

TABLE 8 Summary of climate data for biogeoclimatic units within the guide area^a

Climatic characteristics		ICH mm	ICH wk1	ICH wk3	SBS dh	SBS vk ^b	ESSF mm1	ESSF wk1 ^b	ESSF wc3 ^b
Annual precipitation (mm)	Mean	N/A	1214.1	N/A	609.4	1249.6	N/A	1043.9	1408.5
	Range	N/A	867.7–1725.4	N/A	503.1–678.5	989.7–1635.5	N/A	N/A	1177.1–1624.7
Growing-season precipitation (mm)	Mean	280.5	385.4	382.5	237.3	472.0	354.3	426.1	510.3
	Range	232.7–328.2	325.0–460.5	280.9–479.1	177.4–289.1	404.6–583.4	339.4–369.1	378.5–490.9	401.6–631.0
Annual snowfall (cm)	Mean	N/A	587.6	N/A	210.5	N/A	N/A	538.4	782.1
	Range	N/A	374.8–1090.0	N/A	180.3–234.8	N/A	N/A	N/A	N/A
Annual temperature (°C)	Mean	N/A	4.4	4.8	3.7	2.6	N/A	-0.1	-1.0
	Range	N/A	2.3–6.9	3.2–6.2	2.8–4.2	1.3–4.0	N/A	-1.5–1.4	-3.1–1.1
Growing degree-days (>5°C)	Mean	N/A	1364	n/a	1237	N/A	N/A	748	671
	Range	N/A	991–1808	n/a	1134–1332	N/A	N/A	N/A	N/A
Frost-free period (days)	Mean	N/A	121	N/A	92	N/A	N/A	48	75
	Range	N/A	104–149	N/A	76–116	N/A	N/A	N/A	N/A

a Reynolds, G. 1989. Climatic data summaries for the biogeoclimatic zones of British Columbia. B.C. Min. For., Research Branch, Victoria, B.C. Unpublished report.

b The SBSvk, ESSFwk1, and ESSFwc3 are included for comparison. No long-term climate data exist for the ICHwk4 and ESSFwc2 biogeoclimatic units.

Handbook 29 (ESSFwk2, ESSFwc3), or from the Cariboo Region field guide (ICHwk4). The Alpine Tundra zone is not covered within this field guide as site units have not as yet been described.

TABLE 9 *Some important wildlife species that use biogeoclimatic units in the Rocky Mountain trench guide area*

	Occurrence in variants ^a					
	ICH mm	ICH wk1	ICH wk3	SBS dh	ESSF mm1	ESSF wc2
Moose (winter range)	M	M	M	H	–	–
Mule deer (winter range)	L	L	L	M	–	–
White-tailed deer	–	–	–	M	–	–
Elk	–	–	–	L	–	–
Caribou ^b	M	M	M	–	H	H
Grizzly bear ^b	H	H	H	M	VH	VH
Furbearers	M	M	M	H	H	H

a L = Low; M = Medium; H = High; VH = Very High

b Denotes species “blue listed” in 1989 by the Ministry of Environment. Because of major declines in their populations, they are considered sensitive and/or deserving of management attention.

4.3 Goat Wet Cool Interior Cedar-Hemlock

Location

The ICHwk3 occurs on the lower walls and in the valley floor of the Rocky Mountain Trench between McBride and Dome Creek, except on the lowest terraces of the major rivers. It also enters the valleys of most drainages flowing into the Fraser River.

Elevation range

670–1225 m

Climate

The climate of the ICHwk3 is moister than the ICHmm, but drier than the ICHvk2. Precipitation differences between the ICHwk3 and ICHmm may be compounded by the lower evaporative demand that plants would experience in the ICHwk3. This is most likely due to increased cloud cover and humidity, as well as increasing latitude.

The ICHwk3 has a longer growing season, less snowpack, and warmer temperatures than all ESSF units it borders (ESSFmm1, ESSFwk1, ESSFwk2). That part of the SBSvk that borders the ICHwk3 has a similar climate but, as it occupies the lowest valley bottoms, it is influenced by cold air drainage.

Forests

Western redcedar and western hemlock are the dominant climax tree species. They often occur as co-dominants, with minor components of hybrid white spruce and subalpine fir. Douglas-fir is a long-lived seral species that is occasionally present on mesic or drier sites. Seral stands are rare in this subzone. Trembling aspen, paper birch, and Douglas-fir are the main seral species. Lodgepole pine is occasionally present as a seral species, but is primarily found in the very driest and wettest ecosystems. Lodgepole pine and black spruce are present in the bogs in this variant.

Soils, geology, and landforms

Much of this subzone is underlain by deep unconsolidated deposits in the Rocky Mountain Trench and major tributary valleys. Bedrock is seldom exposed, and consists mostly of Precambrian metamorphic and sedimentary rocks. Surficial materials and soils consist of clayey glaciolacustrine sediments (Gray Luvisols), some of which have been deeply gullied (e.g., Morkill River valley), gullied sandy glaciofluvial deposits (Humo-Ferric Podzols), and terraced sandy fluvial deposits of the Fraser River (Brunisolic Gray Luvisols).

Distinguishing the ICHwk₃ from adjoining biogeoclimatic units

SBSdh has:

- prickly rose present on most sites;
- velvet-leaved blueberry present on dry sites;
- Douglas-fir present in the canopy of subxeric to mesic sites;
- no western hemlock or western redcedar;
- no devil's club or false azalea present in the shrub layer; and
- little or no oak fern in the herb layer of most sites.

ESSFmm₁ has:

- white-flowered rhododendron present on mesic sites;
- Engelmann spruce present in the canopy of most sites;
- no western hemlock or western redcedar present in the canopy;
- and
- no lady fern present in the herb layer of most sites.

SBSvk has:

- hybrid white spruce present in the canopy of most sites;
- more thimbleberry present on mesic sites; and
- more bunchberry present in the herb layer of most sites.

ESSFwk₁ has:

- Engelmann spruce present in the canopy of most sites;
- no western hemlock or western redcedar present in the canopy;
- white-flowered rhododendron and thimbleberry present on mesic sites; and
- less devil's club present on most sites.

ICHvk2 has:

- less black huckleberry and false azalea on submesic to subhygric sites;
- more devil's club and less oak fern present on subxeric sites; and
- more cloudberry and less bog-rosemary on subhydric sites.

ICHmm has:

- falsebox present on dry sites;
- less Douglas maple on wet sites;
- more false azalea on wet sites; and
- less lady fern on hygric sites.

ESSFwk2 has:

- Engelmann spruce present in the canopy of most sites;
- no western hemlock or western redcedar present in the canopy;
- white-flowered rhododendron present on mesic sites;
- less devil's club present on most sites; and
- Indian hellebore present on wet sites.

Ecosystem management

These forest ecosystems were historically usually even-aged, but extended post-fire regeneration periods produced stands that are uneven-aged and possess multistoreyed canopies. Stand-destroying wildfires were often of moderate size (20–1000 ha) with patches of unburned areas due to chance, sheltering terrain features, or higher site moisture. Many larger fires occurred after periods of extended drought, but the landscape was dominated by extensive areas of mature forest surrounding patches of younger forest. Return cycles for stand-initiating events were approximately 200 years.

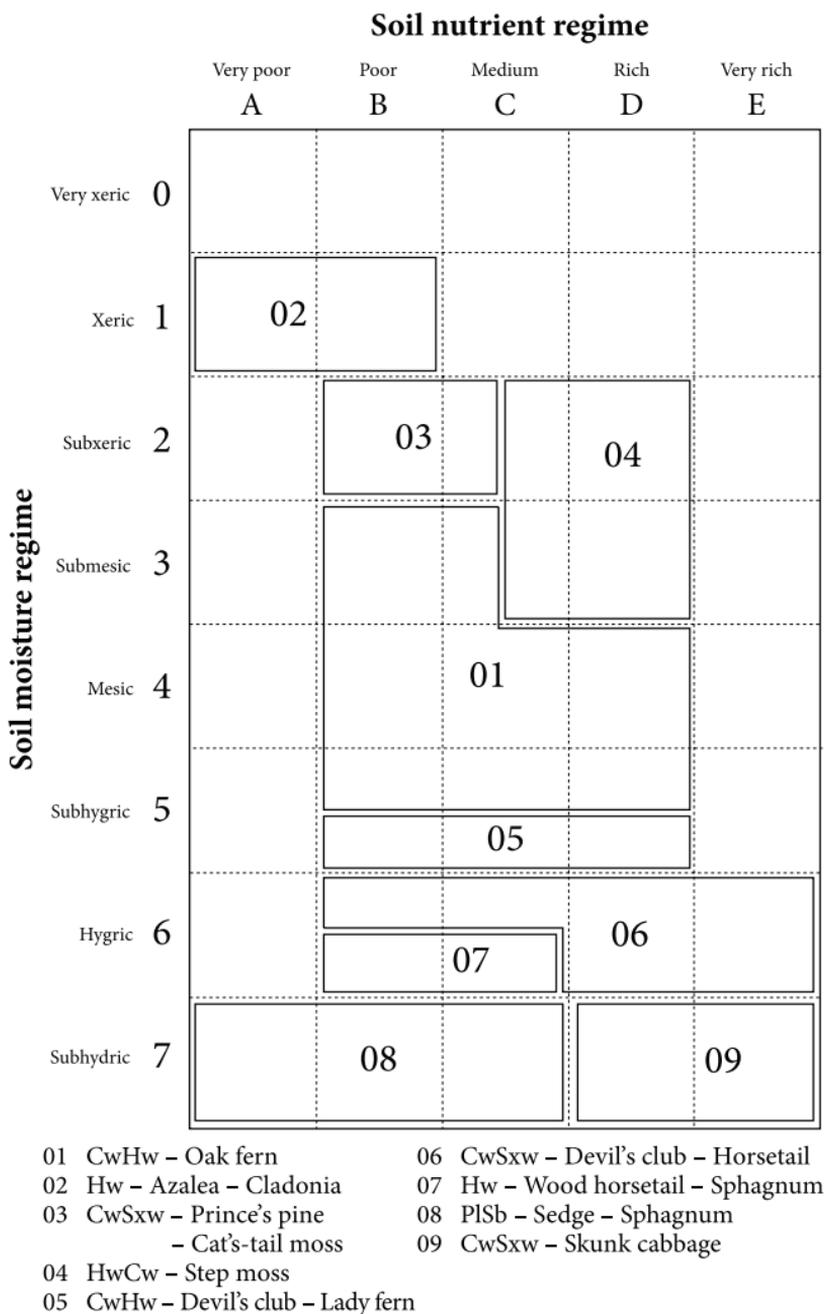


FIGURE 14 Edatopic grid displaying site units in the ICHwk3 variant.

FIGURE 15 ICHwk3 vegetation table.

Site Series	02	03	04	01	05	06	07	08	09	
Trees										
<i>Pinus contorta</i>	■								■	lodgepole pine
<i>Pseudotsuga menziesii</i>		■								Douglas-fir
<i>Tsuga heterophylla</i>	■	■	■	■	■	■	■	■		western hemlock
<i>Thuja plicata</i>		■	■	■	■	■	■	■		western redcedar
<i>Picea glauca</i> × <i>engelmannii</i>		■		■		■	■	■		hybrid white spruce
Shrubs										
<i>Vaccinium membranaceum</i>	■			■			■			black huckleberry
<i>Menziesia ferruginea</i>	■		■	■			■	■		false azalea
<i>Vaccinium ovalifolium</i>	■			■		■	■	■		oval-leaved blueberry
<i>Oplopanax horridus</i>				■	■	■	■	■		devil's club
<i>Lonicera involucrata</i>						■		■		black twinberry
<i>Alnus tenuifolia</i>								■		mountain alder
<i>Ledum groenlandicum</i>									■	Labrador tea
Herbs and Dwarf Shrubs										
<i>Empetrum nigrum</i>	■									crowberry
<i>Chimaphila umbellata</i>		■	■							prince's pine
<i>Aralia nudicaulis</i>		■		■	■	■				wild sarsaparilla
<i>Cornus canadensis</i>		■	■	■	■	■	■	■		bunchberry
<i>Rubus pedatus</i>			■	■	■	■	■	■		five-leaved bramble
<i>Gymnocarpium dryopteris</i>		■		■	■	■	■	■		oak fern
<i>Dryopteris expansa</i>				■	■	■	■			spiny wood fern
<i>Equisetum sylvaticum</i>						■	■	■		wood horsetail
<i>Lysichiton americanus</i>								■	■	skunk cabbage
<i>Carex</i> spp.							■	■	■	sedges
Mosses and Lichens										
<i>Cladina</i> spp.	■		■							cladina lichens
<i>Hylocomium splendens</i>		■	■	■	■	■		■		step moss
<i>Rhytidiadelphus triquetrus</i>		■		■	■	■	■	■		electrified cat's-tail moss
<i>Mnium</i> spp.				■	■			■		leafy mosses
<i>Sphagnum</i> spp.							■	■	■	sphagnums

Prominence class: ■ 1 ■ 2 ■ 3 ■ 4 ■ 5

1a Black spruce in canopy; organic soils; *Ledum groenlandicum* (Labrador tea) (p. 40)⁹ and/or *Betula glandulosa* (scrub birch) (p. 39) moderate to high cover (>5%); water table close to surface; bogs.

ICHwk3/09

1b Black spruce absent from canopy; mineral soils; *Ledum groenlandicum* and/or *Betula glandulosa* low cover (<1%) or absent; water table variable.

2a Lodgepole pine and western hemlock in canopy; crest slope position; moderate to high cover (>30%) of ground lichens.

ICHwk3/02

2b Lodgepole pine is absent; slope position variable; ground lichens low cover (<10%) or absent.

3a Narrow drainage channel; very uneven, open canopy; moderate to high cover of *Lysichiton americanus* (skunk cabbage) (p. 224); water table close to surface.

ICHwk3/08

3b Not a narrow drainage channel; well-developed canopy; *Lysichiton americanus* low cover (<1%) or absent; water table variable.

4a Usually mid- to lower slope or level; *Oplopanax horridus* (devil's club) (p. 36) present and usually moderate to high cover (>10%).

5a Level slope position; lacustrine parent material; *Sphagnum* spp. (sphagnum) (pp. 312–314) moderate to high cover (>10%); canopy often stunted and with poor form.

ICHwk3/07

⁹ Page numbers refer to the publication *Plants of Northern British Columbia* (MacKinnon et al. 1992).

- 5b Slope position variable; parent materials variable; *Sphagnum* spp. low cover (<1%) or absent; canopy well developed.
- 6a Hybrid white spruce and subalpine fir greater than 50% of tree canopy; water table usually within 50 cm of surface; *Equisetum* spp. (horsetails) (pp. 281–284) moderate to high cover (>5%).

ICHwk3/06

- 6b Western redcedar and western hemlock dominate canopy; water table variable; *Equisetum* spp. low cover (<1%) or absent.
- 7a Lower slope to level; seepage water often present; *Oplopanax horridus* high cover (>20%).

ICHwk3/05

- 7b Slope position variable; seepage water rarely present; *Oplopanax horridus* low to moderate cover (<20%).

ICHwk3/01

- 4b Often upper slope; *Oplopanax horridus* absent.
- 8a Occurring on steep (>50%) slopes; aspect usually SE to SW; *Gymnocarpium dryopteris* (oak fern) (p. 293) present.

ICHwk3/03

- 8b Occurring on gentle slopes (<10%); aspect variable; *Gymnocarpium dryopteris* low cover (<1%) or absent.

ICHwk3/04



Oplopanax horridus



Gymnocarpium dryopteris



Hylocomium splendens

VEGETATION

Tree Layer: 70% cover

western redcedar, western hemlock, [subalpine fir, hybrid white spruce]

Shrub Layer: 30% cover

Oplopanax horridus (devil's club)
Vaccinium membranaceum (black huckleberry)
Menziesia ferruginea (false azalea)
Vaccinium ovalifolium (oval-leaved blueberry)
 western hemlock
 western redcedar
 subalpine fir

Herb Layer: 70% cover

Gymnocarpium dryopteris (oak fern)
Cornus canadensis (bunchberry)
Rubus pedatus (five-leaved bramble)
Clintonia uniflora (queen's cup)
Streptopus lanceolatus var. *curvipes* (rosy twistedstalk)
Orthilia secunda (one-sided wintergreen)
Tiarella spp. (foamflowers)
Moneses uniflora (single delight)
Goodyera oblongifolia (rattlesnake-plantain)
Lycopodium annotinum (stiff club-moss)
Maianthemum racemosa (false Solomon's-seal)
Aralia nudicaulis (wild sarsaparilla)
Dryopteris expansa (spiny wood fern)

Moss Layer: 70% cover

Hylocomium splendens (step moss)
Pleurozium schreberi (red-stemmed feathermoss)
Ptilium crista-castrensis (knight's plume)
Rhytidiadelphus triquetrus (electrified cat's-tail moss)
Mnium spp. (leafy mosses)

SOIL AND SITE

Moisture Regime: 3-5 (submesic-subhygric)
 Nutrient Regime: B-C (poor-medium)
 Slope Gradient (%): 18 (0-67)
 * Slope Position: usually mid
 * Parent Material: morainal or fluvial
 Soil Texture: medium-moderately coarse
 Coarse Fragments (%): 25 (0-54)
 Seepage Water (cm): rarely present

DISTRIBUTION: very common

INTERPRETATIONS

- Site limitations: – sites within this unit with high coarse fragment content (>70%) will have significantly reduced soil moisture retention and will be extremely difficult to plant; **attempt to regenerate naturally by retaining Pl cones and/or leaving Fd seed trees on site.**
- Silviculture system: – see Section 5.1.
- Site preparation: – see Section 5.2.
- Species choice: – Sx, [Bl, Cw, Fd, Hw, Pl].
- Vegetation potential: – low to moderate (thimbleberry, fireweed, red raspberry).
- Reforestation: – advance Cw and Hw regeneration should only be preserved if it meets size and acceptability criteria.
– young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.
– fill-planting may be required after partial cutting.
- Concerns: – heavy snowpack may cause stem deformity, especially on steep slopes; **obstacle planting is advised.**
– site conditions may lead to frost damage of regeneration, especially in any naturally occurring or artificially created depression; **leaving a partial canopy, planting on raised microsites, and/or choosing a frost-resistant species (e.g., Pl) are advised.**
– sites within this unit with thick organic horizons (>10 cm) have increased windthrow hazard; **block layouts must have windfirm boundaries, or a wide buffer of standing timber must be left around such sites.**



Oplopanax horridus



Gymnocarpium dryopteris



Hylocomium splendens

VEGETATION

Tree Layer: 70% cover

western redcedar, western hemlock, [subalpine fir, hybrid white spruce]

Shrub Layer: 30% cover

Oplopanax horridus (devil's club)
Vaccinium membranaceum (black huckleberry)
Menziesia ferruginea (false azalea)
Vaccinium ovalifolium (oval-leaved blueberry)
 western hemlock
 western redcedar
 subalpine fir

Herb Layer: 70% cover

Gymnocarpium dryopteris (oak fern)
Cornus canadensis (bunchberry)
Rubus pedatus (five-leaved bramble)
Clintonia uniflora (queen's cup)
Streptopus lanceolatus var. *curvipes* (rosy twistedstalk)
Orthilia secunda (one-sided wintergreen)
Tiarella spp. (foamflowers)
Moneses uniflora (single delight)
Goodyera oblongifolia (rattlesnake-plantain)
Lycopodium annotinum (stiff club-moss)
Maianthemum racemosa (false Solomon's-seal)
Aralia nudicaulis (wild sarsaparilla)
Dryopteris expansa (spiny wood fern)

Moss Layer: 70% cover

Hylocomium splendens (step moss)
Pleurozium schreberi (red-stemmed feathermoss)
Ptilium crista-castrensis (knight's plume)
Rhytidiadelphus triquetrus (electrified cat's-tail moss)
Mnium spp. (leafy mosses)

SOIL AND SITE

Moisture Regime: 4-5 (mesic-subhygric)
 Nutrient Regime: C-D (medium-rich)
 Slope Gradient (%): 7 (0-11)
 * Slope Position: usually mid
 * Parent Material: lacustrine
 Soil Texture: medium-fine
 * Coarse Fragments (%): usually 0
 Seepage Water (cm): rarely present

DISTRIBUTION: very common

INTERPRETATIONS

- Site limitations: – sites with medium- to fine-textured lacustrine soils often have poor soil structure, leading to poor root growth; **plant stock that will achieve better lateral root development (e.g., Cu-treated), prescribe natural regeneration, or protect advance regeneration.**
- Silviculture system: – see Section 5.1.
- Site preparation: – see Section 5.2.
- Species choice: – Sx, [Bl, Cw, Fd, Hw, Pl].
- Vegetation potential: – moderate (thimbleberry, red raspberry, fireweed).
- Reforestation: – advance Cw and Hw regeneration should only be preserved if it meets size and acceptability criteria.
– young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.
- Concerns: – sites within this unit with silty soils are susceptible to frost heaving; **bareroot stock will likely resist frost heaving better than plug stock.**
– sites within this unit with thick organic horizons (>10 cm) have increased windthrow hazard; **block layouts must have windfirm boundaries, or a wide buffer of standing timber must be left around such sites.**
– sites within this unit with fine-textured soils are vulnerable to compaction under wet conditions; **restrict traffic to winter operations or dry soil conditions.**
– site conditions may lead to frost damage of regeneration, especially in any naturally occurring or artificially created depression; **leaving a partial canopy, planting on raised microsites, and/or choosing a frost-resistant species (e.g., Pl) are advised.**

VEGETATION

Tree Layer: 35% cover
western hemlock, lodgepole pine

Shrub Layer: 65% cover
Menziesia ferruginea (false azalea)
Vaccinium membranaceum (black huckleberry)
Vaccinium ovalifolium (oval-leaved blueberry)
 western hemlock
 lodgepole pine
 subalpine fir

*Menziesia
ferruginea*



*Pleurozium
schreberi*

Herb Layer: 5% cover
Empetrum nigrum (crowberry)

Moss Layer: 100% cover
Pleurozium schreberi (red-stemmed feathermoss)
Cladina spp. (reindeer lichens)
Cladonia spp. (cladonia lichens)
Stereocaulon paschale (common coral lichen)
Dicranum polysetum (wavy-leaved moss)
Barbilophozia spp. (leafy liverworts)
Peltigera spp. (peltigera lichens)

SOIL AND SITE

Moisture Regime: 1 (xeric)
 Nutrient Regime: A–B (very poor–poor)
 Slope Gradient (%): 2
 * Slope Position: crest
 * Parent Material: bedrock, and shallow
 veneer over bedrock
 Soil Texture: medium–coarse
 Coarse Fragments (%): 4 (0–10)

COMMENTS: high cover (approx. 35%) of exposed bedrock;
limited data because of the rarity of the ecosystem

DISTRIBUTION: very rare

Cladina spp.

INTERPRETATIONS

- Site limitations: – site and soil conditions of this unit result in marginal forest productivity; *serious consideration should be given to excluding logging from this unit.*
- Silviculture system: – avoid logging.

VEGETATION

Tree Layer: 50% cover

western redcedar, western hemlock, subalpine fir,
hybrid white spruce, [Douglas-fir]

Shrub Layer: 15% cover

<i>Acer glabrum</i>	(Douglas maple)
<i>Amelanchier alnifolia</i>	(saskatoon)
<i>Ribes lacustre</i>	(black gooseberry)
<i>Spiraea betulifolia</i>	(birch-leaved spirea)
western redcedar	
subalpine fir	
western hemlock	

*Acer glabrum*

Herb Layer: 15% cover

<i>Chimaphila umbellata</i>	(prince's pine)
<i>Gymnocarpium dryopteris</i>	(oak fern)
<i>Maianthemum racemosa</i>	(false Solomon's-seal)
<i>Clintonia uniflora</i>	(queen's cup)
<i>Orthilia secunda</i>	(one-sided wintergreen)
<i>Prosartes hookeri</i>	(Hooker's fairybells)
<i>Cornus canadensis</i>	(bunchberry)
<i>Aralia nudicaulus</i>	(wild sarsaparilla)

*Chimaphila
umbellata*

Moss Layer: 50% cover

<i>Pleurozium schreberi</i>	(red-stemmed feathermoss)
<i>Hylacomium splendens</i>	(step moss)
<i>Rhytidiadelphus triquetrus</i>	(electrified cat's-tail moss)
<i>Ptilium crista-castrensis</i>	(knight's plume)
<i>Peltigera</i> spp.	(peltigera lichens)

*Pleurozium
schreberi*

SOIL AND SITE

Moisture Regime:	2 (subxeric)
Nutrient Regime:	B–D (poor–rich)
* Aspect:	usually SE–SW
* Slope Gradient (%):	72 (55–82)
* Slope Position:	upper
Parent Material:	colluvial and steep lacustrine
Soil Texture:	moderately fine– moderately coarse
Coarse Fragments (%):	28 (0–84; greater than 50 if non-lacustrine)

COMMENTS: this ecosystem could occur on other parent
materials within the subzone

DISTRIBUTION: uncommon

INTERPRETATIONS

- Site limitations: – sites with high coarse fragment contents (>70%) will have significantly reduced soil moisture retention and will be extremely difficult to plant; **attempt to regenerate naturally by retaining Pl cones and/or leaving Fd seed trees on site.**
- Silviculture system: – see Section 5.1.
- Site preparation: – light scarification for seedbed preparation or summer logging with no site preparation.
- Species choice: – Fd, [Cw, Hw, Pl], (Sx, Bl).
- Vegetation potential: – low.
- Reforestation: – avoid clearcutting, because stand establishment would likely be difficult due to high surface soil temperatures and drought.
– advance Cw and Hw regeneration should only be preserved if it meets size and acceptability criteria.
– Bl and Sx will be significantly less productive on these sites than Douglas-fir.
– try to preserve advance regeneration if it is abundant and likely to release and form an acceptable stand.
– if Fd stems are present, conduct a stand evaluation to assess whether partial cutting is feasible.
– preserve advance Fd regeneration when partial cutting.
- Concerns: – heavy snowpack may cause stem deformity, especially on steep slopes; **obstacle planting is advised.**
– sites with shallow and/or coarse-textured soils are vulnerable to nutrient deficiency if forest floors are reduced; **site preparation methods that reduce forest floor thickness, such as slashburning or brushblading, must be avoided.**
– site and soil conditions of this unit result in drought hazard for a significant portion of the growing season; **natural regeneration is generally more adapted to surviving these conditions, especially during establishment.**
– full tree harvesting will lead to nutrient depletion and seriously reduce cones; **woody debris and cones should be distributed across these sites (i.e., lop and scatter).**

VEGETATION

Tree Layer: 80% cover
western hemlock, Douglas-fir

Shrub Layer: 35% cover
Menziesia ferruginea (false azalea)
Vaccinium ovalifolium (oval-leaved blueberry)
 [*Amelanchier alnifolia* (saskatoon)]
 [*Vaccinium membranaceum* (black huckleberry)]
 western hemlock
 western redcedar
 [subalpine fir]

*Menziesia
ferruginea*



*Cornus
canadensis*



*Hylocomium
splendens*

Herb Layer: 10% cover
Cornus canadensis (bunchberry)
Chimaphila umbellata (prince's pine)
Orthilia secunda (one-sided wintergreen)
Clintonia uniflora (queen's cup)
Gaultheria hispidula (creeping-snowberry)
Goodyera oblongifolia (rattlesnake-plantain)
 [*Rubus pedatus* (five-leaved bramble)]

Moss Layer: 100% cover
Hylocomium splendens (step moss)
Pleurozium schreberi (red-stemmed feathermoss)
Ptilium crista-castrensis (knight's plume)
Peltigera spp. (peltigera lichens)
Cladina spp. (cladina lichens)
 [*Dicranum polysetum* (wavy-leaved moss)]

SOIL AND SITE

Moisture Regime: 2–3 (subxeric–submesic)
 Nutrient Regime: B–D (poor–rich)
 Slope Gradient (%): 6 (5–8)
 * Slope Position: crest–upper
 * Parent Material: lacustrine veneer or
 blanket over bedrock
 * Soil Texture: fine–moderately fine
 Coarse Fragments (%): 9 (3–15)

COMMENTS: limited data because of the rarity of the ecosystem; usually found in conjunction with o1b site series phase

DISTRIBUTION: rare

INTERPRETATIONS

- Site limitations: – sites with medium- to fine-textured lacustrine soils often have poor soil structure, leading to poor root growth; **plant stock that will achieve better lateral root development (e.g., Cu-treated), prescribe natural regeneration, or protect advance regeneration.**
- Silviculture system: – see Section 5.1.
– minimize or align large slash accumulations when logging to help meet site preparation objectives and reduce fire hazard.
- Site preparation: – see Section 5.2.
- Species choice: – Fd, Pl, [*Hw*], (Sx, *Bl*, *Cw*).
- Vegetation potential: – low.
- Reforestation: – manage to maintain Fd.
– attempt to regenerate naturally if potential exists.
– if Fd stems are present, conduct a stand evaluation to assess if a partial-cutting system is feasible.
– preserve advance Fd regeneration when partial cutting.
– *Bl*, *Cw*, and *Sx* will be significantly less productive than Fd and Pl on these sites.
– fill-planting may be required after partial cutting.
– advance *Cw* and *Hw* regeneration should only be preserved if it meets size and acceptability criteria.
- Concerns: – full tree harvesting will lead to nutrient depletion and seriously reduce cones; **woody debris and cones should be distributed across these sites (i.e., lop and scatter).**
– windthrow risk after partial cutting will be high on sites where root-restricting layers occur at depths <25 cm.
– site and soil conditions of this unit result in drought hazard for a significant portion of the growing season; **leaving a shelterwood overstorey can reduce the severity of the drought hazard.**
– sites with fine-textured soils are vulnerable to compaction under wet conditions; **restrict traffic to winter operations or dry soil conditions.**



*Oplopanax
horridus*



*Gymnocarpium
dryopteris*



*Hylocomium
splendens*

VEGETATION

Tree Layer: 65% cover

western hemlock, western redcedar, hybrid white spruce,
[subalpine fir]

Shrub Layer: 75% cover

Oplopanax horridus (devil's club)
Ribes lacustre (black gooseberry)
Acer glabrum (Douglas maple)
western redcedar
[western hemlock]

Herb Layer: 75% cover

Gymnocarpium dryopteris (oak fern)
Tiarella spp. (foamflowers)
Cornus canadensis (bunchberry)
Dryopteris expansa (spiny wood fern)
Rubus pedatus (five-leaved bramble)
Streptopus spp. (twistedstalks)
Clintonia uniflora (queen's cup)
Goodyera oblongifolia (rattlesnake-plantain)
Maianthemum racemosum (false Solomon's-seal)
Galium trifidum (small bedstraw)
Circaea alpina (enchanter's-nightshade)
Athyrium filix-femina (lady fern)
Aralia nudicaulis (wild sarsaparilla)

Moss Layer: 75% cover

Hylocomium splendens (step moss)
Ptilium crista-castrensis (knight's plume)
Mnium spp. (leafy mosses)
Rhytidiadelphus triquetrus (electrified cat's-tail moss)
Pleurozium schreberi (red-stemmed feathermoss)

SOIL AND SITE

Moisture Regime: 5 (subhygic)
Nutrient Regime: B-D (poor-rich)
Slope Gradient (%): 13 (0-54)
* Slope Position: lower-level
Parent Material: fluvial, colluvial, and morainal
* Soil Texture: medium-coarse
Coarse Fragments (%): 38 (0-65)

DISTRIBUTION: common

INTERPRETATIONS

- Site limitations: – sites within this unit with high coarse fragment content (>70%) will have significantly reduced soil moisture retention and will be extremely difficult to plant; **attempt to regenerate naturally by retaining Pl cones and/or leaving Fd seed trees on site.**
- Silviculture system: – see Section 5.1.
- Site preparation: – see Section 5.2.
- Species choice: – Sx, Fd, [Bl, Cw, Hw, Pl].
- Vegetation potential: – high (lady fern, thimbleberry, fireweed).
- Reforestation: – advance Cw and Hw regeneration should only be preserved if it meets size and acceptability criteria (Section 5.1).
– young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.
- Concerns: – site conditions may lead to frost damage of regeneration, especially in any naturally occurring or artificially created depression; **leaving a partial canopy, planting on raised microsites, and/or choosing a frost-resistant species (e.g., Pl) are advised.**
– heavy snowpack may cause stem deformity, especially on steep slopes; **obstacle planting is advised.**
– sites within this unit with thick organic horizons (>10 cm) have increased windthrow hazard; **block layouts must have windfirm boundaries, or a wide buffer of standing timber must be left around such sites.**



Oplopanax horridus



Gymnocarpium dryopteris



Hylocomium splendens

VEGETATION

Tree Layer: 65% cover

western hemlock, western redcedar, hybrid white spruce,
[subalpine fir]

Shrub Layer: 75% cover

Oplopanax horridus (devil's club)
Ribes lacustre (black gooseberry)
Acer glabrum (Douglas maple)
western redcedar
western hemlock

Herb Layer: 75% cover

Gymnocarpium dryopteris (oak fern)
Tiarella spp. (foamflowers)
Cornus canadensis (bunchberry)
Dryopteris expansa (spiny wood fern)
Rubus pedatus (five-leaved bramble)
Streptopus spp. (twistedstalks)
Clintonia uniflora (queen's cup)
Goodyera oblongifolia (rattlesnake-plantain)
Maianthemum racemosum (false Solomon's-seal)
Galium trifidum (small bedstraw)
Circaea alpina (enchanter's-nightshade)
Athyrium filix-femina (lady fern)
Aralia nudicaulis (wild sarsaparilla)

Moss Layer: 75% cover

Hylocomium splendens (step moss)
Mnium spp. (leafy mosses)
Ptilium crista-castrensis (knight's plume)
Rhytidiadelphus triquetrus (electrified cat's-tail moss)
Pleurozium schreberi (red-stemmed feathermoss)

SOIL AND SITE

Moisture Regime: 5 (subhygric)
Nutrient Regime: B-D (poor-rich)
Slope Gradient (%): usually 0
* Slope Position: lower-level
* Parent Material: lacustrine
Soil Texture: medium-fine
Coarse Fragments (%): usually 0

COMMENTS: limited data for fine-textured phase

DISTRIBUTION: common

INTERPRETATIONS

- Site limitations: – sites with medium- to fine-textured lacustrine soils often have poor soil structure, leading to poor root growth; **plant stock that will achieve better lateral root development (e.g., Cu-treated), prescribe natural regeneration, or protect advance regeneration.**
- Silviculture system: – see Section 5.1.
- Site preparation: – see Section 5.2.
- Species choice: – Sx, Fd, [Bl, Cw, Hw, Pl].
- Vegetation potential: – high (devil's club, thimbleberry, fireweed, lady fern).
- Reforestation: – advance Cw and Hw regeneration should only be preserved if it meets size and acceptability criteria (Section 5.1).
– young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.
- Concerns: – sites within this unit with silty soils are susceptible to frost heaving; **bareroot stock will likely resist frost heaving better than plug stock.**
– heavy snowpack may cause stem deformity, especially on steep slopes; **obstacle planting is advised.**
– sites within this unit with fine-textured soils are vulnerable to compaction under wet conditions; **restrict traffic to winter operations or dry soil conditions.**
– site conditions may lead to frost damage of regeneration, especially in any naturally occurring or artificially created depression; **leaving a partial canopy, planting on raised microsites, and/or choosing a frost-resistant species (e.g., Pl) are advised.**



*Oplopanax
horridus*



*Athyrium filix-
femina*



*Rhytidiadelphus
triquetrus*

VEGETATION

Tree Layer: 70% cover

hybrid white spruce, subalpine fir, paper birch,
[western redcedar, western hemlock, black cottonwood,
trembling aspen]

Shrub Layer: 60% cover

Oplopanax horridus (devil's club)
Lonicera involucrata (black twinberry)
Rubus parviflorus (thimbleberry)
Ribes lacustre (black gooseberry)
Viburnum edule (highbush-cranberry)
subalpine fir
western redcedar

Herb Layer: 65% cover

Athyrium filix-femina (lady fern)
Gymnocarpium dryopteris (oak fern)
Aralia nudicaulis (wild sarsaparilla)
Equisetum spp. (horsetails)
Dryopteris expansa (spiny wood fern)
Cornus canadensis (bunchberry)
Rubus pubescens (trailing raspberry)
Mitella nuda (common mitrewort)
Galium trifidum (small bedstraw)
Equisetum sylvaticum (wood horsetail)
Tiarella spp. (foamflowers)
Circaea alpina (enchanter's-nightshade)

Moss Layer: 80% cover

Rhytidiadelphus triquetrus (electrified cat's-tail moss)
Mnium spp. (leafy mosses)
Hylocomium splendens (step moss)
Pleurozium schreberi (red-stemmed feathermoss)
Ptilium crista-castrensis (knight's plume)

SOIL AND SITE

Moisture Regime: 6 (hygric)
Nutrient Regime: C-D (medium-rich)
Slope Gradient (%): 0
* Slope Position: level
* Parent Material: fluvial
Soil Texture: medium-coarse
Coarse Fragments (%): 0
* Seepage Water: may be present; fluctuating
water table

DISTRIBUTION: uncommon

INTERPRETATIONS

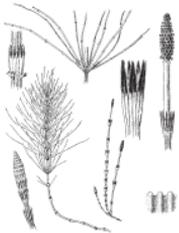
- Site limitations: – sites within this unit with saturated soils are poorly aerated, which slows root development; **plant seedlings on naturally or artificially raised microsites.**
- Silviculture system: – see Section 5.1.
- Site preparation: – see Section 5.2.
– creating an excessive number of microsites (e.g., >300/ha) should be avoided, especially on sites within this unit with a water table <30 cm from the surface.
– careful assessment of plantable and preparable raised microsites should be made to determine target stocking levels.
– under a partial-cutting system, spruce regeneration requires mineral soil exposure and/or planting.
- Species choice: – **Sx, [Bl, Cw, Hw, Pl].**
- Vegetation potential: – very high (devil’s club, black twinberry, thimbleberry, lady fern).
- Reforestation: – young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.
– preserve advance regeneration where feasible.
– plant stock in groups, using available raised microsites, rather than evenly across the site.
– advance Cw and Hw regeneration should only be preserved if it meets size and acceptability criteria (Section 5.1).
- Concerns: – sites within this unit with thick organic horizons (>10 cm) have increased windthrow hazard; **block layouts must have windfirm boundaries, or a wide buffer of standing timber must be left around such sites.**
– site conditions may lead to frost damage of regeneration, especially in any naturally occurring or artificially created depression; **leaving a partial canopy, planting on raised microsites, and/or choosing a frost-resistant species (e.g., Pl) are advised.**
– these units represent important wildlife habitat; **discuss prescription with fish and wildlife personnel.**
– water table will likely rise above the ground surface in the spring, causing seedling mortality.



Oplopanax horridus



Athyrium filix-femina



Equisetum arvense

VEGETATION

Tree Layer: 70% cover

hybrid white spruce, subalpine fir, paper birch,
[western redcedar, western hemlock, black cottonwood,
trembling aspen]

Shrub Layer: 60% cover

Oplopanax horridus (devil’s club)
Lonicera involucrata (black twinberry)
Rubus parviflorus (thimbleberry)
Ribes lacustre (black gooseberry)
Viburnum edule (highbush-cranberry)
subalpine fir
western redcedar

Herb Layer: 65% cover

Athyrium filix-femina (lady fern)
Gymnocarpium dryopteris (oak fern)
Aralia nudicaulis (wild sarsaparilla)
Equisetum spp. (horsetails)
Dryopteris expansa (spiny wood fern)
Cornus canadensis (bunchberry)
Rubus pubescens (trailing raspberry)
Mitella nuda (common mitrewort)
Equisetum sylvaticum (wood horsetail)
Tiarella spp. (foamflowers)

Moss Layer: 80% cover

Rhytidiadelphus triquetrus (electrified cat’s-tail moss)
Mnium spp. (leafy mosses)
Hylocomium splendens (step moss)
Pleurozium schreberi (red-stemmed feathermoss)

SOIL AND SITE

Moisture Regime: 6 (hygric)
Nutrient Regime: D-E (rich-very rich)
Slope Gradient (%): 4 (0-7)
* Slope Position: lower-level
* Parent Material: lacustrine
Soil Texture: moderately fine-fine
Coarse Fragments (%): 0
* Seepage Water: usually present

COMMENTS: these ecosystems usually occur near boundaries with the lower-elevation SBSvk subzone

DISTRIBUTION: uncommon

INTERPRETATIONS

- Site limitations:
- sites with medium- to fine-textured lacustrine soils often have poor soil structure, leading to poor root growth; **plant stock that will achieve better lateral root development (e.g., Cu-treated), prescribe natural regeneration, or protect advance regeneration.**
 - sites with saturated soils are poorly aerated, which slows root development; **plant seedlings on naturally or artificially raised microsites.**
- Silviculture system:
- see Section 5.1.
- Site preparation:
- see Section 5.2.
 - creating an excessive number of microsites (e.g., >300/ha) should be avoided, especially on sites with a water table <30 cm from the surface.
- Species choice:
- **Sx, [Bl, Cw, Hw, Pl].**
- Vegetation potential:
- very high (devil’s club, black twinberry, thimbleberry, lady fern).
- Reforestation:
- young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.
 - advance Cw and Hw regeneration should only be preserved if it meets size and acceptability criteria (Section 5.1).
- Concerns:
- water table will likely rise above the ground surface in the spring, causing seedling mortality.
 - sites with silty soils are susceptible to frost heaving; **bareroot stock will likely resist frost heaving better than plug stock.**
 - sites with thick organic horizons (>10 cm) have increased windthrow hazard; **block layouts must have windfirm boundaries, or a wide buffer of standing timber must be left around such sites.**
 - sites with fine-textured soils are vulnerable to compaction under wet conditions; **restrict traffic to winter operations or dry soil conditions.**
 - site conditions may lead to frost damage of regeneration, especially in any naturally occurring or artificially created depression; **leaving a partial canopy or planting on raised microsites is advised.**
 - these units represent important wildlife habitat; **discuss prescription with fish and wildlife personnel.**
 - heavy snowpack may cause stem deformity of Pl.

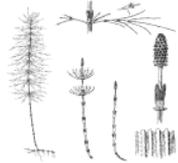
VEGETATION

Tree Layer: 65% cover

subalpine fir, western hemlock, hybrid white spruce,
[western redcedar, paper birch]

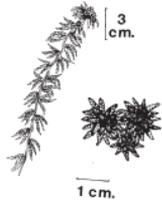
Shrub Layer: 25% cover

Vaccinium ovalifolium (oval-leaved blueberry)
Vaccinium membranaceum (black huckleberry)
Menziesia ferruginea (false azalea)
 [*Oplopanax horridus* (devil's club)]
 western hemlock
 subalpine fir

*Equisetum sylvaticum*

Herb Layer: 60% cover

Equisetum sylvaticum (wood horsetail)
Rubus pedatus (five-leaved bramble)
Gymnocarpium dryopteris (oak fern)
Cornus canadensis (bunchberry)
Orthilia secunda (one-sided wintergreen)
Streptopus spp. (twistedstalks)
Lycopodium annotinum (stiff club-moss)
Athyrium filix-femina (lady fern)
Dryopteris expansa (spiny wood fern)
Linnaea borealis (twinflower)
Tiarella spp. (foamflowers)

*Rubus pedatus**Sphagnum* spp.

Moss Layer: 95% cover

Sphagnum spp. (sphagnum)
Hylocomium splendens (step moss)
Ptilium crista-castrensis (knight's plume)
Pleurozium schreberi (red-stemmed feathermoss)

SOIL AND SITE

Moisture Regime: 6–7 (hygric–subhydric)
 Nutrient Regime: B–C (poor–medium)
 * Slope Gradient (%): 1 (0–5)
 * Slope Position: level
 * Parent Material: lacustrine
 * Soil Texture: moderately fine–fine
 Coarse Fragments (%): 3 (0–16)
 * Seepage Water: present

DISTRIBUTION: common

INTERPRETATIONS

- Site limitations:
- sites with medium- to fine-textured lacustrine soils often have poor soil structure, leading to poor root growth; **plant stock that will achieve better lateral root development (e.g., Cu-treated), prescribe natural regeneration, or protect advance regeneration.**
 - sites with saturated soils are poorly aerated, which slows root development; **plant seedlings on naturally or artificially raised microsites.**
- Silviculture system:
- see Section 5.1.
- Site preparation:
- see Section 5.2.
 - creating an excessive number of microsites (e.g., >300/ha) should be avoided, especially on sites within this unit with a water table <30 cm from the surface.
- Species choice:
- **Pl, [Hw], (Cw, Sx).**
- Vegetation potential:
- low.
- Reforestation:
- plant sturdy stock in groups on available microsites.
 - young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.
 - advance Cw and Hw regeneration should only be preserved if it meets size and acceptability criteria (Section 5.1).
 - Cw and Sx will be significantly less productive than Pl on these sites.
- Concerns:
- this unit is critical to the control of runoff streamflow.
 - site conditions may lead to frost damage of regeneration, especially in any naturally occurring or artificially created depression; **leaving a partial canopy, planting on raised microsites, and/or choosing a frost-resistant species (e.g., Pl) are advised.**
 - sites with fine-textured soils are vulnerable to compaction under wet conditions; **restrict traffic to winter operations or dry soil conditions.**
 - sites with silty soils are susceptible to frost heaving; **bareroot stock will likely resist frost heaving better than plug stock.**
 - sites with thick organic horizons (>10 cm) have increased windthrow hazard; **block layouts must have windfirm boundaries, or a wide buffer of standing timber must be left around such sites.**
 - heavy snowpack may cause stem deformity, especially on steep slopes; **obstacle planting is advised.**

VEGETATION

Tree Layer: 10% cover
[black spruce, lodgepole pine]

Shrub Layer: 30% cover
Ledum groenlandicum (Labrador tea)
Betula glandulosa (scrub birch)
[*Kalmia microphylla* spp. (western bog-laurel)]
lodgepole pine
black spruce
western hemlock

Herb Layer: 50% cover
Carex spp. (sedges)
Oxycoccus oxycoccus (bog cranberry)
Eriophorum chamissonis (Chamisso's cotton-grass)
Drosera rotundifolia (round-leaved sundew)
Andromeda polifolia (bog-rosemary)
[*Menyanthes trifoliata* (buckbean)]
[*Gaultheria hispidula* (creeping-snowberry)]

Moss Layer: 95% cover
Sphagnum spp. (sphagnums)
Pleurozium schreberi (red-stemmed feathermoss)

SOIL AND SITE

Moisture Regime: 7 (subhydric)
Nutrient Regime: A-C (very poor-medium)
Slope Gradient (%): 0
* Slope Position: level or depression
* Parent Material: organic and organic veneer over lacustrine
* Soil Texture: fibric and mesic organic
Coarse Fragments (%): 0
Water Table: close to surface

COMMENTS: these bog and poor fen ecosystems are variable, differing in the depth of organic material and the "richness" of the water moving through the site; most are in shallow depressions over lacustrine material

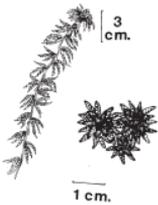
DISTRIBUTION: uncommon



Ledum groenlandicum



Carex spp.



Sphagnum spp.

INTERPRETATIONS

- Site limitations: – site and soil conditions of this unit result in marginal forest productivity; *serious consideration should be given to excluding logging from this unit.*
- Silviculture system: – avoid logging.

VEGETATION

Tree Layer: 30% cover

hybrid white spruce, western redcedar, subalpine fir,
western hemlock

Shrub Layer: 50% cover

<i>Vaccinium ovalifolium</i>	(oval-leaved blueberry)
<i>Alnus tenuifolia</i>	(mountain alder)
<i>Lonicera involucrata</i>	(black twinberry)
<i>Menziesia ferruginea</i>	(false azalea)
<i>Ribes lacustre</i>	(black gooseberry)
<i>Viburnum edule</i>	(highbush-cranberry)

subalpine fir
western redcedar
western hemlock

Alnus tenuifolia



Lysichiton americanus

Herb Layer: 50% cover

<i>Glyceria elata</i>	(tall mannagrass)
<i>Thelypteris phegopteris</i>	(beech fern)
<i>Lysichiton americanus</i>	(skunk cabbage)
<i>Carex</i> spp.	(sedges)
<i>Equisetum</i> spp.	(horsetails)
<i>Cornus canadensis</i>	(bunchberry)

Mnium spp.

Moss Layer: 95% cover

<i>Mnium</i> spp.	(leafy mosses)
<i>Rhytidiadelphus triquetrus</i>	(electrified cat's-tail moss)
<i>Calliergon</i> spp.	(water mosses)
<i>Sanionia uncinata</i>	(sickle-moss)
<i>Sphagnum</i> spp.	(sphagnums)
<i>Hylocomium splendens</i>	(step moss)
<i>Ptilium crista-castrensis</i>	(knight's plume)

SOIL AND SITE

Moisture Regime:	7 (subhydric)
Nutrient Regime:	D-E (rich-very rich)
* Slope Gradient (%):	1
* Slope Position:	depression
Parent Material:	glaciofluvial
Soil Texture:	coarse
Coarse Fragments (%):	0
* Seepage Water:	present; water table near surface

COMMENTS: limited data as the ecosystem is rare; occurs in narrow drainage channels

DISTRIBUTION: rare

INTERPRETATIONS

- Site limitations: – site and soil conditions of this unit result in marginal forest productivity; ***serious consideration should be given to excluding logging from this unit.***
- Silviculture system: – avoid logging.

TABLE 5.2.1 Distribution of Fen Site Associations by biogeoclimatic zone

	BG PP	BWBS SWB	ESSF	ICH	IDF	MS	SBPS SBS	CDF	CWH	MH
Wf01 Water sedge – Beaked sedge		xx	x	xx	xxx	xxx	xxx		x ⁱ	
Wf02 Scrub birch – Water sedge		xxx	x	xx	xx	xx	xx			
Wf03 Water sedge – Peat-moss			xx				x			
Wf04 Barclay's willow – Water sedge – Glow mosses		x	xxx			x	x			
Wf05 Slender sedge – Common hook-moss		x		xx	xx	xx	xx			
Wf06 Slender sedge – Buckbean		x		x	x		x			
Wf07 Scrub birch – Buckbean – Shore sedge		x		x	x		x			
Wf08 Shore sedge – Buckbean – Hook-moss		x	x		x	x	x			
Wf09 Few-flowered spike-rush – Hook-moss			x			x	x			
Wf10 Hudson Bay clubrush – Red hook-moss							x			
Wf11 Tufted clubrush – Star moss		x	x	x		x	x			
Wf12 Narrow-leaved cotton-grass – Marsh-marigold			xxx							
Wf13 Narrow-leaved cotton-grass – Shore sedge			xx			x				
Wf50 Narrow-leaved cotton-grass – Peat-moss									x	xxx
Wf51 Sitka sedge – Peat-moss				x				xx	xx	
Wf52 Sweet gale – Sitka sedge								xx	xx ^s	
Wf53 Slender sedge – White beak-rush								x	xx ^s	

x = incidental; < 5% of wetlands

i = inland areas only

xx = minor; 5–25% of wetlands

s = southern subzones only

xxx = major; >25% of wetlands

TABLE 5.2.2 Fen Species Importance Table

Species		WF01	WF02	WF03	WF04	WF05	WF06	WF07	WF08
Shrubs	<i>Betula nana</i>								
	<i>Salix barclayi</i>								
	<i>Salix pedicellaris</i>								
	<i>Spiraea douglasii</i>								
	<i>Myrica gale</i>								
Herbs and Dwarf Shrubs	<i>Carex utriculata</i>								
	<i>Carex aquatilis</i>								
Shrubs	<i>Comarum palustre</i>								
	<i>Calamagrostis canadensis</i>								
Shrubs	<i>Carex lasiocarpa</i>								
	<i>Menyanthes trifoliata</i>								
Shrubs	<i>Carex limosa</i>								
	<i>Carex chordorrhiza</i>								
Shrubs	<i>Eleocharis quinqueflora</i>								
	<i>Trichophorum alpinum</i>								
Shrubs	<i>Trichophorum cespitosum</i>								
	<i>Eriophorum angustifolium</i>								
Shrubs	<i>Caltha leptosepala</i>								
	<i>Carex anthoxanthea</i>								
Shrubs	<i>Equisetum fluviatile</i>								
	<i>Carex magellanica</i>								
Shrubs	<i>Carex sitchensis</i>								
	<i>Rhynchospora alba</i>								
Shrubs	<i>Carex livida</i>								
	<i>Eriophorum chamissonis</i>								
Shrubs	<i>Vahlodea atropurpurea</i>								
	<i>Drosera anglica</i>								
Shrubs	<i>Hypericum anagalloides</i>								
	<i>Triantha glutinosa</i>								
Shrubs	<i>Schoenoplectus tabernaemontani</i>								
	<i>Fauria crista-galli</i>								
Shrubs	<i>Senecio triangularis</i>								
	<i>Andromeda polifolia</i>								
Shrubs	<i>Kalmia microphylla</i>								
	<i>Oxycoccus oxycoccus</i>								
Shrubs	<i>Triglochin maritima</i>								
	<i>Drosera rotundifolia</i>								
Shrubs	<i>Leptarrhena pyrolifolia</i>								
	<i>Platanthera dilatata</i>								
Shrubs	<i>Sanguisorba canadensis</i>								
	<i>Utricularia intermedia</i>								
Shrubs	<i>Viola palustris</i>								
	<i>Sphagnum Group I</i>								
Lichens and Mosses	<i>Aulacomnium palustre</i>								
	<i>Drepanocladus spp.</i>								
Lichens and Mosses	<i>Sphagnum Group II</i>								
	<i>Tomentypnum nitens</i>								
Lichens and Mosses	<i>Philonotis fontana</i>								
	<i>Calliergon stramineum</i>								
Lichens and Mosses	<i>Scorpidium spp.</i>								
	<i>Campylopus stellatum</i>								
Lichens and Mosses	<i>Warnstorfia spp.</i>								
	<i>Meesia triquetra</i>								

Betula nana – *Carex aquatilis*



General Description

The Scrub birch – Water sedge Fen Site Association is one of the most common peatland Site Associations throughout the Interior and is absent only from PP/BG and wet ESSF subzones. It is frequently a major component of large peatlands where there is some surfactable fluctuation and the surface becomes aerated by mid-season. These sites are often hummocked, with shrubs rooting on elevated microsites.

Betula nana and *Carex aquatilis* are the characteristic species but *Salix pedicellaris* and *Carex utriculata* dominate on wetter sites. The moss layer is variable and can be diverse, absent, or dominated by *Tomentypnum nitens*, *Sphagnum*, or *Drepanocladus*. Some drier sites will have scattered, stunted trees (spruce or black spruce most commonly).

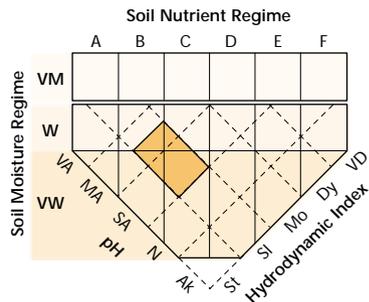


Common soil types are terric and typic Mesisols and Fibrisols. Peat depths are frequently between 1 and 2 m but deep sedge-derived peat to 4 m occurs; this Site Association can occasionally occur on thin organic veneers.

Characteristic Vegetation

- Tree layer** (0 - 0 - 10)
- Shrub layer** (10 - 35 - 100)
Betula nana, *Salix pedicellaris*
- Herb layer** (5 - 60 - 100)
Carex aquatilis, *C. utriculata*,
Comarum palustre
- Moss layer** (0 - 70 - 100)
Aulacomnium palustre, *Drepanocladus aduncus*, *Sphagnum* Group I,
Tomentypnum nitens

Wetland Edatopic Grid



Comments

The Wf02 Site Association often occurs around the periphery of the wetter Wf01 or adjacent to the drier Wb05. These three Site Associations may represent a sequence of long-term peatland succession. Many sites have a moss layer with rich and poor site indicators, suggesting that they are in transition from fen to bog conditions.

The Wf02 is one of the most common Interior peatland community types at low to subalpine elevations. It is probably only absent from the AT, BG, and PP zones. In coastal areas, similar sites are occupied by the Wf52.