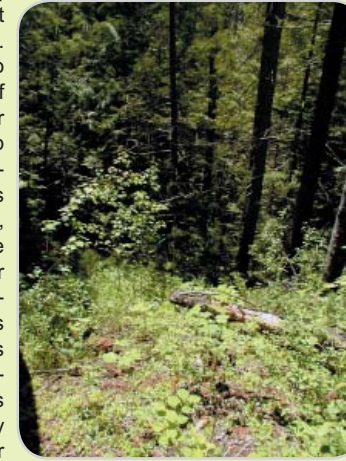
This grassland unit is very uncommon and is found on steep, warm slopes. They appear to occur in the climatically driest portions of the ICHmw2 in very exposed locations that receive high amounts of insolation. Moderate to high covers of bluebunch wheatgrass, California brome and pinegrass characterize this unit. Shrubs and mosses are very sparse to absent.

**02 FdPI — Falsebox — Pinegrass**

The 02 site series occurs infrequently on middle and upper slopes. Soils are often shallow. Stands are characterized by an open Fd canopy with sparse Fd in the regeneration layer. Several shrub species are often present including falsebox, baldhip rose, birch-leaved spirea and saskatoon. Kinnikinnick and showy aster are often present in minor amounts but the herb layer is characterized by abundant (>20%) pinegrass. The moss layer is variable and may include heron's-bill moss and red-stemmed feathermoss.

**03 FdCw — Falsebox — Prince's pine**

The 03 site series is a common unit and is found on steep or gentle slopes. Fd usually dominates the open to closed canopy with minor amounts of Cw, Lw, PI and Pw. Fd and Cw occur in the regeneration layer. The shrub layer is usually dominated by abundant falsebox with minor amounts of soopolallie, birch-leaved spirea, black huckleberry, Douglas maple and baldhip rose. The herb layer is variable in extent; the most common species are twinflower, prince's pine, rattlesnake-plantain, queen's cup, bracken and false Solomon's-seal. Unlike the 02 unit, pinegrass is sparse or absent. The moderately well-developed moss and lichen layer is usually dominated by red-stemmed feathermoss, heron's-bill moss and pelt lichens.



01-MS \$FdHwCw — Falsebox — Twinflower

The 01-MS site unit occurs most often on gentle slopes or level areas. These mature seral stands are variable and may be dominated by a mix of Fd, Pw, Lw, Cw, Hw or Ep. The dense regeneration layer is dominated by Cw and Hw. The shrub layer is patchy and is often dominated by falsebox with minor amounts of black huckleberry, Douglas maple, and, occasionally, baldhip rose and thimbleberry. The herb layer is usually dominated by prince's pine, twinflower, queen's cup and bracken. The moderate moss layer is dominated by red-stemmed feathermoss, step moss, pipecleaner moss and electrified cat's-tail moss.



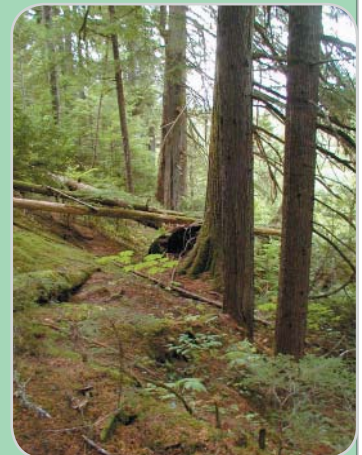
01-YC \$FdHwCw — Nudum

These young climax stands are uncommon. They are characterized by a dense, mixed forest canopy usually dominated by Cw and Hw with lesser amounts of Fd, Pw, Sxw and Lw. Regenerating Cw and Hw are abundant. Unlike other site units, the shrub, herb and moss layers are depauperate. Trace amounts of western yew, falsebox, rattlesnake-plantain, prince's pine, queen's cup or pipecleaner moss may be present.



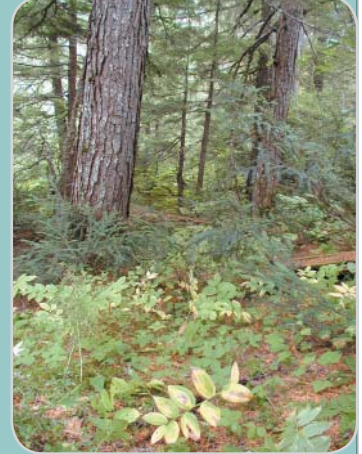
01 HwCw — Falsebox — Feathermoss

The zonal site series is common on gentle or steep slopes and on level areas. Hw and Cw form dense climax stands with abundant conifer regeneration in the understory. Unlike the 02, 03, and 01-MS site units, seral conifer species are sparse to absent. Falsebox and black huckleberry are often present in small patches. The herb layer is similar to the 01-MS unit and is dominated by twinflower, queen's cup, prince's pine and bunchberry. One-leaved foamflower is often present in minor amounts. The extensive moss layer is composed of red-stemmed feathermoss, pipecleaner moss and step moss.



04 CwHw — Oak fern

The 04 site series occurs infrequently. It occupies middle, lower and toe slopes and level areas that may have intermittent seepage. The closed forest canopy and regeneration layer are dominated by Cw and Hw. Shrub cover is usually low and falsebox, black huckleberry, Douglas maple, devil's club, black gooseberry, thimbleberry or Utah honeysuckle may be present in small amounts. Unlike the 01 unit, the herb layer is moderately abundant; oak fern is usually a dominant species. Other common herbs include bunchberry, five-leaved bramble, one-leaved foamflower, queen's cup, violets, and rosy and clasping twistedstalks. Pipecleaner moss, red-stemmed feathermoss and step moss are common and abundant.



05 CwHw — Lady fern — Oak fern

This site series occurs infrequently and is found most often at higher elevations and in wetter portions of the ICHmw2. It occupies moist middle, lower and toe slopes and level areas. Cw and Hw dominate the forest canopy and the regeneration layer. Bl and Sxw occur less frequently. Minor amounts of black huckleberry, Utah honeysuckle, black gooseberry and devil's club are often present in the shrub layer. The herb layer is very similar to the 04 unit except oak fern, one-leaved foamflower and five-leaved bramble are usually more abundant. In addition, lady fern is often abundant. The discontinuous moss layer includes pipecleaner moss and ragged-moss.

**06 CwHw — Devil's club — Lady fern**

This infrequent site series occurs most often at higher elevations and in wetter portions of the subzone. It occurs on lower slopes, toe slopes and level areas that have persistent seepage and is often associated with stream channels. Cw and Hw dominate the closed to dense forest canopy and the regeneration layer. Abundant devil's club is a key indicator of this site series. Other shrubs include minor amounts of black gooseberry, thimbleberry and Utah honeysuckle. The herb layer is similar to the 05 unit and includes abundant lady fern, oak fern and one-leaved foamflower. The most frequent species in the patchy moss layer include ragged-moss, pipecleaner moss, leafy moss and red-stemmed feathermoss.

**07 Act — Devil's club**

The 07 unit is very uncommon and occurs on toe slopes and level sites with persistent seepage. It is associated with stream channels and floodplains. The forest canopy is a mix of Cw and Act and, sometimes, with a minor component of Ep. Conifer regeneration is primarily Cw with a minor component of Hw. The shrub layer is dominated by devil's club with minor amounts of red-osier dogwood, black gooseberry, thimbleberry and Douglas maple. The dense herb layer is similar to the 06 unit; oak fern and lady fern are often the dominant species. The moss layer is usually sparse.

**08 Act — Thimbleberry — Sarsaparilla**

This is a very uncommon unit. It is found on level areas and depressions on fluvial materials typically associated with floodplains. The heterogeneous forest canopy is a mix of Act, Cw and Ep. Conifer regeneration is typically dominated by Cw. The dense shrub layer is dominated by a mix of red-osier dogwood, thimbleberry and Douglas maple with minor amounts of baldhip rose and saskatoon. Wild sarsaparilla often dominates the herb layer. Other species include wild ginger, sweet-cicely, bunchberry, queen's cup, false Solomon's-seal, clasping twistedstalk and baneberry. The moss layer is sparse to moderate and often consists of leafy moss, step moss and ragged-moss.



09 CwHw — Horsetail

The 09 site series occurs infrequently on toe slopes, level areas and depressions with a water table at or near the surface. These sites are often associated with stream channels. The forest canopy varies from open to closed and is dominated by Cw and Hw. Conifer regeneration of Cw and Hw is moderately dense. The shrub layer is sparse and often contains minor amounts of devil's club, black gooseberry and red-osier dogwood. The herb layer is extensive and is dominated by common horsetail and/or dwarf scouring-rush. Other herbs include lady fern, wild ginger, one-leaved foamflower, bunchberry and sweet-cicely. Leafy mosses, pelt lichens and a number of other species are relatively common.



10 CwHw — Skunk Cabbage

This uncommon site series is found on level sites and depressions that have a persistent water table at or near the surface. They are associated with stream channels or low-lying areas where standing water is often present. Soils are typically gleyed or organic. The forest canopy is open to closed and composed of Cw, Hw and minor Sxw. Regeneration is moderate and is primarily Hw and Cw. Devil's club occurs in the otherwise sparse shrub layer. Abundant skunk cabbage and lady fern characterizes the herb-rich understory. Oak fern, sweet-scented bedstraw, violets, bunchberry, clasping twistedstalk and one-leaved foamflower are often present. Mosses are diverse and may include ragged-moss, red-stemmed feathermoss, step moss and pelt lichens.

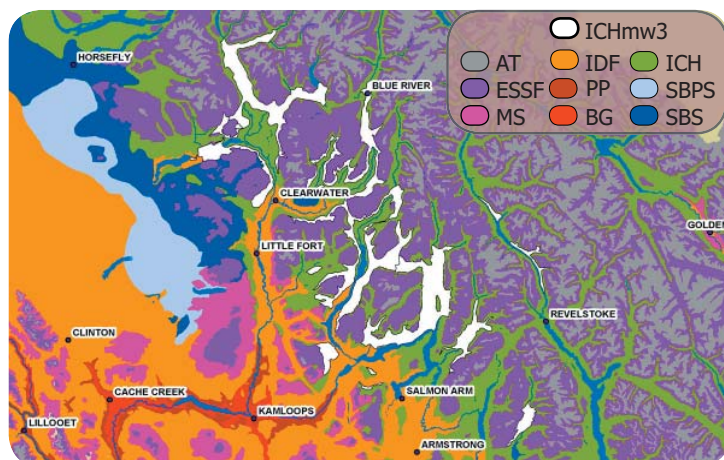


ICHmw3

THOMPSON MOIST WARM INTERIOR CEDAR — HEMLOCK VARIANT

Distribution: In general, the ICHmw3 is found north of the Trans-Canada Highway from Chase to Revelstoke. It occurs in the Shuswap and Quesnel Highlands where it occupies valley bottoms and mid-slopes of the Eagle, Seymour, Barriere, Adams, Cayenne, North Thompson, Clearwater, Mad and Raft River drainages. It occurs south of Revelstoke to Galena Bay and the upper Arrow Lake and it occurs north of Revelstoke in the lower side drainages of the Columbia River which includes the Akikilex River and the Crawford, Drimmie, Cranberry, Blanket and Begbie Creeks. The most southerly occurrence is along the Shuswap River north of Sugar Lake.

Elevational Range: In many areas, the ICHmw3 occupies valley bottoms where elevations generally range from 450-800m. In climatically drier climates, where the ICHmw3 occurs above the IDfmw or ICHdw3, the lower elevational limits are about 800-1000m on north slopes and 1000-1200m on



ICHmw3 - 1

south slopes. In many areas, the ICHmw3 borders the ESSFwc2 at about 1450-1500m on north aspects and 1500-1600m on south aspects. In climatically wetter areas, the ICHmw3 occurs below the ICHwk1 at elevations between 800 and 1300 m.

Climate: The ICH is warmer than the MS and ESSF and wetter than the MS and IDF. The ICHmw3 receives about 600-800 mm of annual precipitation and mid-winter snow accumulations vary between 1 and 2 m in depth. It is drier, warmer and has a longer growing season than ICHwk1 and ICHvk1. It is moister and cooler than the ICHmw2. Prolonged summer droughts are uncommon but may lead to a shorter growing season because of soil moisture deficits.

Forest Cover: Hw and Cw dominate late successional stands. Sxw and Bl are common on wetter site series, sites subject to cold air drainage and at upper elevations. Fire history and human disturbance have led to the widespread development of successional stands dominated by Fd, Pl and Pw. The occurrence of Ep and At is significantly less frequent than that in the ICHmw2 and ICHdw3. Wildfires generally lead to complete stand destroying events although large diameter Fd vets are often found in many successional stands. A large proportion of the natural stands range in age from 80-140 years. At upper elevations and the wetter geographic extremes of this variant, late succession and climax stands are more common and are typically 180-240 years old.

Zonal Vegetation and Soils: Late succession Cw and Hw stands contain a moss-dominated understory that includes a sparse shrub layer consisting of falsebox and an equally sparse herb layer containing small amounts of prince's pine, twinflower, bunchberry and queen's cup. Dense seral, conifer-dominated stands are common and have a depauperate understory. This condition is particularly common on steep north slopes and lower slopes. The soils are characteristically Humo-Ferric Podzols or Dystric Brunisols with a Mor humus forms.

Adjacent Biogeoclimatic Subzones: The ICHmw3 occurs below the ESSFwc2 or, in wetter geographic areas, below the ICHwk1. The ICHmw3 generally occurs above the IDfmw2 or ICHdw3, but in many wetter geographic areas it occupies the valley floor. In the southeastern portion of Wells Gray Park and in the Cariboo, the ESSFwk1 replaces the ICHmw3 at elevations above 1250-1300m. In geographic areas that are transitional between the "wetbelt" and "drybelt" the ICHmk2 may occupy slightly drier and/or cooler areas adjacent to the ICHmw3.

ICHmw3 - 2

Distinguishing adjacent Biogeoclimatic units from the ICHmw3

On zonal sites:

IDFmw2

- Hw and Pw absent
- pinegrass, snowberry and saskatoon are common
- Fd common in climax stands

ICHdw3

- Hw less common in the forest canopy
- Ep and At stands are common and widespread
- late successional stands are rare
- pinegrass frequently dominates dry warm sites

ICHmw2

- Lw is a common successional tree species

ICHmk1

- Hw absent
- Sxw and Bl are more common

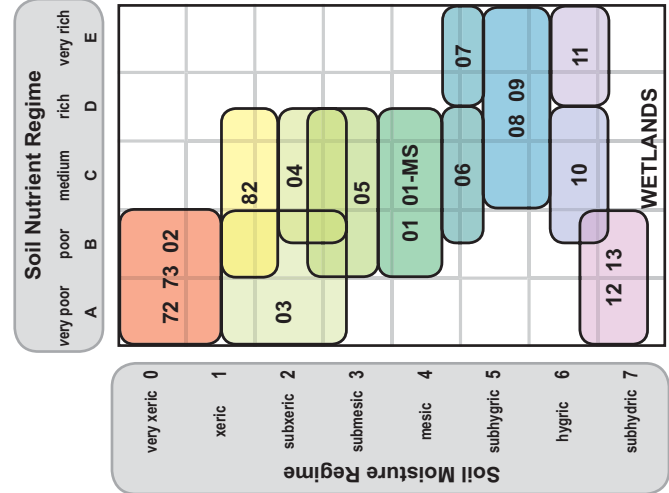
ICHwk1

- herb dominated with oakfern, one-leaved foamflower and rosy twisted-stalk

ESSFwc4 and ESSFwc1

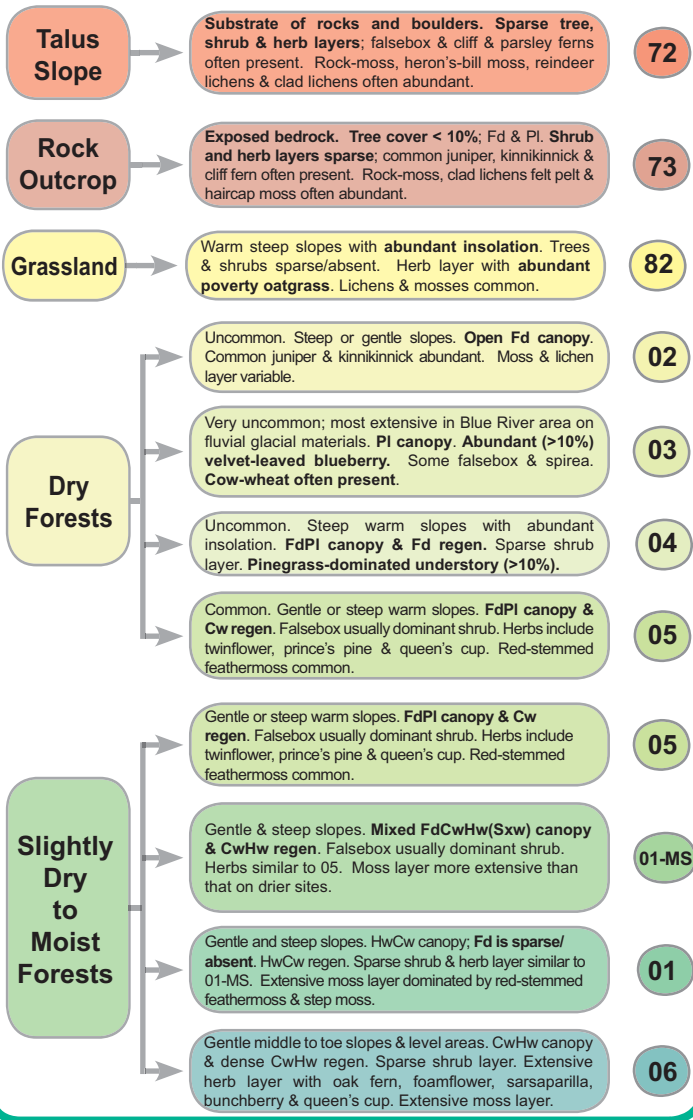
- Se and Bl dominated
- white-flowered rhododendron and Sitka valerian are common

Edatopic Grid

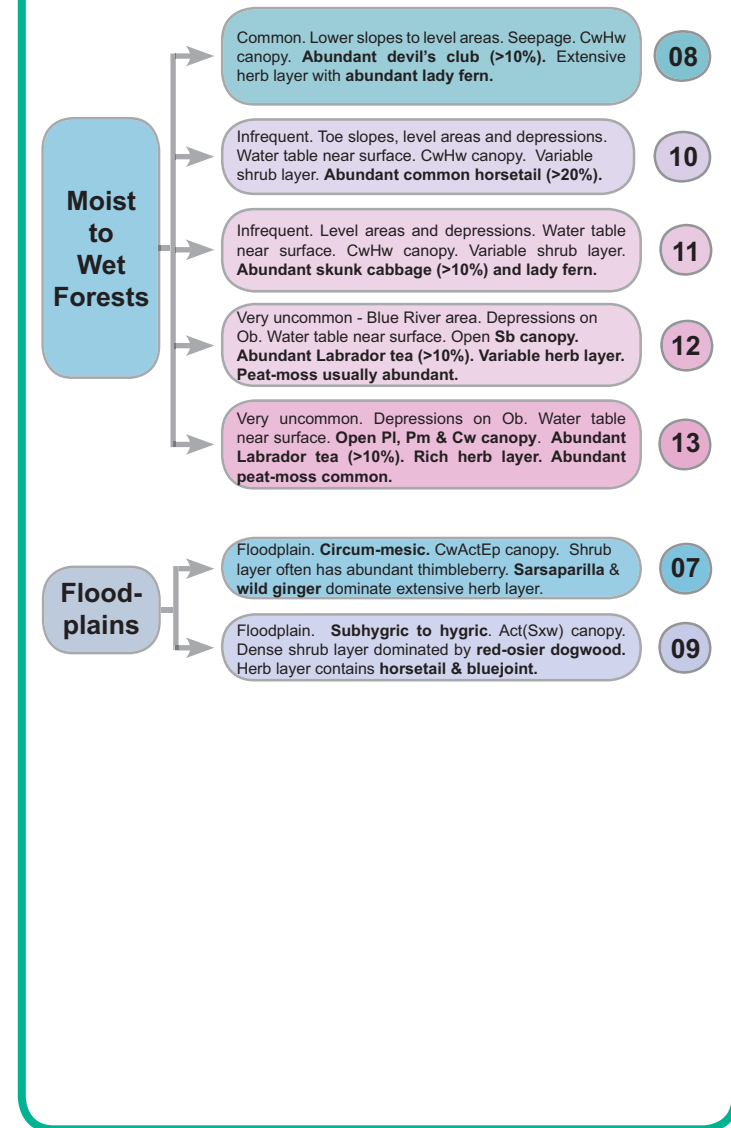


72	Awed haircap moss — Clad lichens
73	Rock-moss — Clad lichens
82	Oatgrass — Kinnikinnick
02	Fd — Juniper — Kinnikinnick
03	Pl — Velvet-leaved blueberry — Feathermoss
04	FqPl — Falsebox — Pinegrass
05	FqPl — Falsebox — Feathermoss
01-MS	\$CwHwFd — Falsebox
01	HwCw — Falsebox — Feathermoss
06	CwHw — Oak fern
07	CwAct — Thimbleberry — Sarsaparilla
08	CwHw — Devil's club — Lady fern
09	Act — Dogwood — Horsetail
10	CwHw — Horsetail
11	CwHw — Skunk cabbage
12	Sb — Labrador tea — Peat-moss
13	HwSxw — Labrador tea — Peat-moss
Wb02	Pl — Bog rosemary — Peat-moss
Wb07	Pl — Water sedge — Peat-moss
Wf01	Water sedge — Beaked sedge
Wf03	Water sedge — Peat-moss
Wf05	Slender sedge — Common hook-moss
Wf06	Slender sedge — Buckbean
Wf11	Tufted clubrush — Star moss
Wm01	Beaked sedge — Water sedge
Wm02	Swamp horsetail — Beaked sedge
Wm04	Common spike-rush
Wm05	Cattail
Wm09	Inflated sedge
Wm15	Bluejoint reedgrass
Ws01	Mountain alder — Skunk cabbage — Lady fern
Ws02	Mountain alder — Pink spirea — Sitka sedge
Ws04	Drummond's willow — Beaked sedge
Ws06	Sitka willow — Sitka sedge
Ww01	Pink spirea — Sitka sedge
	Pond-lily

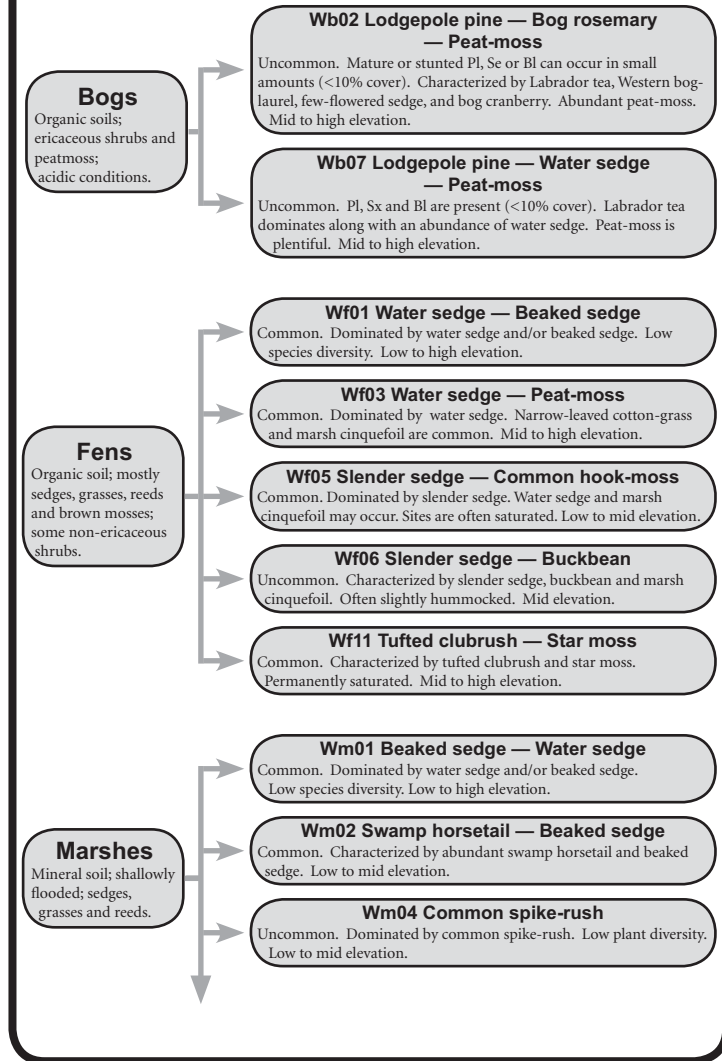
Site Unit Flowchart



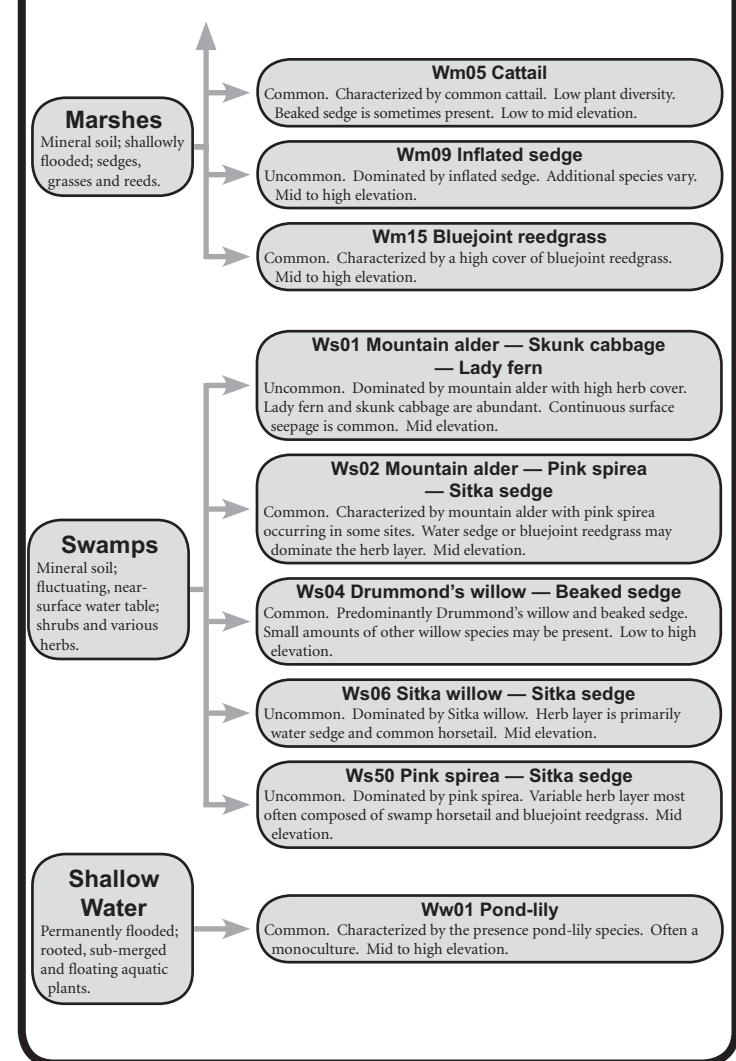
Site Unit Flowchart



Site Unit Flowchart



Site Unit Flowchart



Refer to the wetland section in the package of BEC materials for a more thorough characterization of wetland ecosystems.

Vegetation Table

	Forests													
	Talus	Rock Outcrop	Grass-land	72	73	82	5	4	7	12	21	44	01-MS	01
No. of Plots	8	12	82	5	4	7	12	21	44	01-MS	01	36		
Trees														
<i>Pseudotsuga mertensii</i>														
<i>Pinus contorta</i>		*												
<i>Pinus monticola</i>		*												
<i>Thuja plicata</i>														
<i>Tsuga heterophylla</i>														
<i>Picea engelmannii</i> x <i>glauca</i>	*													
<i>Abies lasiocarpa</i>	*													
<i>Betula papyrifera</i>	*													
<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>														
Shrubs														
<i>Pseudotsuga mertensii</i>			*											
<i>Pinus contorta</i>														
<i>Pinus monticola</i>														
<i>Thuja plicata</i>														
<i>Tsuga heterophylla</i>														
<i>Picea engelmannii</i> x <i>glauca</i>	*													
<i>Taxus brevifolia</i>														
<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>														
<i>Picea mariana</i>														
<i>Juniperus communis</i>	*													
<i>Maionia aquifolium</i>														
<i>Rosa gymnocarpa</i>	*													
<i>Shepherdia canadensis</i>	*													
<i>Paxistima myrsinites</i>														
<i>Spiraea betulifolia</i>	*													
<i>Vaccinium myrtilloides</i>	*													
<i>Vaccinium membranaceum</i>	*													
<i>Vaccinium ovalifolium</i>	*													
<i>Acer glabrum</i>														
<i>Ribes lacustre</i>	*													
<i>Ostrya virginica</i>														
<i>Rubus idaeus</i>														
<i>Rubus odoratus</i>														
<i>Corylus cornuta</i>	*													
<i>Cornus stolonifera</i>	*													
<i>Alnus viridis</i>	*													
<i>Alnus incana</i>	*													
<i>Ledum groenlandicum</i>														

	Forests													
	Talus	Rock Outcrop	Grass-land	72	73	82	5	4	7	12	21	44	01-MS	01
No. of Plots	8	12	82	5	4	7	12	21	44	01-MS	01	36		
Herbs														
<i>Cryptogramma acrostichoides</i>														
<i>Arctostaphylos uva-ursi</i>														
<i>Danthonia spicata</i>														
<i>Calamagrostis rubescens</i>	*													
<i>Pseudoroegneria spicata</i>	*													
<i>Melinis purpurea</i>	*													
<i>Chimaphila umbellata</i>	*													
<i>Linnaea borealis</i>	*													
<i>Cornus canadensis</i>	*													
<i>Clinomena uniflora</i>														
<i>Trientalis trifoliata</i> var. <i>undulata</i>														
<i>Gymnomis axillaris</i>														
<i>Alchemilla filix-ferina</i>														
<i>Asarum canadense</i>														
<i>Aralia nudicaulis</i>														
<i>Pyrola asarifolia</i>	*													
<i>Equisetum arvense</i>														
<i>Calamagrostis canadensis</i>	*													
<i>Lysichiton americanus</i>	*													
<i>Oxycoccus oxycoccus</i>	*													
<i>Carex aquatilis</i>	*													
<i>Kalmia microphylla</i>	*													
<i>Gaultheria hispida</i>	*													
<i>Carex pauciflora</i>	*													
<i>Umbilicaria</i> sp.														
<i>Racomitrium</i> sp.														
<i>Cladonia</i> sp.	*													
<i>Peltigera rufescens</i>	*													
<i>Polytrichum piliferum</i>	*													
<i>Cladonia</i> sp.	*													
<i>Dicranum</i> sp.	*													
<i>Pleurozium schreberi</i>	*													
<i>Phloeoecia sibirica</i>	*													
<i>Rhytidelaphus triquetrus</i>	*													
<i>Hylocomium splendens</i>	*													
<i>Rhizomnium magnifolium</i>	*													
<i>Sphagnum</i> sp.	*													

Frequency of Occurrence: >80% 40-80% 15-25% 7-15% 1-7% <1%

Abundance (Average Percent Cover): >40% and >10% cover * <40% and >10% cover * <40% and <10% cover * <40% and <10% cover * <40% and <10% cover

Vegetation Table

Forests

Site Units
No. of Plots

06 36 07 2 08 21 09 3 10 4 11 15 12 2 13 4

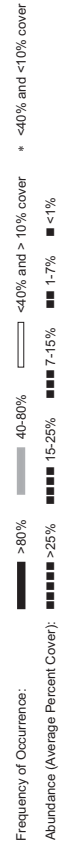
	06	07	08	09	10	11	12	13
Trees								
<i>Pseudotsuga menziesii</i>	*	*	*	*	*	*	*	*
<i>Pinus contorta</i>	*	*	*	*	*	*	*	*
<i>Pinus monticola</i>	*	*	*	*	*	*	*	*
<i>Thuja plicata</i>	*	*	*	*	*	*	*	*
<i>Tsuga heterophylla</i>	*	*	*	*	*	*	*	*
<i>Picea engelmannii</i> & <i>glauca</i>	*	*	*	*	*	*	*	*
<i>Abies lasiocarpa</i>	*	*	*	*	*	*	*	*
<i>Betula papyrifera</i>	*	*	*	*	*	*	*	*
<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>	*	*	*	*	*	*	*	*
<i>Picea mariana</i>	*	*	*	*	*	*	*	*
Shrubs								
<i>Pseudotsuga menziesii</i>	*	*	*	*	*	*	*	*
<i>Pinus contorta</i>	*	*	*	*	*	*	*	*
<i>Pinus monticola</i>	*	*	*	*	*	*	*	*
<i>Thuja plicata</i>	*	*	*	*	*	*	*	*
<i>Tsuga heterophylla</i>	*	*	*	*	*	*	*	*
<i>Picea canadensis</i> & <i>mariana</i>	*	*	*	*	*	*	*	*
<i>Taxus canadensis</i>	*	*	*	*	*	*	*	*
<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>	*	*	*	*	*	*	*	*
<i>Picea mariana</i>	*	*	*	*	*	*	*	*
<i>Juniperus communis</i>	*	*	*	*	*	*	*	*
<i>Maionia aquiloides</i>	*	*	*	*	*	*	*	*
<i>Rosa gymnocarpa</i>	*	*	*	*	*	*	*	*
<i>Shepherdia canadensis</i>	*	*	*	*	*	*	*	*
<i>Paxistima myrsinites</i>	*	*	*	*	*	*	*	*
<i>Spiraea betulifolia</i>	*	*	*	*	*	*	*	*
<i>Vaccinium myrtilloides</i>	*	*	*	*	*	*	*	*
<i>Vaccinium membranaceum</i>	*	*	*	*	*	*	*	*
<i>Vaccinium ovalifolium</i>	*	*	*	*	*	*	*	*
<i>Acer glabrum</i>	*	*	*	*	*	*	*	*
<i>Ribes lacustre</i>	*	*	*	*	*	*	*	*
<i>Opopanax horridus</i>	*	*	*	*	*	*	*	*
<i>Rubus parviflorus</i>	*	*	*	*	*	*	*	*
<i>Corylus cornuta</i>	*	*	*	*	*	*	*	*
<i>Cornus stolonifera</i>	*	*	*	*	*	*	*	*
<i>Alnus viridis</i>	*	*	*	*	*	*	*	*
<i>Alnus incana</i>	*	*	*	*	*	*	*	*
<i>Ledum groenlandicum</i>	*	*	*	*	*	*	*	*
Douglas-fir								
lodgepole pine								
western white pine								
western redcedar								
western hemlock								
yellow pine								
white spruce								
black cottonwood								
black spruce								
Douglas-fir								
lodgepole pine								
western white pine								
western redcedar								
western hemlock								
yellow pine								
white spruce								
black cottonwood								
black spruce								
common juniper								
tall Oregon-grape								
baldfir rose								
soppolalie								
birch-leaved spirea								
velvet-leaved blueberry								
black huckleberry								
oval-leaved blueberry								
Douglas maple								
black gooseberry								
devil's club								
thimbleberry								
beaked hazelnut								
red-osier dogwood								
Sitka alder								
mountain alder								
Labrador tea								

Site Units

06 07 08 09 10 11 12 13

	06	07	08	09	10	11	12	13
Herbs								
<i>Woodсия sp.</i>								
<i>Cryptogramma acrostichoides</i>								
<i>Arctostaphylos uva-ursi</i>								
<i>Danthonia spicata</i>								
<i>Calamagrostis rubescens</i>								
<i>Pseudoroegneria spicata</i>								
<i>Melampyrum lineare</i>								
<i>Chimaphila umbellata</i>								
<i>Linnaea borealis</i>								
<i>Cornus canadensis</i>								
<i>Clintonia uniflora</i>								
<i>Triella trifoliata</i> var. <i>unifoliata</i>								
<i>Gymnocarpium dryopteris</i>								
<i>Allyium trix-femina</i>								
<i>Asarum canadense</i>								
<i>Ranunculus acris</i>								
<i>Phlox pilularis</i>								
<i>Equisetum arvense</i>								
<i>Calamagrostis canadensis</i>								
<i>Lysichiton americanus</i>								
<i>Oxycochus oxycoccus</i>								
<i>Carex aquatilis</i>								
<i>Kalmia microphylla</i>								
<i>Gautheria hispida</i>								
<i>Carex pauciflora</i>								
<i>Umbilicaria sp.</i>								
<i>Racomitrium sp.</i>								
<i>Cledonia sp.</i>								
<i>Pelligera rufescens</i>								
<i>Polytrichum piliferum</i>								
<i>Cledonia sp.</i>								
<i>Dicranum sp.</i>								
<i>Pleurozium schreberi</i>								
<i>Ptilium crista-castrensis</i>								
<i>Rhyidiopsis robusta</i>								
<i>Rhyidiopsis triquetris</i>								
<i>Rhizomnium splendens</i>								
<i>Rhizomnium splendens</i>								
<i>Sphagnum sp.</i>								
Mosses & Lichens								
cliff fern								
parsley fern								
kinikinnick								
poverty oatgrass								
pinegrass								
bluebunch wheatgrass								
cow-wheat								
prince's pine								
twinflower								
bunchberry								
queen's cup								
one-leaved foamflower								
oak fern								
lady fern								
wild ginger								
wild spangalla								
wild spangalla								
common horsetail								
bluejoint reedgrass								
skunk cabbage								
bog cranberry								
water sedge								
western bog-laurel								
creeping snowberry								
few-flowered sedge								
rock-lichen								
reindeer lichens								
felt pet								
awned haircap moss								
clad lichens								
heron's-bill moss								
red-stemmed leathermoss								
knights' plume								
pipercleaner moss								
electric cat's-tail moss								
step moss								
large-leaf leafy moss								
peat-moss								

Frequency of Occurrence:
 Abundance (Average Percent Cover):



Environment Table

Site Units	Forests										
	Talus	Rock Outcrop	Grassland								01-MS
	72	73	82	02	03	04	05			01-MS	01
Soil Moisture Regime	VX X	VX X	X SX	VX X	SX SM	SX SM	SM SX	SM SX	SM SX	M SM	M SM
Mesoslope Position	UP MD	CR (UP MD)	UP MD	UP (CR MD)	LV (UP MD)	UP (MD)	MD UP	MD UP	MD LV (LW UP)	MD LV (LW)	MD LV (LW)
Slope Gradient	Steep	Steep Gentle	Steep Gentle	Steep	Level (Steep)	Steep	Steep Gentle	Steep Gentle	Variable	Variable	Variable
Aspect	Warm	Warm	Variable	Warm Neutral	Neutral (Warm)	Warm	Warm Neutral	Warm Neutral	Neutral	Neutral	Neutral
Parent Materials	Cb	R (Cv)	Cv Mv	FG Cv Mv	FG	Mb (Mv Cv)	Mb (FG Cv)	Mb (FG Cv)	Mb (Cb)	Mb (Cb)	Mb (Cb)
Soil Texture Class	Fragmental	Coarse Medium	Variable	Coarse Medium	Coarse	Variable	Coarse (Medium)	Coarse (Medium)	Variable	Variable	Variable
Important Features	Rocks & boulders	Bedrock 0-20 cm	Bedrock 15-50 cm		Generally coarse glacio-fluvial	Sunny slopes					
Successional Stage	Scarce ¹	Scarce	Scarce	Uncommon	Scarce ²	MS	MS	MS	MS	MS	MS
Occurrence						Uncommon ³	Common	Common	Dominant	Common	Common

¹ Most common on east side of Adams Lake.
² Generally restricted to areas north of Clearwater and Vaverby.
³ Most common at the drier geographic range of the biogeoclimatic unit approaching the DF and ICHmw3.

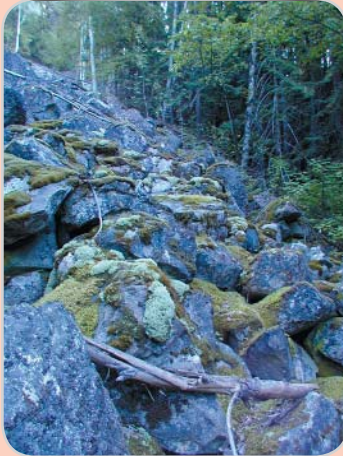
Environment Table

Site Units	Forests													
	06	07	08	09	10	11	12	13						
Soil Moisture Regime	M SHG	M SHG	SHG (HG)	HG SHG	HG (SHD)	HG SHD	SHD HG	SHD HG	SHD HG	SHD HG	SHD HG	SHD HG	SHD HG	SHD HG
Mesoslope Position	MDLV TO LV	LV	TO LV LW	LV (DP)	DP LV TO	LV DP	LV DP	LV DP	LV DP	LV DP	LV DP	LV DP	LV DP	LV DP
Slope Gradient	Level Gentle	Level	Level Gentle	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level	Level
Aspect	Neutral (Cool)	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
Parent Materials	Mb (Fb)	Fb	Fb	Fb (Lb)	Fb	Ob (Fb)	Ob	Ob	Ob	Ob	Ob	Ob	Ob	Ob
Soil Texture Class	Variable	Medium Fine	Coarse (Medium)	Coarse Fine	Medium	Organic (Fine)	Organic (Fine)	Organic (Fine)	Organic (Fine)	Organic (Fine)	Organic (Fine)	Organic (Fine)	Organic (Fine)	Organic
Important Features		Floodplain	Seepage 20-100 cm	Floodplain	Water table 20-80 cm	Water table 0-30 cm	Water table 30-80 cm	Water table 30-80 cm	Water table 20-40 cm	Water table 20-40 cm	Water table 20-40 cm	Water table 20-40 cm	Water table 20-40 cm	Water table 20-40 cm
Successional Stage	MC	MS	MC	MS	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Occurrence	Common ⁴	Scarce	Common	Uncommon	Uncommon	Scarce	Scarce ⁵	Scarce ⁵	Scarce	Scarce	Scarce	Scarce	Scarce	Scarce

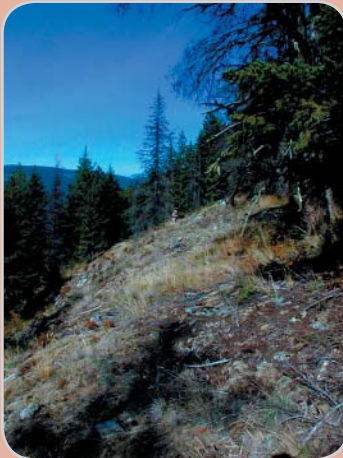
⁴ More common at higher elevations of the subzone.
⁵ Restricted to the Blue River area.

72 Awned haircap moss — Clad lichens

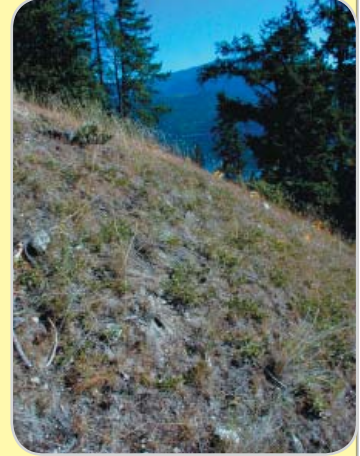
This is a very uncommon unit. It is found on exposed talus on warm, steep, middle and upper slopes. Trees, including Fd or Ep, may occur as scattered individuals. The shrub layer is usually sparse; false-box is sometimes present. Herbs are sparse or absent; the most common species are cliff and parsley ferns. Lichens and mosses are often abundant and dominate the rocky substrate; the most common species are rock-moss, heron's-bill moss, reindeer lichens and clad lichens.

**73 Rock-moss — Clad lichens**

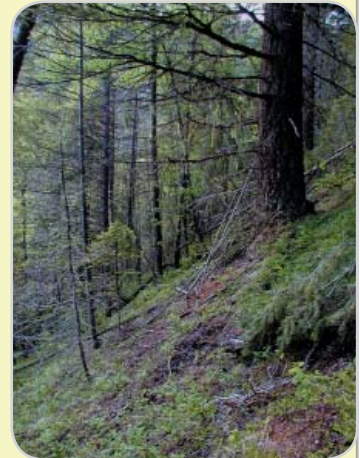
The 73 site unit is very uncommon. It occurs on warm, middle and upper slopes and crests with exposed bedrock. Tree cover is sparse (<10% cover) or absent; Fd and Pl are the most common species. The shrub layer is usually sparse although common juniper may be abundant. Other common species include birch-leaved spirea and tall Oregon-grape. Herbs are typically sparse of which the most common species are kinnikinnick and cliff fern. Minor amounts of poverty oatgrass and bluebunch wheatgrass are sometimes present. Mosses and lichens are abundant and cover much of the exposed bedrock. The most common and abundant species include rock-moss, clad lichens, felt pelt and awned haircap moss.

**82 Oatgrass — Kinnikinnick**

Grasslands are uncommon in the ICHmw3. They have been encountered in the Adams Lake area on warm, middle and upper slopes that are subject to high levels of insolation. Trees are absent and shrubs are very sparse; common juniper, baldhip rose and tall Oregon-grape may occur as scattered individuals. The herb layer is dominated by a high cover of poverty oatgrass. Kinnikinnick may be abundant but other herbs, including bluebunch wheatgrass, are sparse. Reindeer lichens, felt pelt, clad lichens, rock-moss and awned haircap moss are common.

**02 Fd — Juniper — Kinnikinnick**

The 02 unit is very uncommon. It occurs on steep and warm or gentle upper and middle slopes. Fd dominates the open forest canopy. Fd and, to a lesser extent, Cw, occur in the regeneration layer. The moderate shrub layer is dominated by common juniper. Kinnikinnick dominates the herb layer; other species, including pinegrass, may be present in minor amounts. The moss and lichen layer is highly variable; common species include clad lichens, red-stemmed feathermoss and heron's-bill moss.



03 PI — Velvet-leaved blueberry — Feathermoss

The 03 is a very uncommon site series that occurs east of Clearwater and north of Vavenby and is most extensive in the Blue River area. It occurs on coarse glaciofluvial materials. PI dominates the forest canopy. Pw or Hw are usually the most abundant species in the regeneration layer. Unlike all other site units, the shrub layer is characterized by abundant (>10%) velvet-leaved blueberry. Other common shrubs include falsebox and birch-leaved spirea. The sparse to moderate herb layer contains twinflower, prince's pine, bunchberry and cow-wheat. The moss and lichen layer is sparse to abundant; red-stemmed feathermoss is often the most abundant species.

**04 FdPI — Falsebox — Pinegrass**

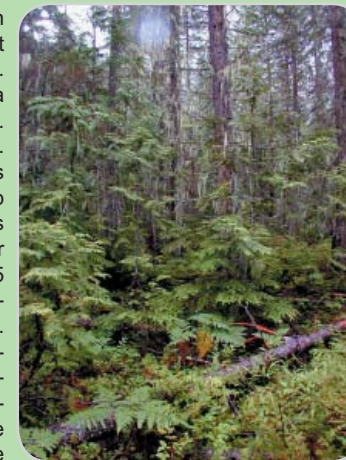
The 04 unit is uncommon. It is usually restricted to dry, warm slopes that receive large amounts of insolation. PI and Fd dominate the tree layer. Fd occurs in the regeneration layer. The shrub layer is typically sparse and includes tall Oregon-grape, baldhip rose, common juniper, falsebox and birch-leaved spirea. Unlike other site units, the herb layer is dominated by a high cover (> 10%) of pinegrass. Other herbs are sparse and include kinnikinnick, twinflower and prince's pine. The moss and lichen layer is sparse to moderate; common species include red-stemmed feathermoss, heron's-bill moss and clad lichens.

**05 FdPI — Falsebox — Feathermoss**

This site series is common and occurs on steep and warm or gentle middle and upper slopes. The tree layer is dominated by Fd or a mixture of Fd and PI. A minor amount of Cw or Ep may be present. The sparse regeneration layer is often dominated by Cw. Minor amounts of Fd, Pw, Hw or Sxw may be present. The moderate to abundant shrub layer is usually dominated by falsebox. Other common shrubs include tall Oregon-grape, birch-leaved spirea, black huckleberry and Douglas maple. The sparse to moderate herb layer is species poor; common species include twinflower, prince's pine and queen's cup. The moderate to abundant moss layer is often dominated by red-stemmed feathermoss.

**01-MS \$CwHwFd — Falsebox**

This site unit occurs most often on gentle middle slopes or level areas. It may also occur on steep, cool slopes. Unlike the 05 unit, the tree layer is a variable mixture of Fd, Cw and Hw. Ep and Sxw are sometimes present. The moderate regeneration layer is dominated by Cw and Hw. The shrub layer is similar to the 05 unit and is usually dominated by falsebox. The herb layer is also similar to the 05 unit and includes prince's pine, twinflower, bunchberry and queen's cup. The moss layer is dominated by red-stemmed feathermoss but other species, including step-moss and electrified cat's-tail moss, are usually more abundant than that found on drier site units.



01 HwCw — Falsebox — Feathermoss

The zonal site series is most common on middle and lower slopes and level areas. The dense tree layer is dominated by Cw and Hw. Unlike previous units, Fd is either absent or a minor component of the tree layer. The moderate regeneration layer is dominated by Hw and Cw. Shrubs are relatively sparse and include falsebox, black huckleberry and oval-leaved blueberry. The sparse to moderate herb layer is similar to the 01-MS. The moss layer is often extensive and is dominated by a mixture of red-stemmed feathermoss, step moss, knight's plume, pipecleaner moss and electrified cat's-tail moss.



06 CwHw — Oak fern

The 06 unit is common on gentle middle, lower and toe slopes and level areas which may have intermittent seepage. The dense forest canopy and moderate regeneration layer are dominated by Cw and Hw. Sxw may also be present. The shrub layer is typically sparse; common species present in minor amounts include falsebox, black huckleberry, oval-leaved blueberry and devil's club. Unlike the 01 unit, the herb layer is moderate to extensive and is often dominated by a mixture of bunchberry, queen's cup, wild sarsaparilla, one-leaved foamflower and oak fern. The moss layer is similar to the 01 unit and is usually dominated by step moss or red-stemmed feathermoss.



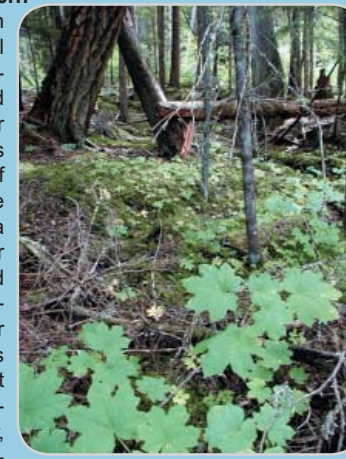
07 CwAct — Thimbleberry — Sarsaparilla

The 07 unit is a very uncommon site unit. It occurs on mesic-subhygric floodplains with a forest canopy dominated by Cw, Act and Ep. The regeneration layer contains a moderate amount of Cw. The shrub layer is sparse to moderate; thimbleberry is often abundant. The extensive herb layer is dominated by wild sarsaparilla and wild ginger. Other species present in minor amounts include bunchberry, queen's cup, one-leaved foamflower and lady fern. The moss layer is sparse to absent.



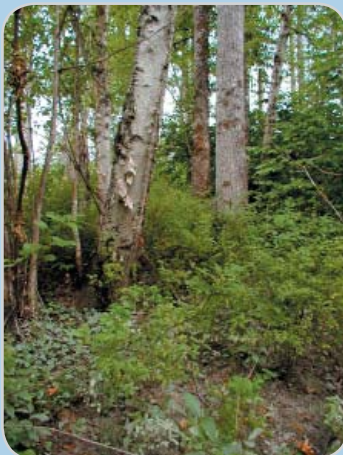
08 CwHw — Devil's club — Lady fern

This site unit occurs frequently on gentle lower and toe slopes and level areas that have intermittent to persistent seepage. The dense canopy and sparse to moderate regeneration layer are dominated by Cw and Hw. Sxw is sometimes a significant component of the forest canopy. Unlike all other site units, the shrub layer is dominated by a high cover (>10%) of devil's club. Other common shrubs include oval-leaved blueberry, Douglas maple, black gooseberry and thimbleberry. The herb layer is usually more extensive than drier units and often contains a significant amount of lady fern. Other common species include oak fern, one-leaved foamflower, wild sarsaparilla, queen's cup, twinflower and bunchberry. The moss layer is highly variable; common species include step moss, red-stemmed feathermoss and electrified cat's-tail moss.



09 Act — Dogwood — Horsetail

The 09 unit is uncommon. It is usually found on subhygric or hygric floodplains. The forest canopy is patchy; Act is usually the dominant species with a minor component of Sxw or Ep. The shrub layer is often very dense and is dominated by red-osier dogwood. Other common species include thimbleberry and Sitka alder. The sparse to moderate herb layer includes bluejoint reedgrass, common horsetail and lady fern. The bryophyte layer is sparse to absent.

**10 CwHw — Horsetail**

The 10 unit occurs infrequently and is found on toe slopes, level areas and depressions where the water table is near the surface. The canopy is dominated by Cw and Hw. The regeneration layer is sparse. The sparse to moderate shrub layer is variable; Sitka alder, red-osier dogwood, black gooseberry, thimbleberry and baldhip rose are common species. The extensive herb layer is dominated by a high cover (>20%) of common horsetail. Other species include those typically associated with moist to wet sites including lady fern, oak fern and one-leaved foamflower. The moss layer is variable; common species include large-leaf leafy moss, knight's plume and red-stemmed feathermoss.

**11 CwHw — Skunk cabbage**

This site series is very uncommon and is found on level areas and depressions on organic or fluvial substrates where the water table is at or near the surface. It is typically richer and wetter than the 10 unit. The CwHw forest canopy is usually open; Sxw and BI may also be present. The regeneration layer is sparse and Hw is usually the most abundant species. The shrub layer is variable; western yew, oval-leaved blueberry, black gooseberry, devil's club, red-osier dogwood and mountain alder are common species. Unlike other units, the rich and extensive herb layer is dominated (>10% cover) by skunk cabbage. Other common species include common horsetail, lady fern, oak fern and other species typically associated with moist to wet forests. The moss layer is highly variable.

**12 Sb — Labrador tea — Peat-moss**

This site series is very uncommon and is only known from the Blue River area. It occurs in cold, wet depressions or level areas on organic blankets where the water table is near the surface. Sb forms a very open forest canopy. The shrub layer is dominated by a high cover (>10%) of Labrador tea. The herb layer is variable; common species include creeping-snowberry, bog cranberry, water sedge, western bog-laurel and bunchberry. The moss layer is often dominated by peat-moss.



13 HwSxw — Labrador tea — Peat-moss

The 13 site unit is very similar to site unit 12 and also very uncommon. It is found on wet level areas or in depressions on organic blankets where the water table is near the surface. Unlike the preceding site series, the very open forest canopy is a mixture of Pl, Pw and Cw. The shrub layer is dominated by a large cover (>10%) of Labrador tea. The rich herb layer includes creeping-snowberry, western bog-laurel, few-flowered sedge and bog cranberry. Much of the substrate is covered by peat-moss.

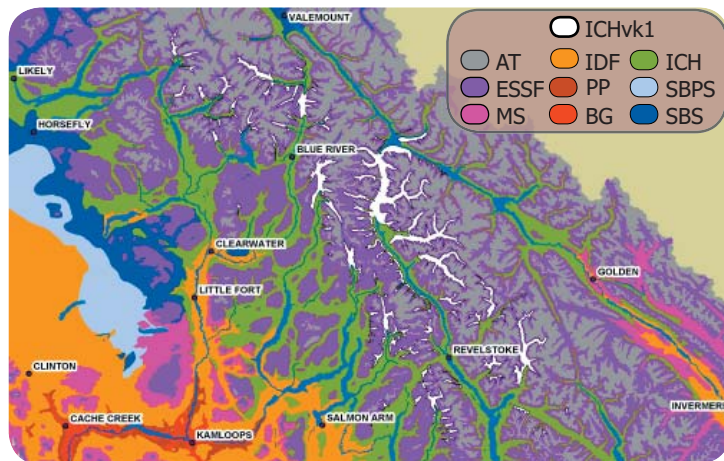


ICHvk1

MICA VERY WET COOL INTERIOR CEDAR — HEMLOCK VARIANT

Distribution: Occurs in the southern Cariboo Mountain and the northern Monashee and Selkirk Mountains. The ICHvk1 variant extends upstream from the ICHwk1 in the valley bottoms and sidewalls of the Hobson, Azure, Murtle and upper North Thompson river drainages, and their tributaries. It is also located on the west side of the Monashee Mountains, and in the Upper Adams, Seymour, Perry and Upper Shuswap rivers, and their tributaries. In the former Nelson Region it occurs in the Columbia drainage north of Goldstream to Mica Creek, the upper ends of Downie and Kirkup creeks and Jrdan, Wolsey, and Tanagers Rivers. It also occurs south of Glacier National Park in the Incomapleux and Kellie creek drainages.

Elevational Range: In upper drainages where the ICHvk1 occupies the valley bottom, the lower elevation ranges from 900 –1200 m valleys. In locations where it occurs on mid slopes above the ICHwk1 it generally starts at 1000-1100 m on north slopes and 1100-1200 m on south slopes. The upper elevation occurs where the ICHvk1 grades into the ESSF at 1250-1350 on north aspects and 1400-1450 m on south aspects.



ICHvk1 - 1

Climate: The ICH is warmer than the MS and ESSF, and wetter than the IDF and MS. The ICHvk is the wettest and coolest ICH subzone in the KFR. It has substantial snow accumulations and a moisture surplus is common during the growing season. Mean annual precipitation is estimated to be 1400-1800 mm and maximum snow depths average 2-3 meters.

Forest Cover : This biogeoclimatic unit is characterized by many of the oldest stands encountered in the province's southern interior. Stands are commonly dominated by Cw with 1-2 meter diameters. Hw, Sxw and BI are commonly associated with these Cw dominated stands. In areas subject to old air drainage Sxw and BI are more abundant than Hw and Cw which are less tolerant of late spring frost events. Tree diameters are large not only because of the productive nature of this subzone but more significantly because of the long fire return interval, which is estimated to be in excess of 500-1000 years. The humid valley floors consistently support the oldest stands. Successional stands are generally dominated by the same shade tolerant species that form climax stands. Fd and Pw have occasionally been observed on steep south slopes, but snow breakage and intolerance to heavy vegetation competition that follows disturbance limits the survival and vigor of these 2 species. Hw most commonly dominates the drier site series in this BGC unit.

Zonal Vegetation and Soils: The location of this subzone in steep mountainous terrain that receives the greatest snow accumulations encountered in the southern interior results in a landscape that is dominated by avalanche tracks. Stable forest communities are dominated by Cw, Sxw and varying amounts of Hw. The understory is dominated by Devil's club and the 2 large ferns lady fern, and spiny wood fern. The intervening avalanche slopes are dominated by Sitka alder with lush understory lady fern, spiny wood fern, oak fern and Devil's club. The moss layer is sparse and poorly represented. The soils are derived from colluvial blankets with a high rock content. The soil development is characteristically Humo-ferric Podzols or organic enriched Sombric and Melanic brunisols.

Adjacent Biogeoclimatic Subzones: The ICHwk1 often occurs below the ICHvk1, while upper elevations merge with one of 3 ESSF biogeoclimatic units; the ESSFwc2, ESSFwc4 or the ESSFvc.

ICHvk1 - 2

Distinguishing adjacent Biogeoclimatic units from the ICHvk1

On zonal sites:

ICHwk1

- devil's club, lady fern, and spiny wood fern less common
- avalanche track less common (non zonal)

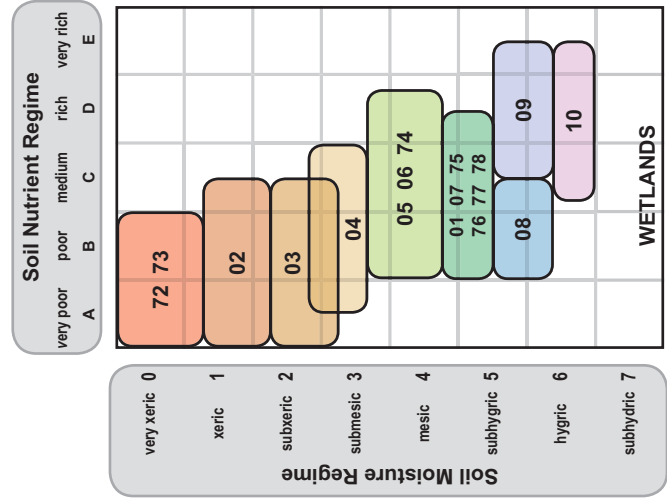
ESSFvc

- Se, Bl and Hm dominate the forest canopy
- white-flowered rhododendron and Sitka valerian common

ESSFwc2 and wc4

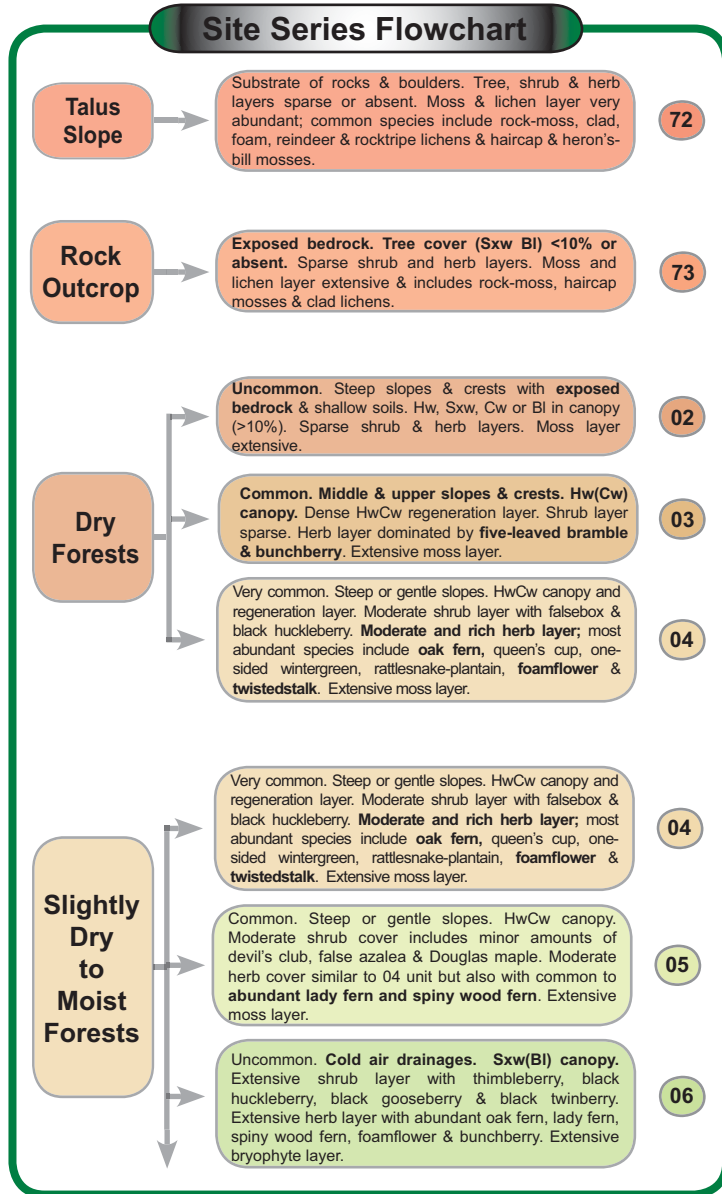
- Se and Bl dominate the forest canopy
- white-flowered rhododendron and Sitka valerian common

Edatopic Grid

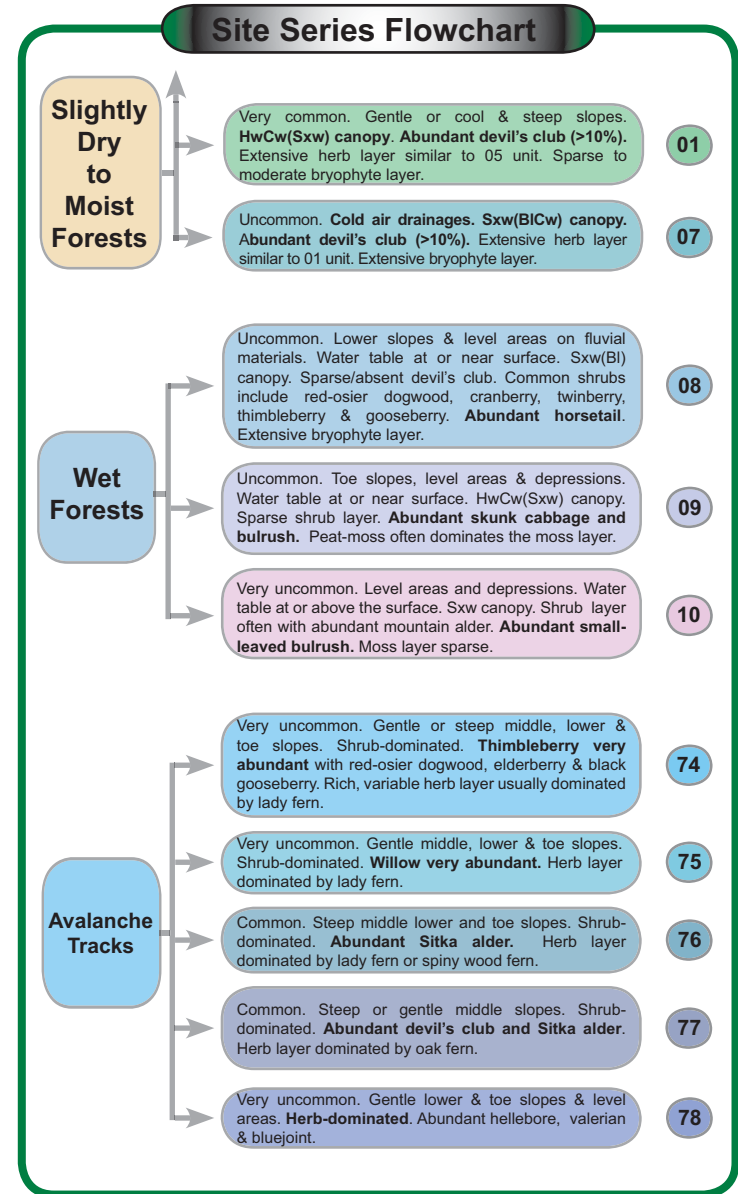


72	Rocktrippe lichens — Rock-moss
73	Rock-moss — Clad lichens
02	HwCw — Feathermoss
03	HwCw — Azalea — Feathermoss
04	CwHw — Oak fern
05	CwHw — Spiny wood fern — Oak fern
06	Sxw — Thimbleberry — Oak fern
01	CwHw — Devil's club — Lady fern
07	Sxw — Devil's club
08	Sxw — Dogwood — Horsetail
09	CwHw — Skunk cabbage
10	Sxw — Burrush
74	Dogwood — Thimbleberry
75	Willow — Lady fern
76	Alder — Lady fern
77	Devil's club — Oak fern
78	Indian hellebore — Bluejoint
WF01	Water sedge — Beaked sedge
WF03	Water sedge — Peat-moss
WF04	Barclay's willow — Water sedge — Glow moss
WF05	Slender sedge — Common hook-moss
WF06	Slender sedge — Buckbean
WF08	Shore sedge — Buckbean — Hook-moss
WF11	Tufted clubrush — Star moss
WF12	Narrow-leaved cotton-grass — Marsh-marigold
WF13	Narrow-leaved cotton-grass — Shore sedge
Wm01	Beaked sedge — Water sedge
Wm02	Swamp horsetail — Beaked sedge
Wm09	Inflated sedge
Wm15	Bluejoint reedgrass
Ws01	Mountain alder — Skunk cabbage — Lady fern
Ws02	Mountain alder — Pink spirea — Sitka sedge
Ws06	Sitka willow — Sitka sedge
Ww01	Pond-lily

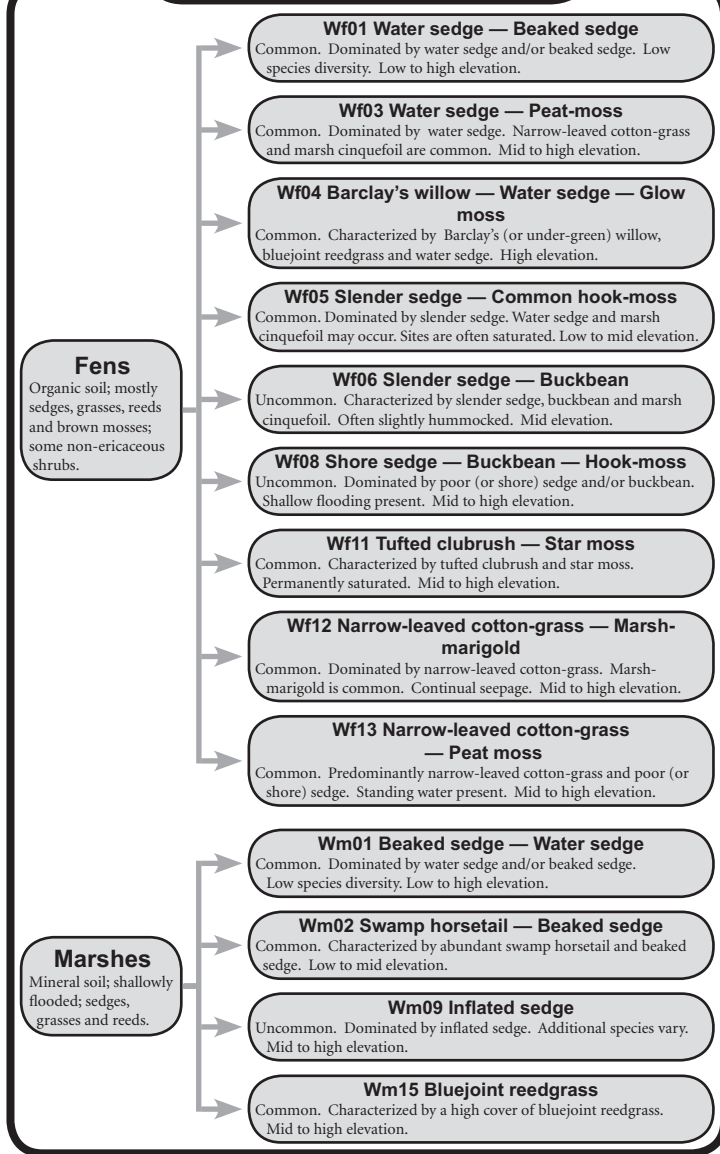
Site Series Flowchart



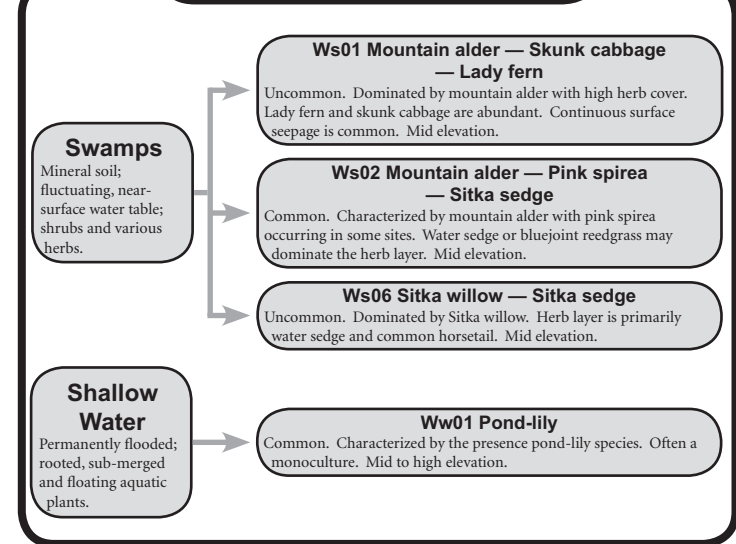
Site Series Flowchart



Site Unit Flowchart



Site Unit Flowchart



Vegetation Table

	Talus		Rock Outcrop		Forests									
	72	73	02	03	04	05	06	01	07	08	09	10		
Trees														
<i>Thuja plicata</i>														
<i>Tsuga heterophylla</i>														
<i>Picea engelmannii</i> x <i>glauca</i>														
<i>Abies lasiocarpa</i>														
<i>Thuja plicata</i>														
<i>Picea engelmannii</i> x <i>glauca</i>														
<i>Abies lasiocarpa</i>														
<i>Paxistima myrsinites</i>														
<i>Menziesia ferruginea</i>														
<i>Vaccinium membranaceum</i>														
<i>Vaccinium ovalifolium</i>														
<i>Taxus brevifolia</i>														
<i>Rhododendron albiflorum</i>														
<i>Castilleja sp.</i>														
<i>Rubus</i>														
<i>Ostrya</i>														
<i>Oplopanax horridus</i>														
<i>Lonicera involucrata</i>														
<i>Ribes lacustre</i>														
<i>Cornus stolonifera</i>														
<i>Viburnum edule</i>														
<i>Alnus incana</i>														
<i>Sambucus racemosa</i>														
<i>Salix</i> sp.														
<i>Alnus viridis</i>														
<i>Orthilia secunda</i>														
<i>Clintonia uniflora</i>														
<i>Goodyera oblongifolia</i>														
<i>Rubus pedatus</i>														
<i>Cornus canadensis</i>														
<i>Linnaea borealis</i>														
<i>Veratrum viride</i>														
<i>Valeriana sitchensis</i>														
<i>Asarum canadense</i>														
<i>Thiarella trifoliata</i> var. <i>unifoliata</i>														
<i>Shepherdia canadensis</i>														
<i>Prinos</i>														
<i>Gymnocarpium dryopteris</i>														
<i>Atterytium filix-terre</i>														
Herbs														
<i>one-sided wintergreen</i>														
<i>queen's cup</i>														
<i>rattlesnake-plantain</i>														
<i>five-leaved bramble</i>														
<i>bunchberry</i>														
<i>twinflower</i>														
<i>Indian hellebore</i>														
<i>Sitka valerian</i>														
<i>wild ginger</i>														
<i>one-leaved foamflower</i>														
<i>rosy winter-sak</i>														
<i>black-foot fern</i>														
<i>lady fern</i>														
Trees														
<i>western redcedar</i>														
<i>western hemlock</i>														
<i>hybrid white spruce</i>														
<i>subalpine fir</i>														
<i>western redcedar</i>														
<i>western hemlock</i>														
<i>hybrid white spruce</i>														
<i>subalpine fir</i>														
<i>false azalea</i>														
<i>black huckleberry</i>														
<i>oval-leaved blueberry</i>														
<i>western yew</i>														
<i>white-flowered rhododendron</i>														
<i>rough maple</i>														
<i>blackberry</i>														
<i>devil's club</i>														
<i>black twinberry</i>														
<i>black gooseberry</i>														
<i>red-osier dogwood</i>														
<i>highbush-cranberry</i>														
<i>mountain alder</i>														
<i>elderberry</i>														
<i>willow</i>														
<i>Sitka alder</i>														
<i>one-sided wintergreen</i>														
<i>queen's cup</i>														
<i>rattlesnake-plantain</i>														
<i>five-leaved bramble</i>														
<i>bunchberry</i>														
<i>twinflower</i>														
<i>Indian hellebore</i>														
<i>Sitka valerian</i>														
<i>wild ginger</i>														
<i>one-leaved foamflower</i>														
<i>rosy winter-sak</i>														
<i>black-foot fern</i>														
<i>lady fern</i>														

	Talus		Rock Outcrop		Forests									
	72	73	02	03	04	05	06	01	07	08	09	10		
Herbs														
<i>Mitella</i> sp.														
<i>Galium triflorum</i>														
<i>Viola</i> sp.														
<i>Circaea alpina</i>														
<i>Equisetum arvense</i>														
<i>Thalictrum occidentale</i>														
<i>Lysichiton americanus</i>														
<i>Saripus microcarpus</i>														
<i>Urtica dioica</i>														
<i>Heracleum maximum</i>														
<i>Calamagrostis canadensis</i>														
<i>Epiobium argusifolium</i>														
<i>Stereocaulon</i> sp.														
<i>Cladonia</i> sp.														
<i>Umbilicaria</i> sp.														
<i>Racomitrium</i> sp.														
<i>Cladonia</i> sp.														
<i>Polytrichum piliferum</i>														
<i>Rhytidelaphus loreus</i>														
<i>Pelligera</i> sp.														
<i>Barbillophozia</i> sp.														
<i>Dicranum</i> sp.														
<i>Hylocomium splendens</i>														
<i>Ptilium crista-castrensis</i>														
<i>Rhytidopsis robusta</i>														
<i>Pleurozium schreberi</i>														
<i>Brachythecium</i> sp.														
<i>Rhytidelaphus squarrosus</i>														
<i>Rhizomnium nudum</i>														
<i>Sphagnum squarrosum</i>														
<i>Plagiomnium</i> sp.														
Mosses & Lichens														
<i>mitrewort</i>														
<i>sweet-scented bedstraw</i>														
<i>violet</i>														
<i>enchanter's-nightshade</i>														
<i>common horsetail</i>														
<i>western meadow rue</i>														
<i>skunk cabbage</i>														
<i>small-flowered bulrush</i>														
<i>stringing nettle</i>														
<i>cow-parsnip</i>														
<i>bluejoint reedgrass</i>														
<i>fireweed</i>														
<i>foam lichens</i>														
<i>reindeer lichens</i>														
<i>rocky lichens</i>														
<i>rock moss</i>														
<i>crack lichens</i>														
<i>juniper haircap moss</i>														
<i>swamp haircap moss</i>														
<i>lanky moss</i>														

Vegetation Table

Avalanche Tracks

74	75	76	77	78
5	3	9	2	3

	74	75	76	77	78
Trees					
<i>Thuja plicata</i>					
<i>Tsuga heterophylla</i>					
<i>Picea engelmannii</i> x <i>glauca</i>					
<i>Abies lasiocarpa</i>	■		*		
<i>Thuja plicata</i>					
<i>Tsuga heterophylla</i>		*			
<i>Picea engelmannii</i> x <i>glauca</i>					
<i>Abies lasiocarpa</i>					
<i>Paxistima myrsinites</i>					
<i>Menziesia ferruginea</i>					
<i>Vaccinium membranaceum</i>					
<i>Vaccinium ovalifolium</i>					
<i>Taxus brevifolia</i>					
<i>Rhododendron albiflorum</i>					
<i>Acer glabrum</i>					
<i>Rubus parviflorus</i>	■	■			
<i>Oplopanax horridus</i>	■	■			
<i>Lonicera caerulea</i>	■	■			
<i>Rubus bicolor</i>	■	■			
<i>Cornus stolonifera</i>	■	■			
<i>Viburnum edule</i>	■	■			
<i>Alnus incana</i>	■	■			
<i>Sambucus racemosa</i>	■	■			
<i>Salix</i> sp.	■	■			
<i>Alnus viridis</i>	■	■			
<i>Orthilia secunda</i>					
<i>Clintonia uniflora</i>					
<i>Goodyera oblongifolia</i>					
<i>Rubus pedatus</i>					
<i>Cornus canadensis</i>					
<i>Linnaea borealis</i>					
<i>Veratrum viride</i>					
<i>Valeriana sitchensis</i>					
<i>Asarum caudatum</i>					
<i>Tiarella trifoliata</i> var. <i>unifoliata</i>					
<i>Streptopus lanceolatus</i>					
<i>Dryopteris expansa</i>					
<i>Gymnocarpium dryopteris</i>					
<i>Athyrium filix-femina</i>					
Herbs					
western redcedar					
western hemlock					
hybrid white spruce					
subalpine fir					
western redcedar					
western hemlock					
hybrid white spruce					
subalpine fir					
false azalea					
black huckleberry					
oval-leaved blueberry					
western yew					
white-flowered rhododendron					
Douglas maple					
himbaleberry					
devil's club					
black huckleberry					
black roseberry					
red-osier dogwood					
highbush-cranberry					
mountain alder					
elderberry					
willow					
Slitka alder					
one-sided wintergreen					
queen's cup					
rattlesnake-plantain					
five-leaved bramble					
bunchberry					
twinnflower					
Indian hellebore					
Slitka valerian					
wild ginger					
one-leaved foamflower					
rosy twistedstalk					
spiny wood fern					
oak fern					
lady fern					

	74	75	76	77	78
Herbs					
<i>Mitella</i> sp.	■	■			
<i>Galium triflorum</i>	■	■			
<i>Viola</i> sp.	■	■			
<i>Circaea alpina</i>	■	■			
<i>Equisetum arvense</i>	■	■			
<i>Thalictrum occidentale</i>	■	■			
<i>Lysichiton americanus</i>	■	■			
<i>Scirpus microcarpus</i>	■	■			
<i>Urtica dioica</i>	■	■			
<i>Heracleum maximum</i>	■	■			
<i>Calamagrostis canadensis</i>	■	■			
<i>Epilobium angustifolium</i>	■	■			
<i>Stereocaulon</i> sp.					
<i>Cladonia</i> sp.					
<i>Umbilicaria</i> sp.					
<i>Racomitrium</i> sp.					
<i>Cladonia</i> sp.					
<i>Polypodium juniperinum</i>					
<i>Polypodium commune</i>					
<i>Rhyidiadelphus laevis</i>					
<i>Peltigera</i> sp.					
<i>Barbilophozia</i> sp.					
<i>Dicranum</i> sp.					
<i>Hylacomium splendens</i>					
<i>Platium crista-castrensis</i>					
<i>Rhytidopsis robusta</i>					
<i>Pleurozium schreberi</i>					
<i>Brachythecium</i> sp.					
<i>Rhyidiadelphus squarrosus</i>					
<i>Rhizomnium nudum</i>					
<i>Sphagnum squarrosum</i>					
<i>Plagiomnium</i> sp.					
Mosses & Lichens					
sweet-scented bedstraw					
violet					
enchanter's-nightshade					
common horsetail					
western meadowrue					
skunk cabbage					
small-flowered burfush					
stinging nettle					
cow-parsnip					
bluejoint reedgrass					
fireweed					
foam lichens					
reindeer lichens					
rocktype lichens					
rock-moss					
clad lichens					
juniper haircap moss					
lumpy haircap moss					
lanky moss					
peat lichens					
leafy liverwort					
heron s-bill moss					
step moss					
knights plume					
pipecleaner moss					
red-stemmed leathermoss					
ragged-moss					
bent-leaf moss					
round-leaved leafy moss					
shaggy peat leafy moss					

Frequency of Occurrence: ■ 40-80% ■ 15-25% ■ 7-15% ■ 1-7% ■ <1% * <40% and > 10% cover * <40% and <10% cover

Abundance (Average Percent Cover): ■ >80% ■ >25% ■ 7-15% ■ 1-7% ■ <1%

Environment Table

Site Units	Forests										
	Talus	Rock Outcrop	72	73	74	75	76	77	78	79	80
Soil Moisture Regime	VX X	VX (X)	X (SX)	SX (SM)	SM (SX)	M SM	M SM	M SHG (M)	HG SHD (SHG)	HG SHD (HG)	SHD HD (HG)
Mesotope Position	MD (LW)	CR UP MD	CR UP MD	UP MD (CR)	MD (UP)	LW (MD)	LW (MD)	LW MD LV	LV (LW TO)	TO LV DP	DP (LV)
Slope Gradient	Steep	Variable	Steep Gentle	Variable (Gentle)	Steep (Gentle)	Steep Gentle	Steep Gentle	Variable	Level	Level	Level
Aspect	Warm	Warm	Variable	Variable (Neutral)	Warm (Neutral)	Variable	Variable	Neutral	Neutral	Neutral	Neutral
Parent Materials	Cb	R (Cx)	R	Cb (Mb)	Cb (Mb)	Mb (Cb FG)	Mb (Cb)	Fb (Cb Mb)	Fb	Ov/F Ov/M Ov/L	Fb Ob
Soil Texture Class	Fragmental	Variable	Variable	Coarse (Medium)	Coarse (Medium)	Coarse (Medium)	Medium Coarse	Variable	Medium (Fine)	Variable	Variable
Important Features	Rocks & boulders	Bedrock 0-20 cm	Bedrock 0-20 cm						Water table 25-100 cm	Water table 5-75 cm	Water table 0-20 cm
Successional Stage		MC	MC	MC	MC	MC	MC	MC	MC	MC	MC
Occurrence	Scarce	Scarce	Uncommon	Common	Common	Common	Uncommon ¹	Dominant	Uncommon ¹	Uncommon	Uncommon

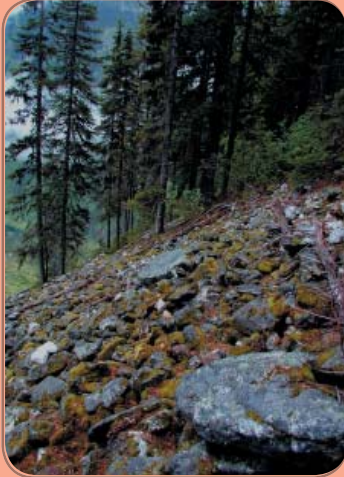
¹ Most common in valley bottoms subject to cold air drainage in northern Wells Gray Park and side drainages of the upper North Thompson.
² Generally associated with large floodplains.

Environment Table

Site Units	Avalanche Tracks				
	74	75	76	77	78
Soil Moisture Regime	SM M	M SHG	M (SHG SM)	M SHG	SHG (M)
Mesotope Position	MD LW TO	MD LW TO	MD (LW TO)	MD	LW TO
Slope Gradient	Gentle Steep	Gentle	Steep	Gentle Steep	Gentle
Aspect	Neutral Warm	Neutral	Variable	Neutral Cool	Neutral
Parent Materials	Cb	Cb	Cb	Cb	Cb
Soil Texture Class	Medium (Fragmental)	Fragmental Medium	Medium	Variable	Medium (Fragmental)
Important Features		Some seepage	Some seepage	Some seepage	Some seepage
Successional Stage					
Occurrence	Scarce	Scarce	Common	Common	Scarce

72 Rocktripe lichens — Rock-moss

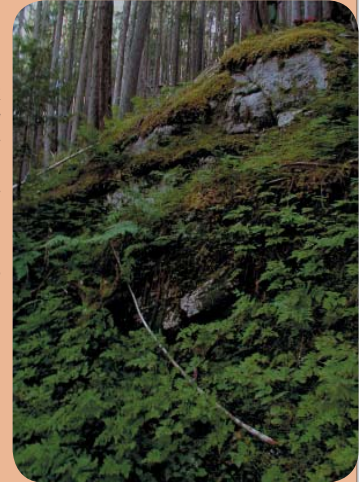
Site series 72 is a talus unit found on steep, upper, middle and lower slopes with a warm aspect. Shrubs and herbs may be present in minor amounts. Bryophytes and lichens are very abundant. Common species include rock-moss, clad, foam, reindeer, and rocktripe lichens, juniper haircap moss and heron's-bill moss.

**73 Rock-moss — Clad lichens**

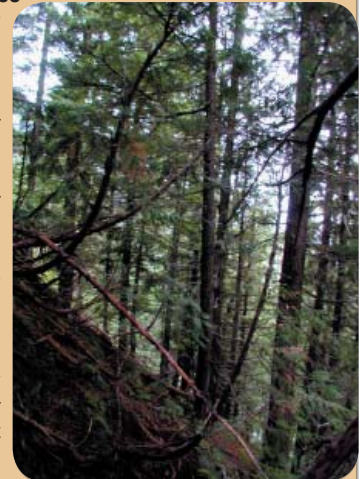
Unit 73 is very infrequent and is restricted to non-forested areas with exposed rock outcrops on steep middle and upper slopes and crests. Scattered Sxw or Bl trees may be present. The shrub layer is very sparse and includes scattered patches of falsebox, black huckleberry and false azalea. The herb layer is also sparse. The bryophyte and lichen layer is dominated by mosses growing on exposed bedrock and rocks and includes rock-moss, awned and juniper haircap mosses and heron's-bill moss. Clad lichens are also abundant.

**02 HwCw — Feathermoss**

The 02 unit is infrequent. It is the driest forested site series. It occurs on steep upper and middle slopes and crests where exposed bedrock is present and soils are very shallow to absent. The forest canopy may include Cw, Hw, Sxw and Bl. The regeneration layer is typically dominated by Cw and Hw. The shrub layer is sparse; common species include black huckleberry and oval-leaved blueberry. Some of the species which may be found in the sparse herb layer include one-sided wintergreen, rattlesnake plantain, one-leaved foamflower, bunchberry and queen's cup. Mosses dominate the substrate. The most abundant species include step moss, pipecleaner moss and knight's plume.

**03 HwCw — Azalea — Feathermoss**

This dry unit is predominantly found on middle and upper slopes and crests. The forest canopy is dominated by Hw. Cw and, to a lesser extent, Sxw and Bl, may occur as minor components. The dense regeneration layer may be dominated by both Hw and Cw. The shrub layer is sparse and includes false azalea, black huckleberry and oval-leaved blueberry. The herb layer is species-poor and may be sparse to moderate in extent. It is dominated by five-leaved bramble and bunchberry. One-sided wintergreen and queen's cup may also be present. The bryophyte layer is usually very extensive. The most common and abundant species are heron's-bill moss, pipecleaner moss, red-stemmed feathermoss, step moss and knight's plume.



04 CwHw — Oak fern

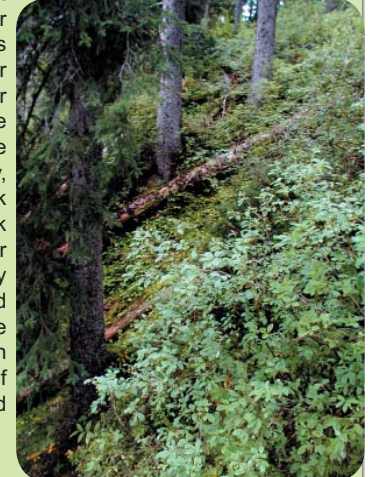
This unit is common and is found most often on warm and steep or gentle middle slopes. The tree layer is dominated by Hw and Cw. The regeneration layer is usually dominated by Hw with a minor component of Cw. The moderate shrub layer includes falsebox, black huckleberry, western yew, false azalea and oval-leaved blueberry. Unlike drier forested units, the herb layer is more extensive and species-rich. Oak fern, queen's cup, bunchberry, rattlesnake-plantain, one-leaved foamflower, and rosy twistedstalk are common species. The well-developed moss layer includes red-stemmed feathermoss, pipecleaner moss, step moss and knight's plume.

**05 CwHw — Spiny wood fern — Oak fern**

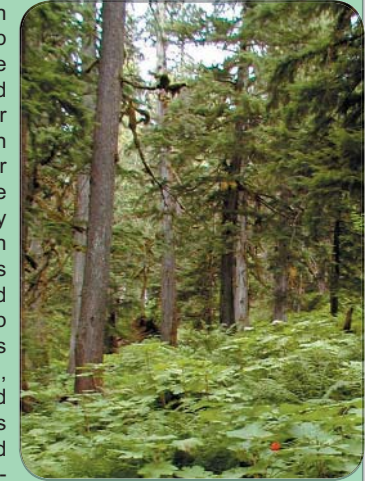
The 05 is a common unit on middle and lower slopes. The forest is a closed stand dominated by Hw and Cw. The sparse to moderate regeneration layer is usually dominated by Hw with a minor component of Cw. The shrub layer is typically composed of a number of species present in minor amounts including western yew, black huckleberry, oval-leaved blueberry, false azalea, Douglas maple and devil's club. The extensive herb layer differs from the 04 unit in that large ferns, lady fern and spiny wood fern, are common and abundant. Other common species include oak fern, rosy twistedstalk, one-leaved foamflower and bunchberry. The extensive bryophyte layer is similar to the 03 and 04 units.

**06 Sxw — Thimbleberry — Oak fern**

The 06 unit is found in cold air drainages. The forest canopy is dominated by Sxw with a minor component of Bl. The shrub layer is often extensive of which the most abundant species include thimbleberry, black huckleberry, oval-leaved blueberry, black gooseberry, false azalea and black twinberry. The extensive herb layer is often dominated by oak fern, lady fern, spiny wood fern, one-leaved foamflower and bunchberry. The extensive bryophyte layer often includes ragged-moss, bent-leaf moss, red-stemmed feathermoss and leafy liverwort.

**01 CwHw — Devil's club — Lady fern**

The zonal site series is most often found on gentle or cool and steep lower and middle slopes. The canopy is dominated by Cw and Hw. Sxw is often present as a minor component. The sparse regeneration layer is dominated by Hw with a minor component of Cw. Unlike drier site series, the shrub layer is dominated by abundant devil's club. Other common species present in minor amounts include oval-leaved blueberry and Douglas maple. The extensive herb layer is similar to the 05 unit and is dominated by oak fern, lady fern, spiny wood fern and one-leaved foamflower. The bryophyte layer is sparse to moderate and is dominated most often by ragged-moss and red-stemmed feathermoss.



07 Sxw — Devil's club

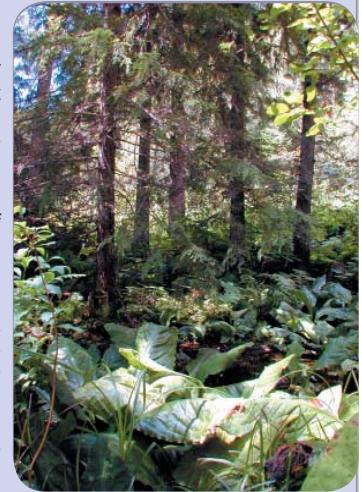
The 07 is dominated by Sxw with minor components of Bl and Cw. It typically occurs in cold air drainages or at higher elevations in areas transitional to the ESSF. It occurs on a variety of slope positions but is most often found on lower and toe slopes and level areas. The regeneration layer is relatively sparse and may include Sxw, Bl, Cw, or Hw. The shrub and herb layers are similar to the 01 unit and are dominated abundant devil's club, lady fern, oak fern and spiny wood fern. The bryophyte layer is often dominated by ragged-moss with minor components of round-leaved leafy moss, red-stemmed feathermoss and knight's plume.

**08 Sxw — Dogwood — Horsetail**

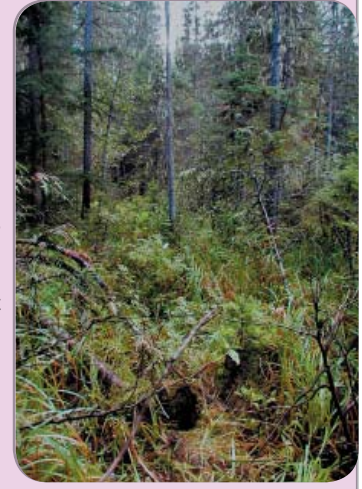
This unit is very uncommon. It occurs on toe and lower slopes and level areas on fluvial materials. The water table is near the soil surface. Sxw dominates the open forest canopy with a minor component of Bl. The sparse regeneration layer may include Cw, Sxw, Bl or Hw. Unlike the 07 and 01 units, devil's club is sparse to absent. Instead the shrub layer is often dominated by red-osier dogwood, highbush-cranberry, black twinberry, thimbleberry and black gooseberry. The extensive herb layer is dominated by common horsetail. Some of the other species present in minor amounts include sweet-scented bedstraw, rosy twistedstalk, mitrewort and violets. The extensive bryophyte layer includes abundant ragged moss and bent-leaf moss.

**09 CwHw — Skunk cabbage**

The uncommon 09 unit occurs on toe slopes, level areas and depressions where the water table is at or near the soil surface. The open forest is dominated by Hw and Cw with minor Sxw. Regeneration is typically dense and dominated by Hw. The shrub layer is sparse and includes minor amounts of a number of species including black huckleberry, oval-leaved blueberry and devil's club. The herb layer is dominated by the characteristic species, skunk cabbage. Lady fern and small-flowered bulrush are often very abundant. Other common species include common horsetail, violets, bunchberry and oak fern. Shaggy peat moss dominates the bryophyte layer.

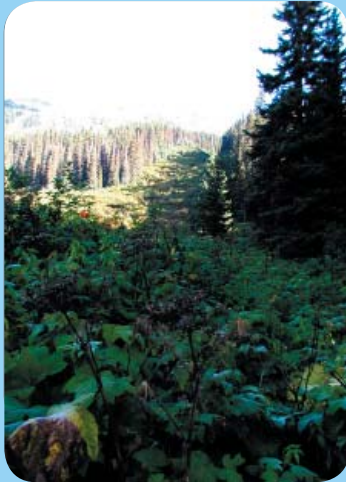
**10 Sxw — Bulrush**

This very wet forested unit is uncommon. It usually occurs in areas where the water table is at or above the soil surface. The open forest is dominated by Sxw. Cw, Hw and Bl may be present in minor amounts. The shrub layer is dominated by a moderate cover of mountain alder. The herb layer is dominated by small-flowered bulrush. Other common species include lady fern, violets, common horsetail, and bluejoint reedgrass. The bryophyte layer is often very sparse.



74 Dogwood — Thimbleberry

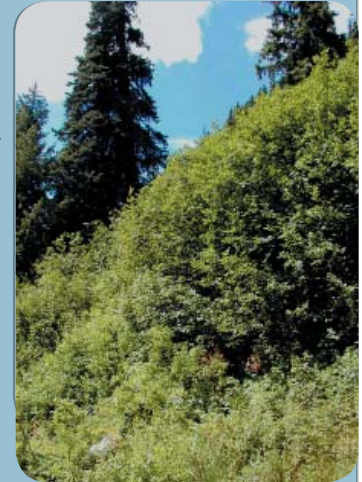
This very uncommon avalanche unit is found most often on middle, lower and toe slopes. The shrub layer is dominated by thimbleberry. Other common shrubs include red-osier dogwood, elderberry, and black gooseberry. The rich herb layer is variable but lady fern is often the most abundant species. Other common species include cow-parsnip, stinging nettle and fireweed. The bryophyte layer is sparse; the most common species are ragged-moss and leafy moss.

**75 Willow — Lady fern**

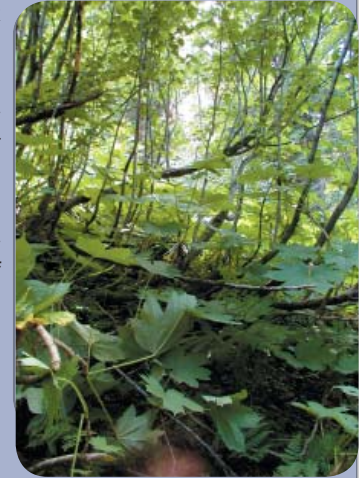
This avalanche track unit is very uncommon. It occurs most frequently on gentle middle, lower and toe slopes. The shrub layer is dominated by a dense cover of willow. Other shrubs that are present in minor amounts include thimbleberry and elderberry. The extensive herb layer is dominated by lady fern. Other common species include stinging nettle, sweet-scented bedstraw, violets and western meadowrue. The sparse bryophyte layer includes ragged-moss.

**76 Alder — Lady fern**

This is a common and widespread avalanche track unit. It is found on steep, cool, middle, lower and toe slopes. The shrub layer is dominated by a dense cover of Sitka alder. The herb layer dominated either by lady fern or spiny wood fern. Other common herbs include rosy twistedstalk, Indian hellebore and oak fern. The sparse moss layer includes ragged-moss and leafy moss.

**77 Devil's club — Oak fern**

This is a common avalanche track unit found on gentle to steep middle slopes. The shrub layer is dominated by abundant devil's club and Sitka alder. The herb layer is typically dominated by oak fern with minor amounts of lady fern, mitrewort, sweet-scented bedstraw, violets and one-leaved foamflower. The bryophyte layer is dominated by leafy moss with a minor component of ragged-moss.



78 Indian hellebore Bluejoint

This avalanche track unit is very uncommon and is found most often on lower or toe slopes. It is distinguished from other avalanche track units by the absence of a dense and abundant shrub layer. Instead, herbs dominate the vegetation of which the most abundant species are Indian hellebore, Sitka valerian and bluejoint reedgrass. Other common species include fireweed, mitrewort, lady fern, sweet-scented bedstraw, and cow-parsnip. The bryophyte layer is very sparse.

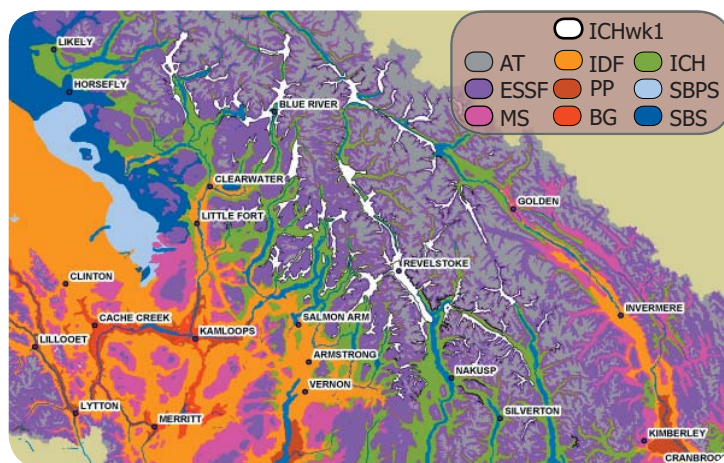


ICHwk1

WELLS GRAY WET COOL INTERIOR CEDAR — HEMLOCK VARIANT

Distribution: The ICHwk1 generally occurs above the ICHmw at the end of several valleys in the Cariboo, Monashee and Selkirk Mountains. It occurs at mid-elevations and in the valley bottoms of Scotch Creek and the Clearwater, upper North Thompson, Shuswap, Adams and Seymour River drainages. In the former Nelson Forest Region it occurs from valley bottoms to mid slopes in the upper Duncan, Incomapleux, Illecillewaet and Gold Rivers. It also occurs adjacent to the Mica Reservoir north of Smith Creek and the Columbia River drainage north of the Arrow Lakes

Elevational Range: The ICHwk1 occupies valley bottoms that range in elevation from 500-1000m and on slopes above the ICHmw1, mw2 and mw3. It extends to the ESSF boundary at about 1400-1450 m on north aspects and 1450-1500 m on south aspects. In a few instances the ICHwk1 occurs below the ICHwk1 in which case the elevation break varies from 800 to 1300m.



ICHwk1 - 1

Climate: The ICH is warmer than the MS and ESSF and wetter than the IDF and MS. The ICHwk1 is moister, cooler and receives more snow than either the ICHmw or ICHmk, but it is drier and warmer than the ICHvk1. The mean annual precipitation is estimated to range from 800 to 1200mm and the maximum snow pack averages 1.5-2 m. Soil moist deficits rarely occur since late snowmelt and ample spring and summer rainfall provide a relatively constant supply of moisture. Summers are warm and the growing season is relatively long. Consequently, the ICHwk1 is one of the most productive biogeoclimatic units in the province's interior. The only major limitation to growth occurs in valley bottoms subject to cold air drainage and frequent spring and early summer frosts. This is particularly common in the North Thompson valley north of Blue River and in northern Wells Gray Park.

Forest Cover: Late succession stands of Hw and Cw dominate the ICHwk1 landscape. Fd, Sxw, Bl, Cw and Hw form mixed successional stands. The relative proportion of each tree species is influenced by the nature and intensity of disturbances, the distance to a seed source, the proximity to cold air sources, and the soil moisture regime. Fd most commonly occurs as a seral species on steep south aspects. Sxw and Bl occur in varying amounts but, are most abundant on wet sites, areas subject to cold air drainage and at upper elevations that are transitional to the ESSF. Fire return intervals are estimated to be a minimum of 200-250 years. As a consequence old growth stands are relatively common throughout the ICHwk1. Stands are relatively dense and mature stands are generally 30-35m tall.

Zonal Vegetation and Soils: Climax multi-story stands of Hw and Cw with a lush herb layer and well-developed moss layer prevail. Hw and Cw regeneration is abundant. The shrub layer is poorly developed and often contains falsebox, black huckleberry, oval-leaved blueberry and false azalea. The herb layer is dominated by oak fern, bunchberry, queen's cup, one-leaved foamflower, five-leaved bramble, rosy twistedstalk and wild sarsaparilla. Mosses are well developed and include red-stemmed feather-moss, step moss, pipecleaner moss and knight's plume. Soils are characteristically Humo-Ferric Podzols with deep Mor humus forms.

Adjacent Biogeoclimatic Subzones: The ICHwk1 occurs above the ICHmw, mw2 or mw3 and below the ESSFwc2, wc4 or vc. At wetter geographic extremes of the ICHwk1 it occurs below the ICHvk1.

ICHwk1 - 2

Distinguishing adjacent Biogeoclimatic units from the ICHwk1

On zonal sites:

ICHmw1, mw2 and mw3

- oak fern, rosy twisted stalk and one-leaved foamflower absent
- seral stands are more common

ICHvk1

- devil's club, spiny wood fern and lady fern dominate the understory
- alder dominated avalanche tracks common on non zonal sites

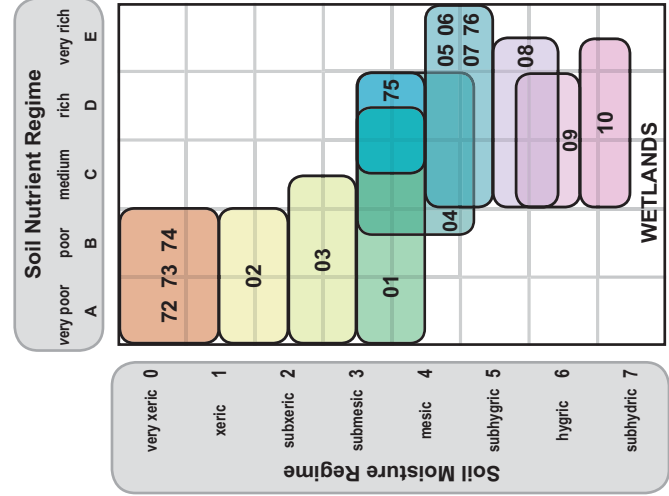
ESSFvc

- Se, Bl and Hm dominate the forest canopy
- white-flowered rhododendron and Sitka valerian common

ESSFwc2 and wc4

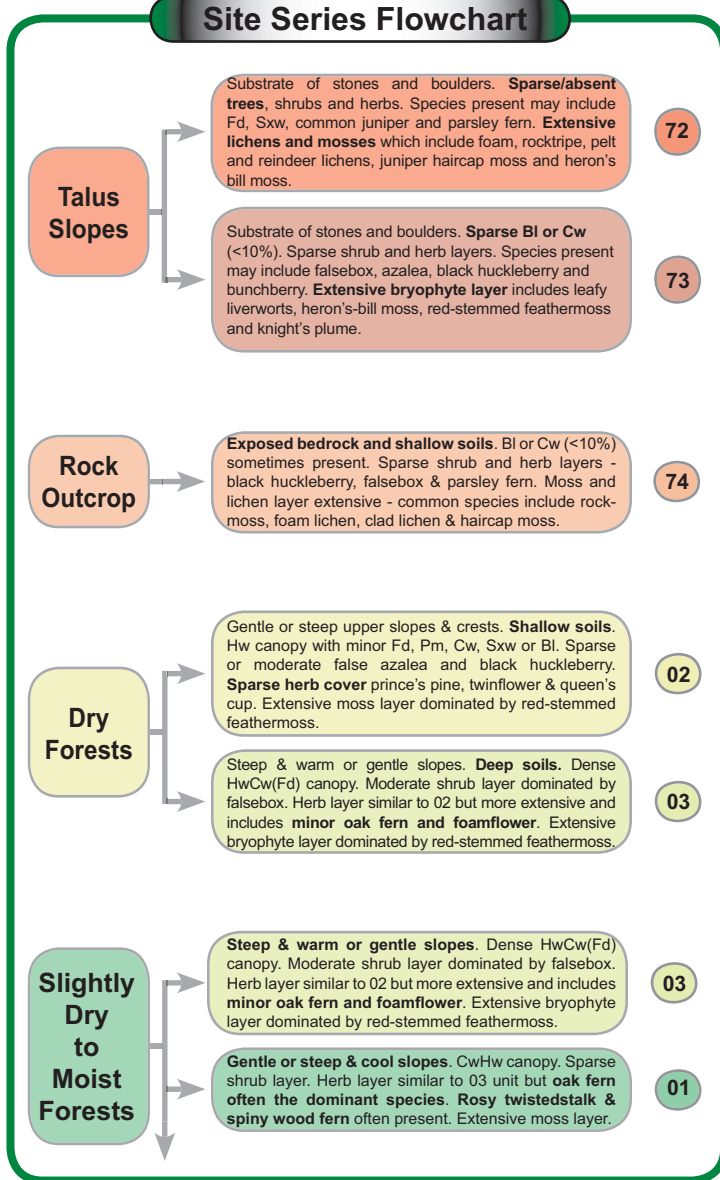
- Se and Bl dominate the forest canopy
- white-flowered rhododendron and Sitka valerian common

Edatopic Grid

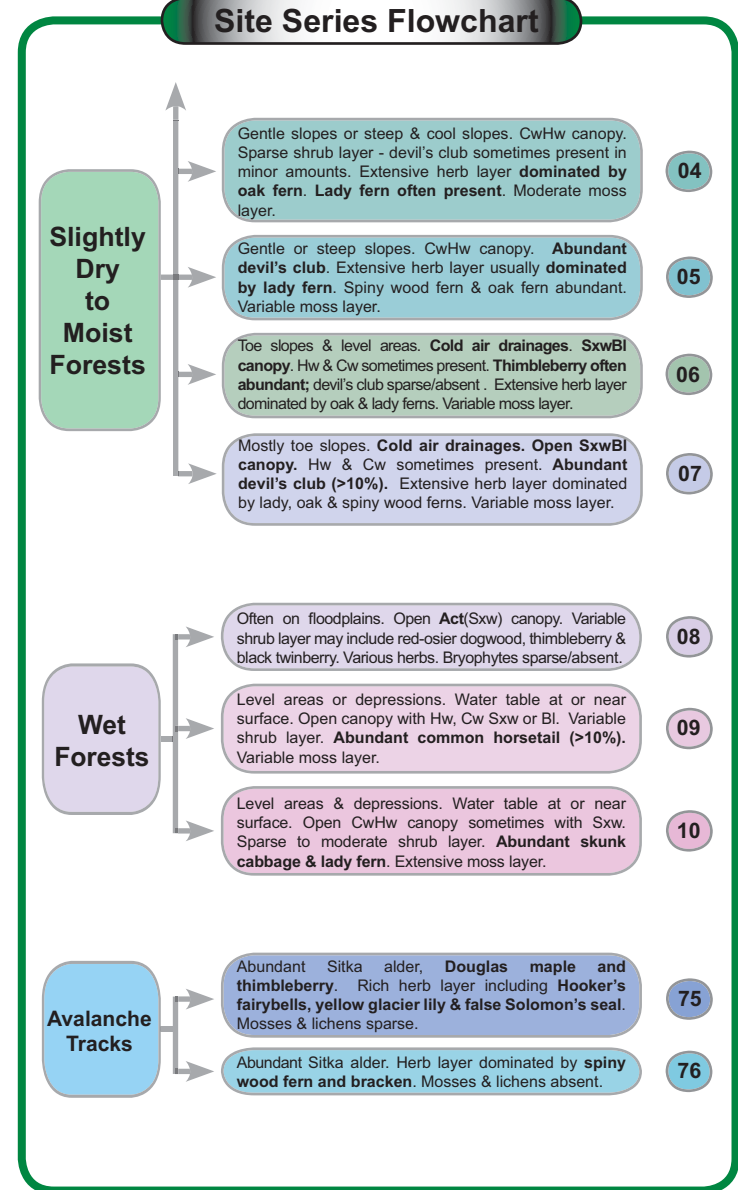


72	Rocktripe lichens — Rock-moss
73	Cedar — Feathermoss
74	Rock-moss — Clad lichens
02	HwCw — Azalea — Feathermoss
03	HwCw — Falsebox — Feathermoss
01	CwHw — Oak fern
04	CwHw — Lady fern — Oak fern
05	CwHw — Devil's club — Lady fern
06	BISxw — Thimbleberry — Oak fern
07	Sxw — Devil's club — Lady fern
08	Act — Dogwood — Thimbleberry
09	CwHw — Horsetail
10	CwHw — Skunk cabbage
75	Alder — Hooker's fairybells
76	Alder — Lady fern
Wb02	Pl — Bog rosemary — Peat-moss
Wb07	Pl — Water sedge — Peat-moss
Wf01	Water sedge — Beaked sedge
Wf03	Water sedge — Peat-moss
Wf04	Barclay's willow — Water sedge — Glow moss
Wf05	Slender sedge — Common hook-moss
Wf06	Slender sedge — Buckbean
Wf08	Shore sedge — Buckbean
Wf11	Tufted clubrush — Star moss
Wm01	Beaked sedge — Water sedge
Wm02	Swamp horsetail — Beaked sedge
Wm04	Common spike-rush
Wm09	Inflated sedge
Ws01	Mountain alder — Skunk cabbage — Lady fern
Ws02	Mountain alder — Pink spirea — Sitka sedge
Ws04	Drummond's willow — Beaked sedge
Ws06	Sitka willow — Sitka sedge
Ws50	Pink spirea — Sitka sedge
Ww01	Pond-lily

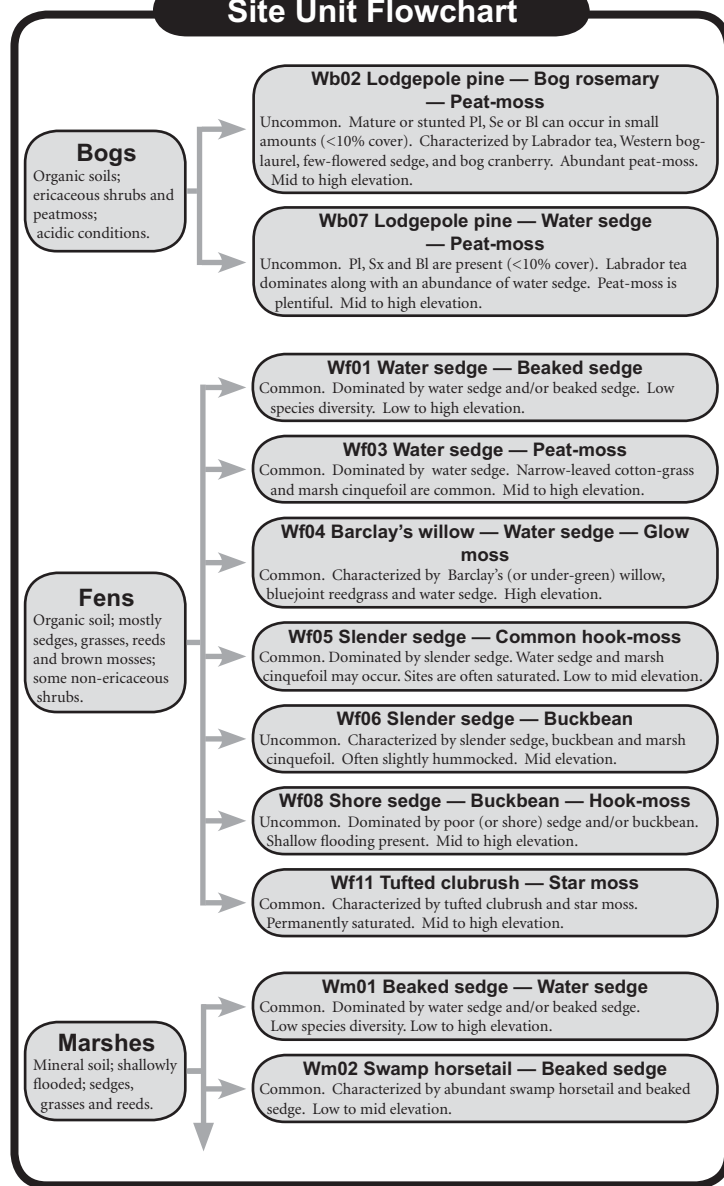
Site Series Flowchart



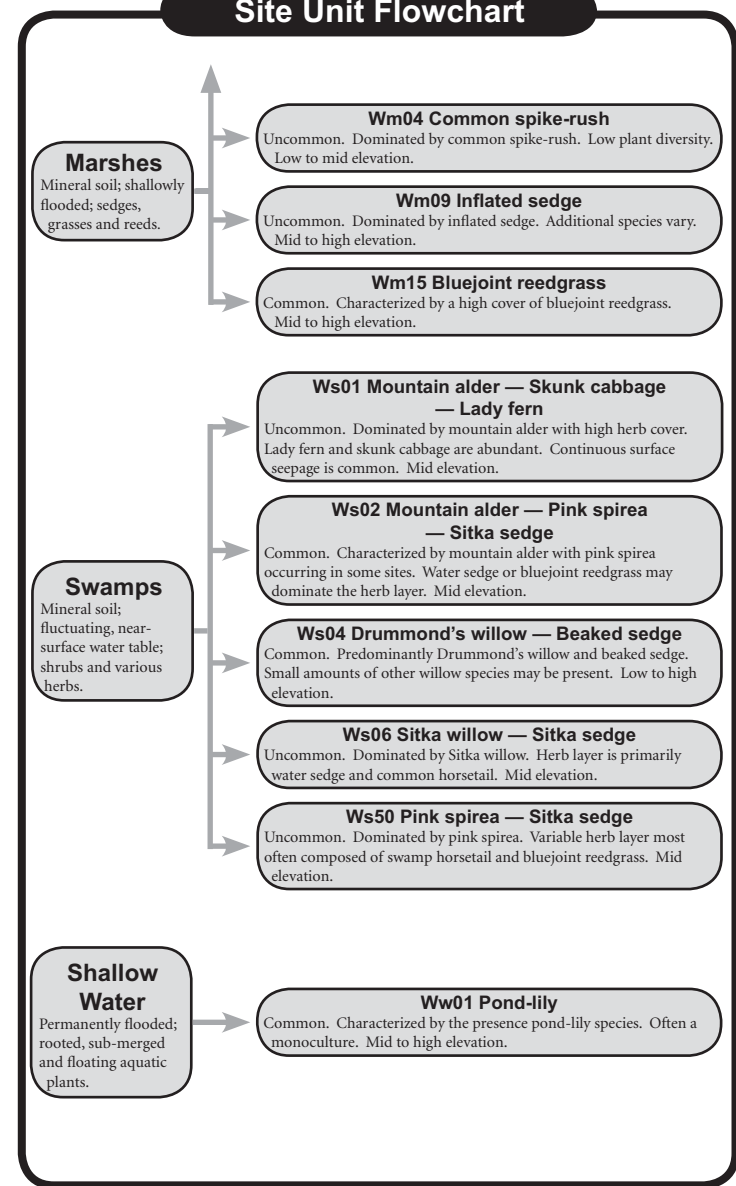
Site Series Flowchart



Site Unit Flowchart



Site Unit Flowchart



Vegetation Table

	Talus		Rock Outcrop					Forests				
	72	73	74	75	76	77	78	79	80	81	82	
Trees	Site Units No. of Plots											
<i>Pseudotsuga menziesii</i>	*											
<i>Pinus monticola</i>			*	*	*	*	*	*	*	*	*	*
<i>Thuja heterophylla</i>			*	*	*	*	*	*	*	*	*	*
<i>Thuja plicata</i>			*	*	*	*	*	*	*	*	*	*
<i>Picea engelmannii</i> x <i>glauca</i>			*	*	*	*	*	*	*	*	*	*
<i>Abies lasiocarpa</i>			*	*	*	*	*	*	*	*	*	*
<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>			*	*	*	*	*	*	*	*	*	*
<i>Picea engelmannii</i> x <i>glauca</i>			*	*	*	*	*	*	*	*	*	*
<i>Thuja plicata</i>			*	*	*	*	*	*	*	*	*	*
<i>Abies lasiocarpa</i>			*	*	*	*	*	*	*	*	*	*
<i>Juniperus communis</i>			*	*	*	*	*	*	*	*	*	*
<i>taxus myrsinites</i>			*	*	*	*	*	*	*	*	*	*
<i>Menziesia ferruginea</i>			*	*	*	*	*	*	*	*	*	*
<i>Thuja occidentalis</i>			*	*	*	*	*	*	*	*	*	*
<i>Vaccinium myrtillus</i>			*	*	*	*	*	*	*	*	*	*
<i>Thuja plicata</i>			*	*	*	*	*	*	*	*	*	*
<i>Abies lasiocarpa</i>			*	*	*	*	*	*	*	*	*	*
<i>Oplopanax horridus</i>			*	*	*	*	*	*	*	*	*	*
<i>Acer glabrum</i>			*	*	*	*	*	*	*	*	*	*
<i>Ribes lacustre</i>			*	*	*	*	*	*	*	*	*	*
<i>Rubus parviflorus</i>			*	*	*	*	*	*	*	*	*	*
<i>Lonicera involucrata</i>			*	*	*	*	*	*	*	*	*	*
<i>Cornus stolonifera</i>			*	*	*	*	*	*	*	*	*	*
<i>Alnus viridis</i>			*	*	*	*	*	*	*	*	*	*
Herbs												
<i>Cryptogramma acrostichoides</i>			*	*	*	*	*	*	*	*	*	*
<i>Chimaphila umbellata</i>			*	*	*	*	*	*	*	*	*	*
<i>Goodyera oblongifolia</i>			*	*	*	*	*	*	*	*	*	*
<i>Limnaea borealis</i>			*	*	*	*	*	*	*	*	*	*
<i>Orthilia secunda</i>			*	*	*	*	*	*	*	*	*	*
<i>Rubus pedatus</i>			*	*	*	*	*	*	*	*	*	*
<i>Cornus canadensis</i>			*	*	*	*	*	*	*	*	*	*
<i>Aralia nudicaulis</i>			*	*	*	*	*	*	*	*	*	*
<i>Tiarelia trifoliata</i> var. <i>unifoliata</i>			*	*	*	*	*	*	*	*	*	*
<i>Gymnocarpium dryopteris</i>			*	*	*	*	*	*	*	*	*	*
<i>Asplenium platyneuron</i>			*	*	*	*	*	*	*	*	*	*
<i>Dryopteris expansa</i>			*	*	*	*	*	*	*	*	*	*
<i>Stratiopogon lanceolatus</i>			*	*	*	*	*	*	*	*	*	*
<i>Actaea rubra</i>			*	*	*	*	*	*	*	*	*	*

Douglas-fir
western white pine
western hemlock
western redcedar
hybrid white spruce
subalpine fir
black cottonwood
hybrid white spruce
western hemlock
western redcedar
subalpine fir
common juniper
falsebox
false azalea
black huckleberry
oval-leaved blueberry
western yew
devil's club
Douglas maple
black gooseberry
thimbleberry
black twinberry
red-osier dogwood
Sitka alder
parsley fern
prince's pine
rattlesnake-plantain
twinnflower
one-sided wintergreen
five-leaved bramble
bunchberry
queen's cup
wild sarsaparilla
one-leaved foamflower
oak fern
dog wood fern
spruce wood fern
rusty twistedstalk
bareberry

	Talus		Rock Outcrop					Forests				
	72	73	74	75	76	77	78	79	80	81	82	
Herbs	Site Units No. of Plots											
<i>Circaea alpina</i>												
<i>Valeriana sitchensis</i>												
<i>Veratrum viride</i>												
<i>Mitella</i> sp.												
<i>Gallium triflorum</i>												
<i>Streptopus amplexifolius</i>												
<i>Osmorhiza</i> sp.												
<i>Equisetum arvense</i>												
<i>Lysichiton americanus</i>												
<i>Erythronium grandiflorum</i>												
<i>Maianthemum racemosum</i>												
<i>Prosartes hookeri</i>												
<i>Viola</i> sp.												
<i>Pteridium aquilinum</i>												
<i>Stereocaulon</i> sp.												
<i>Cladonia</i> sp.												
<i>Umbilicaria</i> sp.												
<i>Recurvata</i> sp.												
<i>Cladonia</i> sp.												
<i>Barbilophozia hatcheri</i>												
<i>Barbilophozia lyco podoides</i>												
<i>Polytrichum juniperinum</i>												
<i>Polytrichum piliferum</i>												
<i>Pelligera</i> sp.												
<i>Pleurozium schreberi</i>												
<i>Dicranum</i> sp.												
<i>Ptilium crista-castrensis</i>												
<i>Rhytidopis robusta</i>												
<i>Hylacomium splendens</i>												
<i>Brachythecium</i> sp.												
<i>Rhizomnium nudum</i>												
<i>Sphagnum</i> sp.												

enchanted-nightsade
Sitka valerian
Indian hellebore
mitrewort
sweet-scented bedstraw
clasping twistedstalk
sweet-cicely
common horsetail
skunk cabbage
yellow glacier lily
false Solomon's-seal
Hooker's fairybells
violet
bracken fern
foam lichens
reindeer lichens
rocktape lichens
aspidoglyphs
dead lichens
Hatcher's leafy liverwort
common leafy liverwort
juniper haircap moss
awned haircap moss
pelt lichens
red-stemmed feathermoss
heron's-bill moss
knight's plume
pipecleaner moss
step moss
ragged-moss
round-leaved leafy moss
peat-moss

Frequency of Occurrence: ■ >80% ■ 40-80% ■ 15-25% ■ 7-15% ■ 1-7% ■ <1%
Abundance (Average Percent Cover): ■ >40% and > 10% cover * <40% and <10% cover

Vegetation Table

	Forests										Avalanche Tracks			
	05	06	07	08	09	10	75	76	77					
Trees														
<i>Pseudotsuga menziesii</i>														
<i>Pinus monticola</i>														
<i>Tsuga heterophylla</i>														
<i>Thuja plicata</i>														
<i>Picea engelmannii</i> x <i>glauca</i>														
<i>Abies lasiocarpa</i>														
<i>Picea engelmannii</i> ssp. <i>trichocarpa</i>														
<i>Picea heterophylla</i>														
Shrubs														
<i>Abies lasiocarpa</i>														
<i>Juniperus communis</i>														
<i>Faxistima myrsinites</i>														
<i>Menziesia ferruginea</i>														
<i>Vaccinium membranaceum</i>														
<i>Vaccinium vitifolium</i>														
<i>Taxus brevifolia</i>														
<i>Ostrya pennsylvanica</i>														
<i>Acer glabrum</i>														
<i>Ribes lacustre</i>														
<i>Rubus parviflorus</i>														
<i>Lonicera involucrata</i>														
<i>Cornus stolonifera</i>														
<i>Alnus viridis</i>														
Herbs														
<i>Cryptogramma acrostichoides</i>														
<i>Chimaphila umbellata</i>														
<i>Goodyera oblongifolia</i>														
<i>Linnaea borealis</i>														
<i>Orthilia secunda</i>														
<i>Rubus pedatus</i>														
<i>Cornus canadensis</i>														
<i>Clintonia uniflora</i>														
<i>Aralia nudicaulis</i>														
<i>Tiarella trifoliata</i> var. <i>unicolata</i>														
<i>Gymnocarpium dryopteris</i>														
<i>Athyrium filix-femina</i>														
<i>Onoclea sensibilis</i>														
<i>Streptopus lancoletus</i>														
<i>Actaea rubra</i>														

	Forests										Avalanche Tracks			
	05	06	07	08	09	10	75	76	77					
Herbs														
<i>Circaea alpina</i>														
<i>Valeriana stichensis</i>														
<i>Veratrum viride</i>														
<i>Mitella</i> sp.														
<i>Galium triflorum</i>														
<i>Streptopus amplexifolius</i>														
<i>Osmorhiza</i> sp.														
<i>Equisetum arvense</i>														
<i>Lysichiton americanus</i>														
<i>Erythronium grandiflorum</i>														
<i>Maianthemum racemosum</i>														
<i>Presarites hookeri</i>														
<i>Viola</i> sp.														
<i>Pteridium aquilinum</i>														
Mosses & Lichens														
<i>Stereocaulon</i> sp.														
<i>Ciaria</i> sp.														
<i>Umbilicaria</i> sp.														
<i>Racomitrium</i> sp.														
<i>Cladonia</i> sp.														
<i>Barbilophozia hatcheri</i>														
<i>Barbilophozia lycopodoides</i>														
<i>Polytrichum juniperum</i>														
<i>Polytrichum piliferum</i>														
<i>Pelligera</i> sp.														
<i>Pleurozium schreberi</i>														
<i>Dicranum</i> sp.														
<i>Ptilium arisaema-streansis</i>														
<i>Rhytidopsis robusta</i>														
<i>Hylocomium splendens</i>														
<i>Brachythecium</i> sp.														
<i>Rhizomnium nudum</i>														
<i>Sphagnum</i> sp.														

Frequency of Occurrence:
 Abundance (Average Percent Cover):
 * <40% and <10% cover * <40% and <10% cover

Environment Table

Site Units	Forests						
	Talus	Rock Outcrop	02	03	01	04	
Soil Moisture Regime	VX X	X VX	VX X	X SX	SM (SX)	M (SM)	M SHG SM
Mesoslope Position	UP MD LW	UP MD LW	CR (UP MD)	CR (UP)	MD (UP)	MD (LW LV UP)	LW TO (MD)
Slope Gradient	Steep	Steep	Variable	Variable	Steep (Gentle)	Variable	Variable
Aspect	Warm (Cool)	Cool (Warm)	Neutral (Warm)	Neutral	Warm (Neutral)	Neutral (Cool)	Cool Neutral
Parent Materials	Cb	Cb	R	Cv (Mv)	Mb Cb FG	Mb Cb	Mb Fb
Soil Texture Class	Fragmental	Fragmental	Fragmental Coarse	Coarse Medium	Coarse Medium	Variable	Medium (Coarse)
Important Features	Rocks & boulders	Rocks & boulders	Bedrock 0-20 cm	Bedrock 0-75 cm			Some seepage
Successional Stage				MC	MC	MC	MC
Occurrence	Scarce	Scarce	Scarce	Uncommon	Common	Dominant	Uncommon ¹

¹Most common at the higher elevations at the wetter geographic range of the biogeoclimatic unit.

Environment Table

Site Units	Forests										Avalanche Track	
	05	06	07	08	09	10	75	76				
Soil Moisture Regime	SHG M	SHG (M)	SHG (M)	SHG (HG)	HG (SHG)	HG (SHD)	M SHG	M SHG				
Mesoslope Position	LW TO (MD)	LV (TO)	TO (LW MD)	LV	LV DP	LV DP	UP MD LW	UP MD LW				
Slope Gradient	Variable	Level	Gentle	Level	Level	Level	Steep	Steep				
Aspect	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral	Variable	Variable				
Parent Materials	Fb Mb Cb	Fb (Mb)	Mb (Fb)	Fb	Fb (Mb)	Ob (Fb)	Cb	Cb				
Soil Texture Class	Medium (Coarse)	Medium (Coarse)	Medium (Coarse)	Variable	Medium (Organic)	Organic (Fine Medium)	Medium Coarse	Medium Coarse				
Important Features	Seepage 20-100 cm	Cold air drainage	Seepage & cold air drainage	Floodplains with seepage	Water table 0-40 cm	Water table 0-20cm	Avalanche track	Avalanche track				
Successional Stage	MC	MC	MC	MC	MC	MC						
Occurrence	Common	Uncommon ²	Uncommon ²	Scarce	Scarce	Uncommon	Scarce ³	Scarce ³				

² Most common in valley bottoms subject to cold air drainage in northern Wells Gray Park and side drainages of the upper North Thompson.

³ Most common in steep mountainous terrain.

72 Rocktripe lichens — Rock-moss

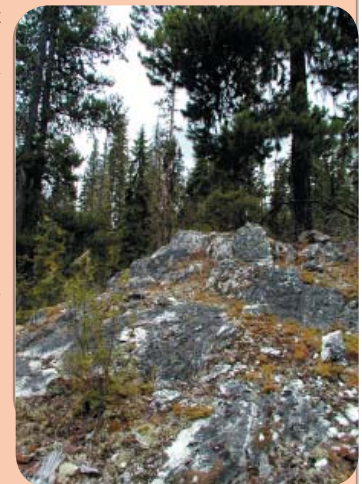
The 72 unit is very uncommon. It occurs on steep talus slopes. Trees, shrubs and herbs are very sparse and are restricted to small pockets of mineral soil. Fd, Sxw, common juniper or parsley fern may be present. The bryophyte and lichen layer is extensive. Clad lichens and rock-moss are the most common and abundant species. Other common species include foam, rocktripe, pelt and reindeer lichens, juniper haircap moss and heron's-bill moss.

**73 Cw — Feathermoss**

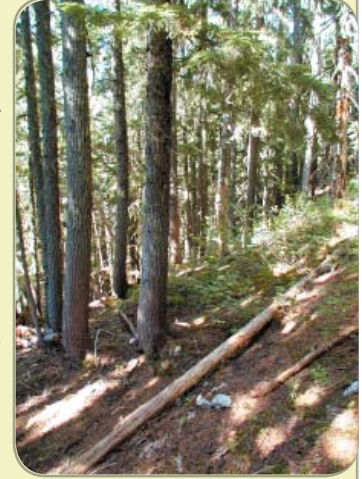
This unit is very uncommon. It occurs on steep talus slopes. Unlike the 72 unit, stunted patches of Bl or Cw are present on pockets of mineral soil. Hw and Sxw may also be present in minor amounts. The shrub layer is sparse; falsebox, false azalea and black huckleberry are the most common species. The herb layer is also sparse; bunchberry is a common species. The bryophyte and lichen layer is dominated by Hatcher's leafy liverwort, common leafy liverwort, heron's-bill moss, red-stemmed feathermoss and knight's plume.

**74 Rock-moss — Clad lichens**

The 74 unit is very uncommon. It occurs on middle and upper slopes and crests where exposed bedrock is present and soils are very shallow. Scattered conifers, Fd or Sxw, may be present. The shrub layer is sparse; the most common species include common juniper, black huckleberry, falsebox and false azalea. The herb layer is sparse; parsley fern is the most common species. The bryophyte and lichen layer is dominated by rock-moss. Other common species include foam, clad and pelt lichens, awned and juniper haircap mosses, and heron's-bill moss.

**02 HwCw — Azalea — Feathermoss**

This is the driest forested site series and is found on upper slopes and crests on shallow soils. The open forest canopy is dominated by Hw. Fd, Pw, Cw, Sxw and Bl may also occur in minor amounts. The regeneration layer is usually dominated by Hw and Cw. The most common species in the sparse to moderate shrub layer are false azalea and black huckleberry. Herb cover is usually sparse; common species include prince's pine, rattlesnake-plantain, twinflower, five-leaved bramble, bunchberry and queen's cup. The bryophyte and lichen layer is extensive and is usually dominated by red-stemmed feathermoss. Other common species include heron's-bill moss, knight's plume and pipecleaner moss.



03 HwCw — Falsebox — Feathermoss

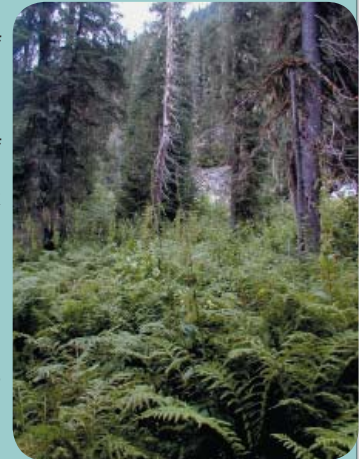
The 03 is a common unit found on steep and warm or gentle middle and upper slopes. It is dominated by a mixed canopy of Hw and Cw. Fd is sometimes present as a minor component. The regeneration layer is dominated by Hw with a minor component of Cw. The moderate shrub layer is often dominated by falsebox. Other common species include black huckleberry, oval-leaved blueberry and false azalea. The herb layer is similar to that of the 02 unit and contains the same species but it is more extensive in the 03 unit. In addition, it includes trace amounts of one-leaved foamflower and oak fern. The extensive bryophyte layer is usually dominated by red-stemmed feathermoss, step moss, heron's-bill moss, pipecleaner moss and knight's

**01 CwHw — Oak fern**

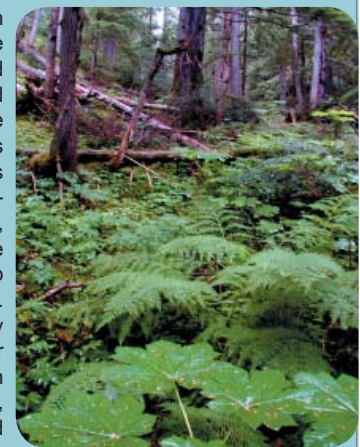
The zonal site series is found most often on gentle or steep and cool slopes and level areas. The forest canopy is dominated by a mix of Hw and Cw. Minor amounts of Bl and Sxw may be present. The regeneration layer is dominated by Hw with a minor amount of Cw. The sparse shrub layer contains several species including falsebox, black huckleberry, oval-leaved blueberry and false azalea. The herb layer is more extensive than the 03 unit; oak fern is often the most abundant species. Other abundant species include bunchberry, queen's cup and one-leaved foamflower. Rosy twistedstalk and spiny wood fern are often present in minor amounts. Red-stemmed feathermoss, pipecleaner moss and step moss are the most abundant species in the extensive moss layer.

**04 CwHw — Lady fern — Oak fern**

This unit is common and is often found near the climatically wetter portions of the ICHwk1. It occurs on steep and cool or gentle middle, lower and toe slopes. The closed canopy and sparse regeneration layer are composed of Hw and Cw. The shrub layer is sparse; oval-leaved blueberry and black huckleberry are the most common species. Devil's club is sometimes present but always in minor amounts. The herb layer is extensive and is dominated by oak fern. Other common and abundant species include queen's cup, bunchberry, wild sarsaparilla, one-leaved foamflower, rosy twistedstalk, spiny wood fern and five-leaved bramble. Unlike drier units, lady fern is often present. The moderate bryophyte layer includes heron's-bill moss, red-stemmed moss, knight's plume, step moss and pipecleaner moss.

**05 CwHw — Devil's club — Lady fern**

The 05 unit is common and occurs on middle, lower and toe slopes. The tree and regeneration layers are composed of Cw and Hw. Unlike drier forested units the shrub layer is extensive and is dominated by abundant devil's club (>10%). Other common species present in minor amounts include oval-leaved blueberry, black huckleberry, black gooseberry, Douglas maple and thimbleberry. The extensive herb layer is usually dominated by lady fern. Other abundant species include spiny wood fern, one-leaved foamflower and oak fern. Species present in minor amounts include queen's cup, bunchberry, rosy twistedstalk and five-leaved bramble. The bryophyte layer is variable. Common species include ragged-moss, red-stemmed feathermoss and knight's plume.



06 BISxw — Thimbleberry — Oak fern

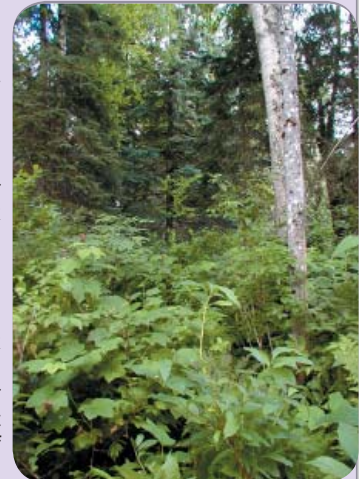
This site unit is uncommon and occurs in cold air drainages. It occurs on toe slopes and level areas. The forest canopy is dominated by Sxw with a minor component of Bl. Hw and Cw are occasionally present and any of the four species may occur in the sparse regeneration layer. The shrub layer is often dominated by thimbleberry. Other common species include black twinberry, black huckleberry and oval-leaved blueberry. Devil's club and black gooseberry may be present in minor amounts. The extensive herb layer is similar to the 05 unit and is dominated by lady fern and oak fern. The bryophyte layer is variable; common species include ragged-moss, knight's plume and red-stemmed feathermoss.

**07 Sxw — Devil's club — Lady fern**

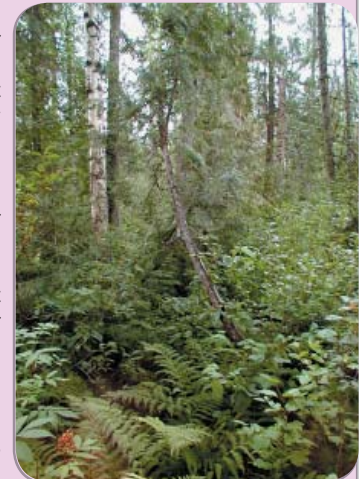
This site unit is infrequent and is found in cold air drainages. Sxw and Bl dominate the forest canopy. Hw and Cw are occasionally present in minor amounts. Any of the four species may occur in the sparse regeneration layer. The shrub layer differs from the 06 unit in that devil's club is very abundant (>10%) and dominates the understory. Other shrubs may be present in minor amounts. The herb layer is similar to the 06 unit and lady fern, oak fern and spiny wood fern are the most common and abundant species. Ragged moss and round-leaved leafy moss often dominate the bryophyte layer.

**08 Act — Dogwood — Thimbleberry**

The 08 site unit is very uncommon. It occurs on fluvial deposits on level areas. The tree layer consists of an open patchy Act stand. Sxw may also be present. The regeneration layer is very sparse and consists of scattered Cw and Sxw. The shrub layer is variable; red-osier dogwood, thimbleberry and black twinberry are common species. Numerous herbaceous species are often present in minor amounts and include sweet-cicely, sweet-scented bedstraw, clasping twistedstalk, oak fern, one-leaved foamflower and false Solomon's-seal. The bryophyte layer is typically very sparse or absent because of the thick deciduous leaf litter.

**09 CwHw — Horsetail**

The 09 occurs infrequently but is most often found on level areas or in depressions where the water level is near the soil surface. The forest canopy and regeneration layer may contain Hw, Cw, Sxw and Bl. The shrub layer is variable; some species include black twinberry, oval-leaved blueberry, devil's club, red-osier dogwood and Sitka alder. Unlike drier forested units, the extensive herb layer is dominated by abundant common horsetail (>10%). Other common species include oak fern, lady fern, rosy twistedstalk, and bunchberry. The moderate to extensive bryophyte layer is variable; common species include ragged-moss, peat-moss, step moss and red-stemmed feathermoss.



10 CwHw — Skunk cabbage

The wettest forested unit is found on level areas and in depressions where the water table is at or near the soil surface. Canopy cover is moderate and typically contains Cw and Hw but Sxw may also be abundant. The same species dominate the regeneration layer. Shrub cover is sparse to moderate; and common species include oval-leaved blueberry, false azalea and devil's club. The herb layer is dominated by skunk cabbage (>10%). Lady fern is also usually a dominant species. Other common herbs include oak fern, bunchberry, rosy twistedstalk and one-leaved foamflower. The bryophyte layer is variable; common and abundant species may include peat-moss, knight's plume and red-stemmed feathermoss.

**75 Alder — Hooker's fairybells**

This is a very uncommon avalanche track unit. It occurs on steep upper and middle slopes. The shrub layer is dominated by a mix of Sitka alder, thimbleberry and Douglas maple. The extensive herb layer is composed of Hooker's fairybells, violets, yellow glacier lily and false Solomon's-seal. The moss layer is poorly developed.

**76 Alder — Lady fern**

This is a very uncommon avalanche track unit. It occurs on steep upper, middle and lower slopes. The shrub layer is dominated by a dense cover of Sitka alder. The herb layer is dominated by a mixture of spiny wood fern and bracken. Bryophytes are absent.

