TABLE 14 Environmental characteristics of SBS subzones and variants in the Cariboo Forest Region^a

	SBSdw1	SBSdw2	SBSmh	SBSmw	SBSmc1	SBSmc2 ^b	SBSwk1 ^b
Area (km²)	3443	2567	789	1374	419	1205	1473
Elevation range (m)	750-1200	750-1200	450 - 750	700 - 1000	1250-1350	1200-1500	900-1250
Climate							
Precipitation (mm)							
Mean annual	585	487	559			575	719
Mean summer	286	252	257	328	298	229	334
Mean winter	298	235	297			354	429
Mean annual snowfall (cm) 182	198	197			237	240
Temperature(°C)							
Mean annual	3.7	3.4	4.6		2.9	1.5	2.4
Mean - warmest month	14.8	14.9	16.6	14.1		12.3	13.1
Mean - coldest month	-10.4	-11.0	-10.8			-12.6	-11.1
Frost-free days	152	170	179			151	117
Soils							
Zonal soils ^c	Br.G.L.	Br.G.L.	Br.G.L.	Br.G.L.	Br.G.L.	Br.G.L.	Br.G.L.
Zonal humus formd	HR (RM)	HR	HR, RM	HR (RM)	HR (RM)	HR (RM)	HR (RM)

^aThe SBSmm has a very small area (86 km²) in the Cariboo Forest Region and is not included here. Refer to Lloyd *et al.* 1990.

^bClimatic data are from the Prince George and/or Prince Rupert forest regions; few or no data are available from the Cariboo.

^cBr.G.L. = Brunisolic Gray Luvisol

 $^{^{}d}HR = HemiMor; RM = MorModer$

TABLE 15 SBS vegetation table - zonal sites^a

	Biogeoclimatic Unit	SBSdw1	SBSdw2	SBSmh	SBSmw	SBSmc1	SBSmc2	SBSwk1) ·
Tree	Pseudotsuga menziesii	\$	¢	¢	\$				Douglas-fir
Layer	Betula papyrifera			×					paper birch
,	Pinus contorta	×			×	٠	٠		lodgepole pine
	Picea engelmannii x glauca	×	e	e	×	e	8	٠	hybrid white spruce
	Abies lasiocarpa					e		×	subalpine fir
Shrub	Rosa acicularis	8	8	8	8				prickly rose
Layer	Cornus stolonifera			æ					red-osier dogwood
Lujei	Mahonia aquifolium								tall Oregon-grape
	Amelanchier alnifolia	æ	æ	æ	п			ш	saskatoon
	Lonicera involucrata	п	ш	æ	ш			e	black twinberry
	Corylus cornuta			×					beaked hazelnut
	Spiraea betulifolia					8	8		birch-leaved spirea
	Pachistima myrsinites	2			2	п			falsebox
	Viburnum edule	п	п	æ	п			ш	highbush-cranberry
	Rubus parviflorus	×		×	2			8	thimbleberry
	Vaccinium membranaceum	a			e	e	×	e	black huckleberry
	Ribes lacustre					п		8	black gooseberry
Herb	Elymus glaucus	п							blue wildrye
Layer	Calamagrostis rubescens	e	×			8	8		pinegrass
	Aralia nudicaulis	×	e	e	e				wild sarsaparilla
	Chimaphila umbellata	8	п		п				prince's pine
	Rubus pubescens	11		п	п				trailing raspberry
	Aster conspicuus		п	8	8				showy aster
	Oryzopsis asperifolia	п	8	8					rough-leaved ricegrass
	Lathyrus ochroleucus			8					creamy peavine
	Arnica cordifolia	ш	п		8	e	e		heart-leaved arnica
	Cornus canadensis	×	8	8	×	×	e	×	bunchberry
	Linnaea borealis			×		8	8	8	twinflower
	Clintonia uniflora				8	e		e	queen's cup
	Gymnocarpium dryopteris							•	oak fern
	Streptopus roseus					0		e	rosy twistedstalk
	Rubus pedatus					e	e	e	five-leaved bramble
	Veratrum viride							e	Indian hellebore
Moss	Rhytidiadelphus triquetrus	e	2	2	×			e	electrified cat's-tail moss
Layer	Pleurozium schreberi	•	•	æ	•	.	•	•	red-stemmed feathermoss
/	Ptilium crista-castrensis	×	0		٠	•	•	•	knight's plume
	Peltigera aphthosa		ш			ш	e	0	freckle pelt
	Hylocomium splendens		×		×			×	step moss
	Mnium spp.			п				×	leafy mosses
	Barbilophozia spp.							п	leafy liverworts

^aData are for zonal sites only.

Species abundance: \square present in 40–60% of plots surveyed; m > 60% of plots, mean cover <1%; m > 60% of plots, mean cover 1–7%; m > 60% of plots, mean cover >7–15%; m > 60% of plots, mean cover >15%

BGC UNITS

summits of hills in the Blackwater and Nazko areas. It has a much larger area in the Prince Rupert and Prince George regions, where it also occurs on plateau landscapes. The absence of Douglas-fir and greater abundance of cool-, snowy-climate species such as five-leaved bramble, indicates that the climate of the SBSmc2 is cooler than that of the SBSmc1.

SBSwk1 Variant The SBSwk in the Cariboo Forest Region occurs along the moist eastern edge of the Fraser Plateau and on lower valley slopes in the dissected topography of the adjacent Quesnel Highland, north of the Cariboo River. It occurs between 900 and 1250 m and borders the ESSFwk1 at higher elevations and the SBSmw at lower elevations. A large area of the SBSwk also occurs in the adjacent portions of the Prince George Forest Region. The SBSwk is distinguished from the SBSmw and SBSmc by abundant oak fern on zonal sites and from other SBS subzones of the Cariboo Forest Region by the presence of species characteristic of moist, relatively snowy climates, such as five-leaved bramble, rosy twistedstalk, and Indian hellebore.

The SBSwk has the wettest, snowiest climate of the SBS Zone in the Cariboo Forest Region.

Old forests of hybrid white spruce and subalpine fir are common on the SBSwk landscape. These forests have a moderate cover of shrubs and herbaceous species and a well-developed moss layer. Principal shrub species are black huckleberry, black gooseberry, black twinberry, and thimbleberry. Lodgepole pine is the principal seral species following wildfire and covers a large proportion of the landscape. Douglas-fir and deciduous species are uncommon.

The SBSwk1 Variant is the only biogeoclimatic variant of the SBSwk in the Cariboo Forest Region.

SBSwk1 SUB-BOREAL SPRUCE WET COOL SUBZONE WILLOW VARIANT

The SBSwk1 occurs in the northeastern portion of the Cariboo Forest Region and adjacent portions of the Prince George Forest Region. In the Cariboo Forest Region (1473 km²), it dominates the rolling terrain along the western edge of the Quesnel Highland north of the Cariboo River. It also extends eastward in valley bottoms into the more dissected and rugged landscapes of the Quesnel Highland and Cariboo Mountains. The SBSwk1 occurs just below the ESSFwk subzone and has the highest precipitation and coolest temperatures of the SBS Zone in the Cariboo Forest Region. Elevations are generally 900–1250 m.

Distinguishing Adjacent Units from the SBSwk1

The **ESSFwk1** occurs above the SBSwk1 throughout its distribution in the Cariboo Forest Region. The **SBSmw** occurs below the SBSwk1 along most of its border, although the **ICHwk4** occurs below the SBSwk1 in the lower Cariboo River valley. The **ICHmk3** borders a small portion of the SBSwk1 near Spectacle Lake along the southwestern boundary of Bowron Park. It occurs at similar elevations but in apparently warmer climates than the SBSwk1.

In the ESSFwk1, zonal sites have:

• white flowered rhododendron, red elderberry, and Sitka valerian.

In the **SBSmw**, zonal sites have:

- common Douglas-fir and prince's pine;
- little or no oak fern, three-leaved foamflower, or five-leaved bramble.

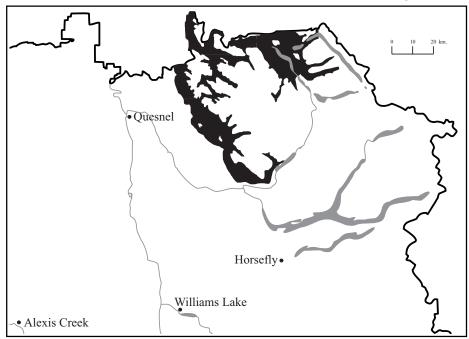
In the ICHwk4, zonal sites have:

- · western redcedar and western hemlock;
- frequent Douglas-fir.

In the ICHmk3, zonal sites have:

- western redcedar and Douglas-fir;
- prince's pine;
- · little or no oak fern.

Distribution of SBSwk1 Variant in the Cariboo Forest Region



Site Units of the SBSwk1

Zonal Site Series 01 Sxw - Oak fern Site Series dominates the SBSwk1 landscape, occurring from upper to lower slope positions on medium-textured soils. It occurs on gentle and steep slopes and on all slope aspects. Climax tree species are hybrid white spruce and subalpine fir. Spruce is the principal canopy species, while subalpine fir is the principal tree species in the regeneration layer. Subalpine fir as well as lodgepole pine are often present in the canopy. Since wildfires have been less frequent than in other portions of the SBS in the Cariboo Region, lodgepole pine stands are also less common. The undergrowth of mature forests has a moderate cover of shrubs, consisting of several species. Black twinberry and black huckleberry are among the most abundant. The herbaceous layer has a moderate cover of low-growing species including oak fern, bunchberry, rosy twistedstalk, and stiff clubmoss. Moss cover is nearly continuous.

Drier Sites Sites drier than those of the zonal site series are moderately common, occurring on ridge tops, shallow soils, sandy soils, and steep south-facing slopes. These sites are distinguished by having more lodgepole pine, birch-leaved spirea, and western mountain-ash than do mesic and wetter sites. Moist-site species such as spiny wood fern, sweet-scented bedstraw, and leafy mosses are uncommon.

02 PI - Huckleberry - Cladina Site Series occurs on upper slopes and ridge tops where bedrock is very near (<35 cm) the surface. These are small, localized sites with a vegetation distinguished by abundant ground lichens. The mature forest canopy is typically dominated by lodgepole pine or subalpine fir. Low shrubs, especially black huckleberry and dwarf blueberry, are abundant, but the herbaceous layer is typically sparse. Moss cover is relatively patchy, occurring mostly on microsites with deep soils.

- 03 Pl Huckleberry Velvet-leaved blueberry Site Series occurs on dry sands, including dry glaciofluvial terraces, as well as on dry upper and crest slope positions where soils are shallow (<80 cm) but deeper than those of the /02 unit. Slopes range from level to steep, but are most commonly level sandy terraces. The mature forest canopy is most often dominated by lodgepole pine with an understory of hybrid white spruce and subalpine fir. The undergrowth vegetation is distinguished by abundant velvet-leaved blueberry, which, together with black huckleberry, bunchberry, and twinflower, typically dominates the undergrowth. In contrast to most other site series, black gooseberry is absent. Feathermoss cover of the soil surface is nearly complete.
- 04 SxwFd Knight's plume Site Series occurs primarily on steep (>30%) south- and west-facing slopes with deep, loamy soils that have a high coarse fragment content. Most soils contain coarse fragments more than 25 cm in diameter. This site series is also found on gentler south- and west-facing slopes where soils are moderately shallow (35–80 cm) to bedrock. The mature forest canopy is typically dominated by lodgepole pine with sparse hybrid white spruce and subalpine fir. The shrub layer is relatively dense and dominated by black huckleberry. The herb layer is relatively sparse, but feathermoss cover is nearly complete. The vegetation is distinguished from other sites by the presence of Douglas maple and the absence of velvet-leaved blueberry, three-leaved foamflower, and false Solomon's-seal.
- **05** Sxw Huckleberry Highbush-cranberry Site Series is the most common site series on submesic sites with loamy soils. It occurs on upper slope positions, on broad, rounded hill crests with deep soils, and on some steep south- and west-facing slopes where soils are deep and coarse fragment content is not high. The mature forest canopy is dominated by hybrid white spruce or lodgepole pine. Subalpine fir is by far the most abundant understory tree species. The undergrowth vegetation is similar to that of the /01 site series but is distinguished by having less abundant (<10% cover) oak fern, three-leaved foamflower, and leafy mosses.

Wetter sites Sites wetter than those of the zonal site series are very common in the SBSwk1 due to the relatively wet climate and large volumes of soil seepage water. They occur on lower slopes and in the bottoms of small valleys, on seepage areas, and along streams and wetlands. Compared to the zonal site series, they have less lodgepole pine, birch-leaved spirea, and black huckleberry but more spiny wood fern, sweet-scented bedstraw, and common horsetail.

- 06 Sxw Pink spirea Oak fern Site Series occurs on moist sites in cold air accumulation areas, primarily in small, shallow depressions adjacent to wetlands. The mature forest typically has a relatively open canopy dominated by hybrid white spruce and sparse tree regeneration. The undergrowth vegetation is distinguished by its vigorous low shrub layer, dominated by abundant pink spirea and black twinberry. The herbaceous layer is diverse, containing many species with more than 1% ground cover. Knight's plume moss covers most soil surfaces.
- 07 Sxw Twinberry Oak fern Site Series is found primarily on moist lower and toe slope positions along stream channels. These are often fluvial terraces and are typically cold air drainages. The mature forest canopy is typically dominated by large hybrid white spruce trees with a subcanopy of subalpine fir. The undergrowth is distinguished by a vigorous shrub layer, dominated by black twinberry and thimbleberry, and including red elderberry. Oak fern is abundant and, along with other ferns, dominates the herb layer. Moss cover is incomplete.
- 08 Sxw Devil's club Site Series occurs on moist lower slopes where there is a nearly sustained, relatively high volume of seepage water flow near the surface. It typically does not occur in cold air accumulation areas. The mature forest canopy is dominated by a mixture of hybrid white spruce and subalpine fir with little or no lodgepole pine. The undergrowth is dominated by and distinguished by devil's club and ferns, including lady fern, spiny wood fern, and oak fern. Mosses cover less of the soil surface than in most other SBSwk1 sites.

- **09** Sxw Horsetail Site Series occurs on level or gently sloping sites with a persistent near-surface (<50 cm) water table. These sites are primarily at the toe of slopes and are often adjacent to wetlands. Soils are typically Gleysols and, less commonly, Organics. The mature forest canopy is predominantly small, widely spaced hybrid white spruce with a small component of subalpine fir. Trees are often rooted on raised microsites. The undergrowth is distinguished by abundant (>5% cover) common horsetail. Common shrubs are black gooseberry and black twinberry.
- 10 Sxw Devil's club Lady fern Site Series occurs in the Prince George Forest Region but has not been recorded in the Cariboo Forest Region.
- 11 SbSxw Scrub birch Sedge Site Series occurs in wet depressions where a water table is near (<50 cm) the surface. These are primarily forested wetlands. The mature forest canopy is relatively open, and dominated by black spruce or white spruce. The undergrowth is distinguished by abundant (>5% cover) sphagnum moss.

Non-forested Sites Wetlands are common on the floor of small valleys and along gently sloping drainage channels. Sedge fens dominate the wetland area, although shrub fens and swamps are also present. Grasslands are virtually absent, and nearly all of the upland terrain is forested.

Key to Site Units of the SBSwk1

- 1a. Soils shallow (<80 cm) to bedrock and no significant seepage water input; slope position usually crest or upper; bedrock outcrops often present.
 - 2a. Soils predominantly very shallow (<35 cm) over bedrock; slope position mostly crest; cladonia and cladina lichens abundant (>5% cover); moisture regime very xeric or xeric.

SBSwk1/02 Pl - Huckleberry - Cladina

- 2b. Soils predominantly deeper; bedrock often not exposed; slope position mostly upper, occasionally crest; cladonia and cladina lichens not abundant; moisture regime xeric or subxeric.
 - 3a. Douglas maple cover >1% and velvet-leaved blueberry absent or incidental; slope gradient >20% and slope aspect predominantly south or west.

SBSwk1/04 SxwFd - Knight's plume

3b. Douglas maple cover <1%; velvet-leaved blueberry usually present; slope gradient <20% or, if steeper, then slope aspect predominantly north or east.

SBSwk1/03 Pl - Huckleberry - Velvet-leaved blueberry

- Soils deeper (>80 cm), or significant near-surface seepage water input; slope position various but seldom crest; bedrock outcrops usually not present;
 - 4a. Soil texture sand or loamy sand, and no evidence of seepage water or water table within 100 cm of surface; slope position predominantly mid, upper, or level; velvet-leaved blueberry present.

SBSwk1/03 Pl - Huckleberry - Velvet-leaved blueberry

- 4b. Soil texture finer or, if sand, then evidence of seepage water or a water table within 100 cm of soil surface; slope position various; velvet-leaved blueberry usually absent or incidental.
 - Slope gradient 30% or greater and slope aspect SE, S, SW, or W.

6a. Douglas maple cover >1%; soil coarse fragment content >50%, and large (>25 cm diameter) fragments common.

SBSwk1/04 SxwFd - Knight's plume

6b. Douglas maple absent or incidental; soil coarse fragment content <50%, or significant component of large fragments not present.

SBSwk1/05 Sxw - Huckleberry - Highbushcranberry

- 5b. Slope gradient <30% or, if steeper, then slope aspect NW, N, NE, or E.
 - 7a. Moisture regime predominantly submesic or mesic (occasionally subhygric in /01); no evidence of seepage water input or water table within 50 cm of soil surface.
 - 8a. Moisture regime predominantly mesic; oak fern abundant (>10% cover).

SBSwk1/01 Sxw - Oak fern

8b. Moisture regime predominantly submesic; oak fern not abundant (<10% cover).

SBSwk1/05 Sxw - Huckleberry - Highbushcranberry

- 7b. Moisture regime subhygric or wetter; evidence of seepage water inputs or water table within 50 cm of soil surface.
 - 9a. Moisture regime subhygric or rarely hygric; persistent water table not present within 50 cm of soil surface; slope position level, mid, lower, or toe.
 - 10a. Pink spirea cover 5% or greater; predominantly cold air accumulation basins near the perimeter of wetlands.

SBSwk1/06 Sxw - Pink spirea - Oak fern

10b. Pink spirea cover <5%; site variable but generally not in cold air accumulation basin.

11a. Devil's club cover >5% in mature forest; cover of black twinberry and thimbleberry variable; lower-slope seepage sites.

SBSwk1/08 Sxw - Devil's club

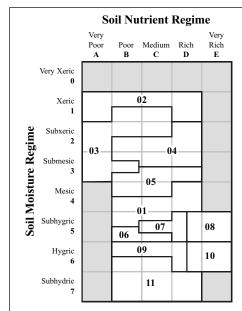
- 11b. Devil's club cover <5%; cover of black twinberry or thimbleberry >5%; mostly toe slope positions along stream channels.
 - SBSwk1/07 Sxw Twinberry Oak fern
- 9b. Moisture regime hygric or wetter; persistent water table within 50 cm of surface; slope position toe or depression.
 - 12a. Surface organic layers <50 cm thick; common horsetail cover >5% and sphagnum moss cover <5%.

SBSwk1/09 Sxw - Horsetail

12b. Surface organic layers >50 cm thick; sphagnum moss and common horsetail cover each >5%.

SBSwk1/11 SbSxw - Scrub birch - Sedge

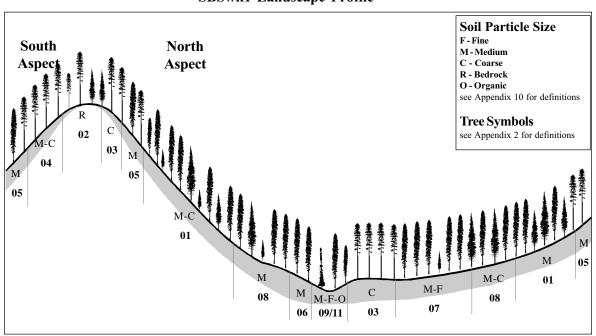
SBSwk1 Edatopic Grid



Site Series

- 01 Sxw Oak fern
- 02 Pl Huckleberry Cladina
- 03 Pl Huckleberry Velvet-leaved blueberry
- 04 SxwFd Knight's plume
- 35 Sxw Huckleberry Highbush-cranberry
- 06 Sxw Pink spirea Oak fern
- 07 Sxw Twinberry Oak fern
- 08 Sxw Devil's club
- 09 Sxw Horsetail
- 11 SbSxw Scrub birch Sedge

Note: SBSwk1/10 occurs in the Prince George Forest Region but has not been noted in the Cariboo Forest Region.



Site Features of SBSwk1 Site Series

Site Series	01	02	03	04	05
Key Features	zonal and other gently to steeply sloping sites with mesic or near-mesic moisture regime	very dry ridge and hill crests and upper slopes with very thin (< 35 cm) soils over bedrock; bedrock usually exposed	mostly dry sandy soils on gentle (some steep) slopes; also dry, shallow (40 - 80 cm) soils on N and E aspects and gentle S and W aspects	steep S and W aspects with shallow (40 - 80 cm) loamy soils or deep loamy soils that have a high coarse fragment content	wide range of submesic sites: upper slopes, broad crests, and gentle S and W aspects with deep loamy soils
Soil Moisture / Nutrient Regimes	mesic, subhygric / poor - rich	xeric / very poor - rich	xeric - submesic / very poor - medium	subxeric, submesic / poor - rich	submesic, mesic / poor - rich
Slope Position	upper - lower	crest	crest, upper, mid, level	mid, upper	upper, mid, level
Slope Aspect	all	all	all	SE, S, SW, W	all (N or E on steep slopes)
Slope Grade (%)	0 - 50 (70)	0 - 30	0 - 70	> 30	0 - 50 (70)
Soil Texture	gravelly loamy, sand, silty	gravelly loamy	sand, gravelly sand	loamy, gravelly loamy	loamy, gravelly loamy
Humus Form and	Hemimor,	Xeromor	Hemimor,	Hemimor	Hemimor
Thickness (cm)	Hemihumimor 3 - 8	1 - 3	Xeromor 1 - 8	3 - 8	3 - 8
Occurrence /	predominant /	uncommon /	common /	uncommon /	common /
Size /	large /	small /	medium /	small /	medium /
Distribution	wide	wide	wide	wide	wide

Site Features of SBSwk1 Site Series (continued)

Site Series	06	07	08	09	11
Key Features	moist sites in cold air accumulation basins, often adjacent to wetlands	moist, lower and toe slope positions; often on level to gently sloping sites adjacent to stream channels	very moist lower slope positions with significant seepage volumes; moist, rich sites	wet, level to gently sloping sites with near-surface (< 50 cm) water table and < 50 cm of peat over mineral soil	wet, level to gently sloping sites with near- surface (< 50 cm) water table and 50 cm or more of peat over mineral soil
Soil Moisture /	subhygric /	subhygric /	subhygric /	hygric /	hygric, subhydric
Nutrient Regimes	poor, medium	medium, rich	rich, very rich	poor - rich	/ poor - rich
Slope Position	toe, lower	middle, lower, toe, level	lower, middle	toe, depression	depression
Slope Aspect	all	all	all, but mostly N	all	N/A
Slope Grade (%)	< 20	0 - 20 (40)	0 - 50	0 - 5	0 - 5
Soil Texture	loamy, gravelly loamy	gravelly loamy, silty	gravelly loamy, sand	loamy, silty	organic
Humus Form and	Hemimor	Hemimor,	Hemihumimor,	Hydromor	Organic soil
Thickness (cm)	3 - 8	Mormoder 3 - 8	Hemimor 5 - 20	5 - 50	
Occurrence /	uncommon /	common /	common /	uncommon /	uncommon /
Size /	small - medium /	medium /	medium - large /	small - medium /	small /
Distribution	wide	wide	wide	wide	wide

SBSwk1 Vegetation Table^a

	Site Unit	02	03	04	05	01	06	07	08	09	11	
Tree	Pinus contorta	11111	11111	11111	1111		ш	•				lodgepole pine
Layer	Abies lasiocarpa	Ш	111		1111	1111		Ш		Ш	Ш	subalpine fir
	Picea engelmannii x glauca		Ш	Ш	111111	11111	IIIIII	11111	Ш	111111	IIII	hybrid white spruce
Shrub	Sorbus scopulina	111	<u>.</u>	III	11	!				_		western mountain ash
Layer	Spiraea betulifolia	11	111	11	111	I		_	_		_	birch-leaved spirea
	Vaccinium membranaceum	111111	11111	11111	IIII	III			<u> </u>			black huckleberry
	Vaccinium myrtilloides						Ш					velvet-leaved blueberry
	Amelanchier alnifolia			Ш	ш	11	Ш					saskatoon
	Acer glabrum			Ш								Douglas maple
	Lonicera involucrata			Ш	111	111			11		ш	black twinberry
	Rubus parviflorus			11	111	111			Ш			thimbleberry
	Spiraea douglasii						1111			ı	ı	hardhack
	Sambucus racemosa								II			red elderberry
	Oplopanax horridus											devil's club
	Ledum groenlandicum											Labrador tea
	Betula glandulosa											scrub birch
Herb	Clintonia uniflora			II	III	111	Ш		1			queen's cup
Layer	Aralia nudicaulis			III								wild sarsaparilla
	Gymnocarpium dryopteris	11		III	III		Ш					oak fern
	Cornus canadensis	111	1111	III	IIIII	1111	IIII		111			bunchberry
	Streptopus roseus	11		Ш	III	111	Ш	III	11	III		rosy twistedstalk
	Smilacina stellata				III	•						star-flowered false Solomon's-seal
	Tiarella trifoliata					11	Ш	111	111	III		foamflower
	Smilacina racemosa						Ш	11	11			false Solomon's-seal
	Dryopteris expansa						Ш	111		III		spiny wood fern
	Veratrum viride					111	Ш					Indian hellebore
	Galium triflorum						Ш	II	II	1		sweet-scented bedstraw
	Equisetum spp.						Ш	111			111	horsetails
	Potentilla palustris											marsh cinquefoil
	Carex disperma									1		soft-leaved sedge
Moss	Cladina spp.	1111	Ш									reindeer lichens
Layer	Cladonia spp.	111	•	H								cladonia lichens
Lujei	Dicranum spp.	1111	•	H			Ш					heron's-bill mosses
	Peltigera spp.	Ш	Ш	Ш		1	Ш	1	Ш		ш	pelt lichens
	Pleurozium schreberi	11111					Ш	1111	111			red-stemmed feathermoss
	Hylocomium splendens	Ш				1111		1	1		1	step moss
	Brachythecium spp.			Ш		II	Ш	iII	iII			ragged mosses
	Rhytidiadelphus triquetrus				ш	iii	iii	III	IIII	ii .		electrified cat's-tail moss
	Mnium spp.				i	IIII	iii	IIIII	IIIII	iiii		leafy mosses
	Sphagnum spp.				_					i	ш	sphagnum

a Species abundance: ■ present in 40–60% of plots surveyed; ■ >60% of plots, mean cover <1%; ■ ■ >60% of plots, mean cover 1–7%; ■ ■ ■ >60% of plots, mean cover >7–15%; ■ ■ ■ >60% of plots, mean cover >15%

SBSwk1 Silviculture Considerations

Silviculture Practices and Options

Predominant silviculture system in the SBSwk1 is even-aged management (clearcutting), and the regeneration method is virtually all artificial (planting). Most sites are planted with Pl, Sxw, or Pl/Sxw mixtures. Mixing Sxw with Pl reduces the risk of white pine weevil damage and frost injury to Sxw. Some sites have been broadcast burned prior to planting, but mesic and drier sites are often planted without site preparation as long as they can be planted promptly following logging. Competing vegetation may be controlled as necessary by spot herbicide application around the planted tree. Some sites with vigorous competing vegetation prior to planting have been scarified (planting trails) but this practice is not common currently. Wet sites are usually planted with Sxw, often on artificially created mounds.

Principal crop tree species are Sxw and Pl. Fd occurs locally on steep south-facing slopes, but is common only near the SBSmw boundary.

Partial harvest system experience is virtually nonexistent.

Advance regeneration on mesic and near-mesic sites is predominantly Bl and Sxw. Most Sxw stems and many of the younger Bl stems are of good form and vigour.

Principal Insect, Disease, and Abiotic Damage Concerns

Summer frost may reduce growth and result in mortality of Sxw stems, especially on gentle lower slopes and depressions.

White pine weevil has caused terminal leader dieback in some Sxw plantations.

Black army cutworm defoliates young Sxw and Pl seedlings, usually only for one season, on some recently burned sites.

Tomentosus root rot, laminated root rot, and Armillaria root disease reduce growth and result in mortality of young or immature Pl and Sxw. Damage may be increased by partial harvesting.

Spruce beetle damage risk is high, especially in valley bottoms and in the vicinity of windthrow and poor logging.

Two-year-cycle budworm can cause severe defoliation, especially on regeneration in partially harvested stands.

Blister rusts and gall rusts are common and can cause localized severe damage to regenerating Pl stands.

Douglas-fir beetle causes localized spot mortality of Fd stems.

SILVICULTURE CONSIDERATIONS

Silviculture Considerations Table — Harvest Assumptions

No or limited canopy refers to clearcuts and larger patch (generally >60 m wide) group selection systems;

Canopy present for most stands refers to group selection systems with small to moderate-size (generally 30–60 m wide) harvested groups. **Canopy present** for wet spruce stands (/09 and /11 site series) refers to single tree or very small (two to few trees) group selection.

SBSwk1 Site Series - Silviculture Considerations

Site series	Ecologically adapted tree	Principal site facto establishment and	_	Vegetation potential and complex					
	species	No or limited canopy Canopy present							
01	P:Fd (near	summer frost		medium (S and W aspects) to high (N and E aspects); Mixed					
	SBSmw)	Fd	Fd	shrub - moist forb					
	Pl	light deficits (vegetation	on overtop)						
	Sxw	Fd, Pl, Sxw, Act	Fd, Pl, Sxw, Act	•shrub cover often increases significantly 3–4 years following					
	S:B1	snowpress		logging; burning reduces shrubs, but herbaceous cover usually					
	D:Act	•		well developed within 3-4 years, especially on N aspects, after					
		broadcast burning.							
	planting spot •survival and	; in partial cuts, survival	and growth of Pl li	adequate to restock clearcut sites if vegetation controlled at kely poor in tree-shaded microsites; on steeper slopes in western portions of SBSwk1, near the					
	SBSmw;								
				ill improve restocking success;					
	•natural regen		nd BI will likely res	est floor, dense shrub and herb vegetation, and cool temperatures; tock sites with low vegetation cover and exposed mineral soil near					
		rning reduces above-groumage greatest where tall		 4 years, depending on intensity of burn and slope aspect; ion is abundant; 					
	•advance Bl <	25 cm tall is generally of	f good form and vig	our, and its growth releases following canopy opening.					

Site series	Ecologically adapted tree	Principal site factor establishment and	C	Vegetation potential and complex				
	species	No or limited canopy	Canopy present					
02	P:Fd (near SBSmw)	moisture deficits Sxw, Bl	Sxw, Bl	low to medium; Ericaceous shrub - low shrub				
	P1	light deficits		•shrub and herbaceous cover generally develops slowly				
	T:B1		P1	following logging and is less vigorous than in /01 site series.				
	Sxw	rooting restrictions (bedrock)						
_	nutrient deficits							
	soil;		, 1	estock cleared sites if planted in microsites with relatively deep r to moderate due to moisture stress; best in deeper soil;				
	•PI natural reg well distribu	generation generally adeq	uate to restock clea	red and partial-cut sites if sufficient numbers of cones present and may increase ingress rate; establishment and growth likely poor in				
		1	uate to restock site	es on deeper soil microsites under partial Fd canopy;				
	•maintenance	of soil organic layers and	woody debris imp	ortant for long-term nutrient availability and natural regeneration.				

Site series	eries adapted tree	Principal site factor establishment and		Vegetation potential and complex
	species	No or limited canopy	Canopy present	-
03	3 P:Fd (near SBSmw) Pl T:Bl Sxw	moisture deficits Bl, Sxw	Bl, Sxw	medium; Ericaceous shrub - low shrub
		summer frost (terraces)	·	 vegetation development following logging and site
		Fd, Sxw, Bl	Fd, Sxw, Bl	preparation limited by dry, nutrient-poor soils.
		nutrient deficits (sand s	soils)	
		Fd	Fd	
		light deficits		
			Pl, Fd	
	and growth l •survival and	ikely poor in tree-shaded	microsites; d Bl generally poor	o restock site without vegetation control; in partial cuts, survival to moderate due to moisture stress; may be somewhat improved

- under partial canopy and by mineral soil exposure;
- •Pl natural regeneration ingress is very limited by deep soil organic layers; scarification generally required;
- •advance BI <25 cm tall is generally of good form and vigour, and growth releases following canopy opening;
- •maintenance of soil organic layers and woody debris important for long-term nutrient availability and natural regeneration.

Site series	Ecologically adapted tree	Principal site facto establishment and		Vegetation potential and complex						
	species	No or limited canopy	Canopy present							
04	P:Fd	moisture deficits		medium; Mixed shrub - dry shrub						
	Pl	Sxw, Bl, Ep	Sxw, Bl, Ep							
	Sxw	light deficits		 increase in vegetation following tree canopy removal relatively 						
	S:Bl		<u>Pl</u> , <u>At</u> , Ep	small and slow due to dry soils.						
	D:At, Ep	D:At, Ep •Fd more common on these than on other sites of SBSwk1, but occurs mostly near SBSmw boundary;								
05	 survival of planted Pl and Fd generally moderat microsites of partial cuts; Fd survival may be po Pl natural regeneration generally adequate to reson exposed mineral soil or mixed mineral/organ 		may be poor on all uate to restock clear eral/organic materia ate to high without ally adequate to rest	red sites if sufficient numbers of cones present and well distributed als; scarification may be required on some sites; vegetation control, but growth slow due to moisture stress;						
03	P:Pl Sxw	light deficits (vegetatio	<i>n overtop)</i> Pl	medium, wixed sinub - dry sinub						
	S:Bl moisture deficits •shrub and herbaceous vegetation development foll Sxw, Bl •clearing less vigorous and slower than in /01 site s									
		growth of planted Pl, Sxv al cuts, Pl survival likely		adequate to restock cleared sites if vegetation controlled at planting microsites;						
	•Pl natural reg	generation limited by thic	k soil organic layers	s; scarification generally required;						
		natural regeneration will geral soil is exposed;	generally establish n	ear mature stand edges, and in partial cuts where vegetation cover is						
	advance Sxw	•advance Sxw and BI regeneration <25 cm tall is often of good form and vigour; growth releases following canopy opening.								

Site series	Ecologically adapted tree	Principal site factor establishment and	C	Vegetation potential and complex					
	species	No or limited canopy	Canopy present						
06	P:Pl	summer frost		medium to high; Mixed shrub - pink spirea					
	Sxw	Sxw, Bl	Sxw, Bl						
	S:Bl	cold, moist soils		 cover of shrubs typically increases following canopy opening; 					
	D:Act	Pl, <u>Sxw</u> , <u>Bl</u>	Pl, <u>Sxw</u> , <u>Bl</u>	•shrub cover variable, greatest on wettest sites.					
		light deficits (vegetatio	n overtop)						
		all species	all species						
	•sites difficult	*sites difficult to restock due to cold, moist soils and frequent summer frost;							
	survival and	•survival and growth of planted Sxw and Bl generally poor, due to severe frost and cold soils; may be somewhat improved on							
	raised micro	raised microsites where vegetation cover is reduced and soils are warmed;							
	•planted Pl su	rvival likely moderate on	raised microsites v	where vegetation is controlled;					
	•soils very sus	sceptible to compaction a	nd rutting.						
07	P:Pl	light deficits (vegetatio	n overtop)	high; Mixed shrub - moist shrub					
	Sxw	all species	all species						
	S:Bl	summer frost (gentle s	lopes)	•vigorous and nearly continuous cover of shrubs usually present in					
	D:Act	Sxw, Bl, Ep	Sxw, Bl, Ep	mature stands; cover and height usually increase following canopy					
	At	cold, wet soils		opening; if dominant shrubs controlled, they are often quickly					
	Ep	Pl, Sxw, At, Ep	Pl, Sxw, At, Ep	replaced by other species.					
				adequate to restock cleared sites if planted on raised microsites and					
		is controlled at planting							
	 Sxw and Bl is vegetation; 	natural regeneration may	partially restock sit	e, but full stocking not reliable due to frost and competing					
	•Bl advance r	egeneration <25 cm tall a	nd most Sxw is of	good form and vigour, and releases following canopy opening;					
	 frost damage 	to Sxw and Bl may be so	mewhat reduced by	y planting on raised microsites and under partial canopy;					
	•At and Ep best adapted to climates near SBSmw boundary.								

Site series	Ecologically adapted tree	Principal site factor establishment and		Vegetation potential and complex
	species	No or limited canopy	Canopy present	
08	P:Sxw	light deficits (vegetation	overtop)	high; Mixed shrub - tall fern
	S:Bl	all species	all species	•vigorous shrub and herbaceous vegetation; cover and height of
	P1	summer frost (gentle slo	ppes)	vegetation generally increases following canopy opening;
	D:Act	Sxw, Bl		devil's club generally declines following canopy opening but
	At			other shrubs and some forbs increase; lady fern is
	Ep			characteristic.
		eration ingress of all speci susceptible to compaction		
09	P:Sxw	summer frost		medium; Mixed shrub - wet forb
	S:Bl	Sxw, Bl, Pl, Act	Sxw, Bl, Pl, Act	
	Pl	cold, wet soils		•vegetation development limited by cold, wet soils and thick soil
	D:Act	all species	all species	organic layers.
		light deficits (vegetation	overtop)	
		Sxw, Pl, Act	Sxw, <u>Pl</u> , <u>Act</u>	
	1	vity sites for timber, and d		
				xcept moderate on raised microsites;
				well adapted to sites with near-surface water table;
		to Sxw may be slightly re if large upslope cold air s		n raised microsites, but benefits likely overwhelmed by cold air
		ceptible to soil rutting and		
	 trees with lar 	ge, dense crowns exposed	to winds by logging	g generally very susceptible to windthrow.

Site series	Ecologically adapted tree	Principal site factor establishment and	0	Vegetation potential and complex				
	species	No or limited canopy	Canopy present					
11	P:Pl	summer frost		medium; Mixed shrub - sphagnum				
	Sxw	<u>Sxw</u> , Pl	<u>Sxw</u> , Pl					
	T:Sb	cold, wet soils		•vegetation development limited by cold, wet organic soils.				
		Sxw, Pl, Sb	Sxw, Pl, Sb					
	•very low proc	ductivity sites for timber,	and very difficult to	restock after logging;				
	•survival and e	early growth of planted Sx	w generally poor,	except moderate on raised microsites;				
	•Pl is not com	mon on these sites; Pl gro	wth to maturity not	well adapted to sites with near-surface water table;				
	•Sb growth ve	ry slow, and value for tim	ber very low;					
	•frost damage to Sxw may be slightly reduced by planting on raised microsites, but benefits likely overwhelmed by cold air							
	accumulation	accumulation if large upslope cold air source is present;						
	•trees with larg	ge, dense crowns exposed	to winds by loggin	g generally very susceptible to windthrow.				

TABLE A1.1. Site units (shaded) in the Cariboo Forest Region and their precorrelation equivalents (unshaded).

				Current	(correlated)	BEC unit c	ode					
BEC Unit	BEC Unit Site unit											
		/01	/02	/03	/04	/05	/06	/07	/08	/09	/10	/11
						Equiva	alent preco	rrelation co	de			
	BEC Unit						Ecosyste	m unit				
AT	AT	(site units not yet described)										
BGxh3	PPBGg					(see Iv	erson and	Coupé 1996	ia)			
BGxw2	PPBGe					(see Iv	erson and	Coupé 1996	b)			
CWHds1	CWHc	see Guide for Vancouver Region (Green and Klinka 1994)										
ESSFdc2	ESSFe1				see Guid	le for Kamlo	ops Forest	t Region (Ll	loyd et al. 1	990)		
ESSFwc3	ESSFh2	/01	/02	/03								
ESSFwk1	ESSFh1	/01	/02	/03	/05	/04	/07 in p	art /07 in p	art			
ESSFxc	ESSFd				see Guid	le for Kamlo	ops Forest	t Region (Ll	loyd et al. 1	990)		
ESSFxv1	ESSFg, ESSF undif	npe	npe	npe	npe	npe	npe	npe	npe			
ESSFxv2	ESSFg, ESSF undif	npe	npe	npe	npe	npe	npe	npe	npe			
ICHdk	ICHe3	/01	/02	/03	/04	/05	/06	/07	/08	/09		
ICHmk3	ICHe2	/01,/04	/02	/03	/05	/06	/07	/08				
ICHmw3	ICHm1				see Guid	le for Kamlo	ops Forest	t Region (Ll	loyd et al. 1	990)		
ICHwk2	ICHh1	/01,/05	/02	/03	/04	/06 in pa	art /06 in p	oart /07	/08			
ICHwk4	ICHh2	/01,/06	/02	/03	/04	/05	/07	/08	/09			
IDFdk3	IDFb2	/01	/03	/02	/05	/04	/06	/07	/08	/09, /10		
IDFdk4	IDFb5	/01	/02	/03	/04	/05	/06	/07	/08	/09	/10	
IDFdw	IDFundiff.	npe	npe	npe	npe	npe	npe	npe	npe			
IDFmw2	IDFj1				see Guid	le for Kamlo	ops Forest	t Region (Ll	loyd et al. 1	990)		
IDFxm	IDFa4	/01	/02	/03	/04	/05	/06	/07	/08	/09		
IDFxw	IDFa2	/01,/05,/0	07 /02	/03	/04	/06	/08	/09				

^aNo previous equivalent (npe)

CORRELATION

TABLE A 1.1 (continued)

BEC unit	Current (correlated) BEC unit code Site unit											
DEC unit		/01	/02	/03	/04	/05	/06	/07	/08	/09	/10	/11
						Equiv	lent Precor	relation Co	de			
	BEC unit						Ecosysten	n Unit				
MHmm2	MHb			se	e Guide for	r Vancouv	er Forest Ro	egion (Gree	n and Klinl	(a 1994)		
MSdc2	MS undiff	npe	npe	npe	npe	npe	npe	npe	npe	npe	npe	npe
MSdv	MS undiff	npe	npe	npe	npe	npe	npe	npe	npe	npe	npe	npe
MSxk	MSc				see Guide	for Kaml	oops Forest	Region (Ll	oyd et al. 1	990)		
MSxv	MSd	/01	/03	/02	/04	/05	/06	/07	/08			
SBPSdc	SBSa3	/01	/02	/03,/04	/05	/06	/07	/09	/08			
SBPSmc	SBSa2			5	see Guide fo	or Prince I	Rupert Fore	st Region (I	Banner et al	1993)		
SBPSmk	SBSb	/01	/02	/03	/04	/05	/06	/07	/08,/09			
SBPSxc	SBSa1	/01	/02,/03	/05	/04	/06	/07					
SBSdw1	SBSk1	/01	/02	/03	/04	/05	/06	/07	/08	/09		
SBSdw2	SBSk2	/01	/02	/03	/04	/05	/06	/07	/08	/09	/10	/11
SBSmc1	SBSm2	/01	/02	/03	/04	/06	/05	/07	/08			
SBSmc2	SBSe1	/01	/02	/03	/04	/05	/06	/07	/08	/09	/10	/11
SBSmh	SBSI	/01	/02	/03	/04	/05	/06	/07	/08	/09		
SBSmm	SBSm				see Guide	for Kaml	oops Forest	Region (Ll	oyd et al. 1	990)		
SBSmw	SBSc	/01	/02	/05	/03,/04	npe	/06	/07	/08	/09	/10	
SBSwk1	SBSj1	/01	/02	/03,/04	/05	/06	npe	/07	/08	/10	/09	/11

^aNo previous equivalent (npe)

APPENDIX 5 ACTUAL SOIL MOISTURE REGIME RELATIONSHIP TO RELATIVE SOIL MOISTURE REGIME AND BIOGEOCLIMATIC UNIT

BEC				Relative s	soil moistu	ire regime		
unit	0	1	2	3	4	5	6	7
BGxh3	ED	ED	ED	ED	ED	SD	M	W
BGxw2	ED	ED	ED	ED	ED	SD	M	W
IDFxw	ED	ED	VD	VD	MD	SD	M	W
IDFxm	ED	ED	VD	VD	MD	SD	M	W
SBPSxc	ED	ED	VD	VD	MD	SD	M	W
SBPSdc	ED	ED	VD	MD	SD	F	M-VM	W
SBPSmk	ED	VD	VD	MD	SD	F	M-VM	W
IDFdk3	ED	VD	VD	VD	MD	F	M	W
IDFdk4	ED	VD	VD	VD	MD	F	M	W
IDFdw	ED	VD	VD	MD	MD	F	VM	W
IDFmw2	VD	VD	VD	MD	SD	F	VM	W
M Sxk	VD	VD	VD	VD	MD	F	M	W
M Sxv	VD	VD	VD	MD	SD	F	VM	W
SBPSmc	VD	VD	VD	MD	SD	F	M-VM	W
SBSdw1	VD	MD	MD	SD	SD	F	M	W
SBSdw2	VD	MD	MD	SD	SD	F	M	W
SBSmh	VD	MD	MD	SD	SD	M	VM	W
SBSmw	VD	MD	MD	SD	F	M	VM	W
SBSmc1	VD	MD	MD	SD	F	M	VM	W
SBSmc2	VD	MD	MD	SD	F	M	VM	W
SBSwk1	VD	MD	SD	F	F	M	VM	W
ICHdk	VD	VD	VD	MD	SD	M	VM	W
ICHmk3	VD	MD	MD	SD	F	M	VM	W
ICHwk2	VD	MD	SD	F	F	M	VM	W
ICHwk4	VD	MD	SD	F	F	M	VM	W
ESSFxv	VD	VD	MD	MD	SD	F	M	W
ESSFdc2	VD	MD	MD	SD	SD-F	M	VM	W
ESSFwk1	MD	MD	SD	F	M	M	VM	W
ESSFwc3	MD	MD	SD	F	M	M	VM	W

Actual Moisture Regime Codes:

ED=extremely dry; VD=very dry; MD=moderately dry; SD=slightly dry;

F=fresh; M=moist; VM=very moist; W=wet

Biogeoclimatic Unit Key for SE Guide Area

1a Forest containing western redcedar; primarily located on slopes of Rocky Mountain Trench between 700 and 1200 m elevation.

ICHvk2

- 1b Forest not containing western redcedar.
 - 2a Generally >1050 m in elevation; tree canopy dominated by subalpine fir and Engelmann spruce; *Rhododendron* albiflorum (white-flowered rhododendron) (p. 41)² or Valeriana sitchensis (Sitka valerian) (p. 221) present.
 - 3a Generally 1050–1300 m in elevation; mature trees relatively evenly distributed; generally some *Rubus parviflorus* (thimbleberry) (p. 36) on mesic and wetter sites.

ESSFwk1

3b Generally >1300 m in elevation; mature tree distribution often clumpy; *Rubus parviflorus* generally absent on mesic and wetter sites.

ESSFwc3

- 2b Generally <1050 m in elevation; tree canopy not dominated by subalpine fir and Engelmann spruce; *Rhododendron albiflorum* and *Valeriana sitchensis* absent.
 - 4a Tree canopy generally dominated by hybrid white spruce on mesic and wetter sites; *Oplopanax horridus* (devil's club) (p. 36) and/or *Vaccinium ovalifolium* (oval-leaved blueberry) (p. 42) present on mesic sites.
 - 5a Gymnocarpium dryopteris (oak fern) (p. 293) present on most sites; Oplopanax horridus abundant (>10% cover) on mesic sites; Athyrium filix-femina (lady fern) (p. 291) present on mesic sites.

SBSvk

5b Gymnocarpium dryopteris (oak fern) (p. 293) only present on mesic and wetter sites; Oplopanax horridus not abundant (<10% cover) on mesic sites; Athyrium filix-femina (lady fern) (p. 291) absent on mesic sites.

SBSwk1

² Page numbers refer to the publication *Plants of Northern British Columbia* (MacKinnon et al. [editors] 1992).

- 4b Tree canopy composition variable, but only occasionally dominated by hybrid white spruce on mesic sites; *Oplopanax horridus* and *Vaccinium ovalifolium* absent on mesic sites.
 - 6a Restricted to the lower valley slopes and valley bottoms of the Fraser River in the guide area; *Corylus cornuta* (beaked hazelnut) (p. 38) present and *Paxistima myrsinites* (falsebox) (p. 44) absent on mesic sites.

SBSmh

- 6b Geographic distribution not as in 6a; *Corylus cornuta* absent and *Paxistima myrsinites* present on mesic sites.
 - 7a *Tiarella trifoliata* (three-leaved foamflower) (p. 147) present on moist sites but *Calamagrostis rubescens* (pinegrass) (p. 240) absent on most sites.

SBSmw

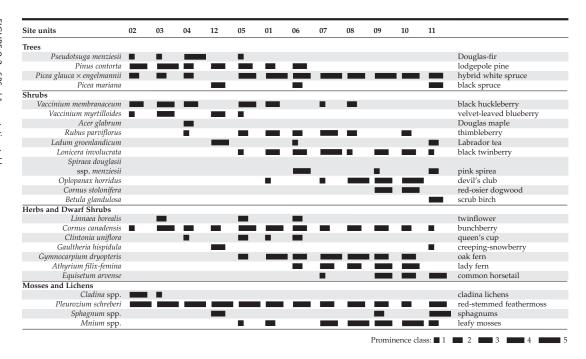
7b *Tiarella trifoliata* absent from moist sites but *Calamagrostis rubescens* present on mesic to xeric sites.

3.5 Identifying Seral Ecosystems

The biogeoclimatic ecological classification was developed based on samples of climax and late seral vegetation (forest stands older than 80 years). Because of this, environmental features must be more heavily relied upon when attempting to assess recently disturbed or seral sites. Since environmental features among site series can overlap considerably, disturbed sites are often difficult to identify. Remnant climax vegetation found in portions of the site not subjected to burning or heavy mechanical site preparation may help in the assessment. Otherwise, vegetation found in an adjacent mature stand with similar environmental features (e.g., same slope position and soil texture) can be used.

3.6 Management Interpretations

Interpretations are provided in two areas of the guide. Within the biogeoclimatic unit subsections (4.1–4.4) are direct interpretations. These relate to specific site units and are contained on the page facing the appropriate unit. Section 12 contains interpretations that can be made at a more general level than the site series, or that are best



Site Series Key

- 1a Main canopy mixed but dominated by Douglas-fir.
 - 2a Commonly on colluvial material; >50% coarse fragments; *Acer glabrum* (Douglas maple) (p. 35)¹ present.

SBSwk1/04

2b Never on colluvial material; <50% coarse fragments; *Acer glabrum* absent.

SBSwk1/05

- 1b Main canopy dominated by tree species other than Douglas-fir.
 - 3a Main canopy dominated by lodgepole pine or black spruce.
 - 4a Black spruce in main canopy; shrub layer often dominated by *Ledum groenlandicum* (Labrador tea) (p. 40).
 - 5a Organic soils, rarely lacustrine or fluvial; *Equisetum* spp. (horsetails) (p. 281–284) high cover (>10%).

SBSwk1/11

5b Lacustrine or glaciofluvial soils; *Equisetum* spp. absent.

SBSwk1/12

- 4b Black spruce absent from canopy; shrub layer not dominated by *Ledum groenlandicum*.
 - 6a Soils shallow to bedrock or coarse-textured (glacio)fluvial; *Vaccinium myrtilloides* (velvet-leaved blueberry) (p. 43) abundant (>10% cover) or lichens common (>5% cover).
 - 7a If sloping then aspect south-westerly; moderate herb cover (>10%); located on coarse-textured (glacio)fluvial soils or thin soils (40–80 cm) over bedrock.

SBSwk1/03

7b Aspect variable and slope position often crest; low herb cover (<10%); located on very thin soils (<35 cm) over bedrock.

SBSwk1/02

Page numbers refer to the publication Plants of Northern British Columbia (MacKinnon et al. [editors] 1992).

- 6b Soils variable and always deep (i.e., >80 cm to bedrock); Vaccinium myrtilloides and lichens not abundant.
 - 8a Often mid- to upper slope; generally moderately coarse to coarse-textured soils; *Gymnocarpium dryopteris* (oak fern) (p. 293) low to moderate cover (<10%).

SBSwk1/05

8b Usually mid- to lower slope or level; variable soil texture; *Gymnocarpium dryopteris* moderate to high cover (>10%).

SBSwk1/01

- 3b Main canopy dominated by hybrid white spruce.
 - 9a Shrub layer dominated by *Spiraea douglasii* ssp. *menziesii* (pink spirea) (p. 45); lacustrine soils; level slope position.

SBSwk1/06

- 9b *Spiraea douglasii* ssp. *menziesii* low cover (<2%) or absent; soils variable; slope position variable.
 - 10a *Oplopanax horridus* (devil's club) (p. 36) high cover (>5%); mid- to lower slope, level or depression.
 - 11a Cornus stolonifera (red-osier dogwood) (p. 48) moderate to high cover (>5%); Equisetum spp. (p. 281–284) cover high (>10%); level slope position adjacent to water or in depression.

SBSwk1/10

11b Cornus stolonifera low cover (usually <1%); Equisetum spp. low cover (<1%); mid- to lower slope, or level.

SBSwk1/08

- 10b *Oplopanax horridus* cover low (usually <5%); slope position and soil texture variable.
 - 12a Equisetum spp. high cover (>10%); on level or in depression; seepage water usually present.

SBSwk1/09

- 12b *Equisetum* spp. cover low (<10%); upland site; seepage water generally absent.
 - 13a Canopy has lodgepole pine and/or Douglasfir present; slope position variable; parent material variable; coarse fragment content variable.

14a Usually mid- to upper slope; *Gymnocarpium dryopteris* low cover (usually <10%) or absent; lodgepole pine usually a significant proportion (>25%) of the canopy.

SBSwk1/05

14b Usually mid- to lower slope, or level; *Gymnocarpium dryopteris* moderate to high cover (usually >10%); lodgepole pine usually a minor component of, or absent from, the canopy.

SBSwk1/01

13b Canopy of hybrid white spruce and subalpine fir, lodgepole pine very low cover (<1%) or absent, Douglas-fir absent; dominantly toe or level slope positions; dominantly fluvial parent material; coarse fragments <10% unless morainal material.

SBSwk1/07

SBSwk1/01

Sxw - OAK FERN



Vaccinium membranaceum



Tree Laver: 30% cover

hybrid white spruce, subalpine fir,

[lodgepole pine]

Shrub Layer: 30% cover

Lonicera involucrata Ribes lacustre

Vaccinium membranaceum

Rubus parviflorus

Viburnum edule [Oplopanax horridus

subalpine fir

hybrid white spruce

Herb Layer: 70% cover

Gymnocarpium dryopteris (oak fern) Cornus canadensis Orthilia secunda

Rubus pedatus Streptopus roseus Lycopodium annotinum Tiarella trifoliata

Clintonia uniflora Smilacina racemosa

Aralia nudicaulis

Moss Layer: 90% cover Ptilium crista-castrensis Pleurozium schreberi

Mnium spp. [Hylocomium splendens (black twinberry) (black gooseberry) (black huckleberry)

(thimbleberry) (highbush-cranberry)

(devil's club)]

(bunchberry) (one-sided wintergreen) (five-leaved bramble) (rosy twistedstalk)

(stiff clubmoss) (foamflower) (queen's cup)

(false Solomon's-seal) (wild sarsaparilla)

(knight's plume) (red-stemmed

feathermoss) (leafy mosses) (step moss)]



Moisture Regime: Nutrient Regime:

*Slope Gradient (%): * Slope Position:

Parent Material: *Soil Texture:

3-5 (submesic-subhygric)

B-D (poor-rich) 0-56, commonly <40 mid to lower, level

variable moderately coarse to fine

Coarse Fragments (%): 0–75, usually <50

DISTRIBUTION: very common and large



Lonicera involucrata



Gymnocarpium dryopteris

Sxw - OAK FERN

INTERPRETATIONS

Site limitations:

- sites within this unit with medium- to finetextured 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) or protect advance regeneration.

Site preparation:

- see Section 12.1 - Pl, Sx, *Fd*, [*Bl*]

Species choice:

Vegetation potential: - moderate to high (black twinberry, thimbleberry,

fireweed)

Reforestation:

-plant sturdy stock as soon after harvesting as

possible.

-young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.

-restrict Fd to warm aspects on coarse-textured

soils within its natural range.

 -help maintain stand diversity on sites to be planted with Pl by mapping aspen patches prior to harvest and planting these areas with spruce.

 maintain Fd component, especially veterans that are valuable for wildlife and seed production.

Concerns:

 - 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 leading to cold air ponding will lead to frost damage of Fd and Sx regeneration; leaving a partial canopy and/or choosing a frost-resistant species (e.g., Pl) are advised.

PI - HUCKLEBERRY - CLADINA







Pleurozium schreberi

VEGETATION

Tree Laver: 20% cover

lodgepole pine, [Douglas-fir], [hybrid white

spruce]

Shrub Layer: 20% cover

Vaccinium

membranaceum

[Vaccinium myrtilloides (velvet-leaved

blueberry)]

(cow-wheat)]

(bunchberry)]

(twinflower)]

(red-stemmed feathermoss)

(dwarf blueberry)]

(black huckleberry)

subalpine fir hybrid white spruce

Herb Layer: 5% cover

[Epilobium angustifolium (fireweed)] Melampyrum lineare [Cornus canadensis Linnaea borealis

[Vaccinium caespitosum

Moss Layer: 75% cover Pleurozium schreberi

Dicranum spp. Cladina spp. Peltigera aphthosa

(dicranum mosses) (cladina lichens) (freckle lichen)

Polytrichum juniperinum (juniper haircap moss)

1-2 (xeric-subxeric)

A-B (very poor-poor)

SOIL AND SITE:

Moisture Regime: Nutrient Regime:

Slope Gradient (%):

* Slope Position: * Parent Material: 0 - 86crest and upper

colluvial or morainal veneer over bedrock medium to coarse

*Soil Texture: Coarse Fragments (%): 8-70

DISTRIBUTION: rare and small in size



Cladina spp.

PI - HUCKLEBERRY - CLADINA

INTERPRETATIONS

Site limitations:

- -very difficult sites to reforest; consider managing these sites primarily as wildlife habitat.
- site and soil conditions of this unit result in marginal forest productivity; seriously consider excluding logging from this unit.
- -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.

Silvicultural system: -minimize or align large slash accumulations when logging to help meet site preparation objectives

and reduce fire hazard.

Site preparation:

-light scarification for seedbed preparation or summer logging with no site preparation.

Species choice: $-\mathrm{Fd}$, Pl, (Bl, Sx)

Vegetation potential: –low

Reforestation:

- attempt to regenerate naturally if potential exists.
- -if natural regeneration is not feasible, plant Fd or P1.
- -Bl and Sx will be significantly less productive than Pl on these sites.

- -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 may lead to nutrient depletion and seriously reduce the number and distribution of cones; distribute woody debris and cones across these sites (i.e., lop and scatter).
- -sites within this unit are vulnerable to nutrient deficiency if forest floors are reduced; avoid site preparation methods that reduce forest floor thickness, such as slashburning or brushblading.

SBSwk1/03 PI – HUCKLEBERRY – VELVET-LEAVED BLUEBERRY



Vaccinium myrtilloides



Cornus canadensis



Pleurozium schreberi

VEGETATION

Tree Layer: 30% cover lodgepole pine, [hybrid white spruce], [subalpine fir]

Shrub Layer: 45% cover Vaccinium myrtilloides Vaccinium membranaceum Sorbus scopulina

Spiraea betulifolia Rosa acicularis Amelanchier alnifolia subalpine fir lodgepole pine

Herb Layer: 25% cover Cornus canadensis Linnaea borealis Clintonia uniflora Lycopodium complanatum Rubus pedatus Vaccinium caespitosum Moss Layer: 95% cover

Peltigera aphthosa Pleurozium schreberi Ptilium crista-castrensis Dicranum polysetum [Cladina rangiferina [Hylocomium splendens

(velvet-leaved blueberry) (black huckleberry)

(western mountain-ash) (birch-leaved spirea) (prickly rose) (saskatoon)

(bunchberry) (twinflower) (queen's cup) (ground-cedar)

(five-leaved bramble) (dwarf blueberry)

(freckle lichen) (red-stemmed feathermoss)

(knight's plume) (wavy-leaved moss) (reindeer lichen)] (step moss)]

SOIL AND SITE:

1-3 (xeric-submesic) Moisture Regime: Nutrient Regime: A-C (very poor-medium) Slope Gradient (%): 0-62

Slope Position:

variable, crest to level Parent Material: variable, often (glacio)fluvial

*Soil Texture: coarse Coarse Fragments (%): 5–88

DISTRIBUTION: common on upper (glacio)

fluvial terraces and sites with bedrock within 1 m of the

surface

PI - HUCKLEBERRY - VELVET-LEAVED BLUEBERRY

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 on site.

Silvicultural system: – minimize or align large slash accumulations when

logging to help meet site preparation objectives

and reduce fire hazard.

Site preparation: —light scarification for seedbed preparation or

summer logging with no site preparation.

Species choice: -Pl, Fd, [Sx], (Bl)

Vegetation potential: -low

Reforestation: -attempt to regenerate naturally if potential exists.

-if natural regeneration is not feasible, plant Pl or

Fd.

-plant Sx on moist microsites only.

-Bl is significantly less productive than Pl on these

sites.

Concerns: – 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 may lead to nutrient depletion and seriously reduce the number and distribution of cones; distribute woody debris and cones across

these sites (i.e., lop and scatter).

- sites within this unit are vulnerable to nutrient deficiency if forest floors are reduced; avoid site preparation methods that reduce forest floor thickness, such as slashburning or brushblading.

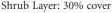
SBSwk1/04

SxwFd - KNIGHT'S PLUME

VEGETATION

Tree Laver: 50% cover

Douglas-fir, hybrid white spruce, [lodgepole pine]



Acer glabrum Amelanchier alnifolia Vaccinium

membranaceum Rubus parviflorus Ribes lacustre Spiraea betulifolia Rosa acicularis Vihurnum edule subalpine fir

(Douglas maple) (saskatoon) (black huckleberry)

(thimbleberry) (black gooseberry) (birch-leaved spirea) (prickly rose) (highbush-cranberry)

Herb Layer: 20% cover Cornus canadensis Streptopus roseus Aralia nudicaulis Smilacina racemosa Orthilia secunda Disporum hookeri Clintonia uniflora

Moss Layer: 70% cover Pleurozium schreberi

Rhytidiadelphus triquetrus Hylocomium splendens Ptilium crista-castrensis Dicranum polysetum

(bunchberry) (rosy twistedstalk) (wild sarsaparilla) (false Solomon's-seal) (one-sided wintergreen) (Hooker's fairybells) (queen's cup)

(red-stemmed feathermoss) (electrified cat's-tail moss) (step moss) (knight's plume) (wavy-leaved moss)



Moisture Regime: Nutrient Regime: Slope Gradient (%):

* Slope Position: * Slope Aspect: Parent Material:

*Soil Texture: Coarse Fragments (%): 5-88, usually >50

2-3 (subxeric-submesic) B-D (poor-rich) 12 - 63

mid to upper, crest generally southerly variable, commonly colluvial

medium to coarse

DISTRIBUTION: uncommon; small areas occurring on S to W facing slopes









Hylocomium splendens

SxwFd - KNIGHT'S PLUME

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.

Silvicultural system: – assess partial cutting feasibility.

-minimize or align large slash accumulations when logging to help meet site preparation objectives

and reduce fire hazard.

-light scarification for seedbed preparation or Site preparation:

summer logging with no site preparation.

Species choice: -Fd, Pl, Sx, [Bl]

Vegetation potential: -low

-maintain Fd component, especially veterans that Reforestation:

are valuable for wildlife and seed production. -attempt to preserve Fd advance regeneration

when partial cutting.

-promote natural Pl and Fd regeneration by light

scarification or spot screefing.

-only plant Sx and Bl on moister microsites.

-young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.

- -full tree harvesting may lead to nutrient depletion and seriously reduce the number and distribution of cones; distribute woody debris and cones across these sites (i.e., lop and scatter).
- -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.
- -sites within this unit are vulnerable to nutrient deficiency if forest floors are reduced; avoid site preparation methods that reduce forest floor thickness, such as slashburning or brushblading.

Sxw - HUCKLEBERRY - HIGHBUSH-CRANBERRY



Vaccinium membranaceum

VEGETATION

Tree Laver: 30% cover

hybrid white spruce, lodgepole pine, subalpine fir, [Douglas-fir]

Shrub Layer: 45% cover

Vaccinium

(black huckleberry)

membranaceum Rubus parviflorus Spiraea betulifolia Sorbus scopulina Ribes lacustre Rosa acicularis Vihurnum edule

(birch-leaved spirea) (western mountain-ash) (black gooseberry) (prickly rose) (highbush-cranberry) (black twinberry)

(thimbleberry)

Lonicera involucrata subalpine fir Herb Layer: 60% cover

Cornus canadensis (bunchberry) Clintonia uniflora (queen's cup) Gymnocarpium dryopteris (oak fern)

Streptopus roseus (rosy twistedstalk) Rubus pedatus (five-leaved bramble) Orthilia secunda (one-sided wintergreen)

Epilobium angustifolium (fireweed) Linnaea borealis (twinflower) Lycopodium annotinum (stiff clubmoss)

Moss Layer: 80% cover Pleurozium schreberi

(red-stemmed feathermoss) Ptilium crista-castrensis (knight's plume) (electrified cat's-tail

[Rhytidiadelphus triquetrus [Hylocomium splendens

moss)] (step moss)]

3–4 (submesic-mesic)

B-D (poor-rich)

0-75, usually <50

SOIL AND SITE:

Moisture Regime: Nutrient Regime: *Slope Gradient (%):

Slope Position: variable, commonly upper and mid morainal, glaciofluvial Parent Material: *Soil Texture: generally medium to

coarse, occasionally fine Coarse Fragments (%): 0–90

DISTRIBUTION: common



Ptilium cristacastrensis

Sxw - HUCKLEBERRY - HIGHBUSH-CRANBERRY

INTERPRETATIONS

Site limitations: -sites within this unit 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) or protect advance

regeneration.

Site preparation: – see Section 12.1 Species choice: – Fd, Pl, Sx, [*Bl*]

Vegetation potential: -moderate (black twinberry, thimbleberry,

fireweed)

Reforestation: —plant sturdy stock as soon after harvesting as

possible.

-young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.

-restrict Fd to warm aspects on coarse-textured

soils within its natural range.

 help maintain stand diversity on sites to be planted with Pl by mapping aspen patches prior to harvest and planting these areas with spruce.

 maintain Fd component, especially veterans that are valuable for wildlife and seed production.

Concerns: – 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 leading to cold air ponding will lead to frost damage of Fd and Sx regeneration; leaving a partial canopy and/or choosing a frost-

resistant species (e.g., Pl) are advised.

Sxw - PINK SPIREA - OAK FERN





Spiraea douglasii



Alnus incana

ssp. tenuifolia

VEGETATION

Tree Layer: 40% cover

hybrid white spruce, lodgepole pine, trembling

aspen, black spruce

Shrub Laver: 55% cover Spiraea douglasii

ssp. menziesii (pink spirea) Lonicera involucrata (black twinberry)

Alnus incana

subalpine fir

ssp. tenuifolia Viburnum edule Rosa acicularis Rihes lacustre [Rubus parviflorus

(mountain alder) (highbush-cranberry) (prickly rose) (black gooseberry) (thimbleberry)]

Herb Layer: 35% cover

Gymnocarpium dryopteris (oak fern) Cornus canadensis (bunchberry) Calamagrostis canadensis (bluejoint) Clintonia uniflora (queen's cup) Athyrium filix-femina (lady fern) Linnaea borealis (twinflower) Lycopodium obscurum (ground-pine) Pyrola asarifolia (pink wintergreen)

Moss Layer: 50% cover

Rhytidiadelphus (electrified cat's-tail

triquetrus moss)

Pleurozium schreberi (red-stemmed

feathermoss)

Ptilium crista-castrensis (knight's plume) Dicranum scoparium (broom moss)

SOIL AND SITE:

Moisture Regime: 5 (subhygric) Nutrient Regime: B-C (poor-medium)

0 - 5*Slope Gradient (%):

* Slope Position: level

Parent Material: lacustrine or morainal *Soil Texture: moderately fine to fine

Coarse Fragments (%): 0-40

COMMENTS: based on few plots

DISTRIBUTION: uncommon and restricted to cold air drainage pockets

Sxw - PINK SPIREA - OAK FERN

INTERPRETATIONS

Site limitations:

 sites within this unit 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.

Site preparation:

- see Section 12.1

-avoid mechanical site preparation when claytextured soils occur right to the surface.

Species choice:

-Pl, *Sx*, [*Bl*, *Sb*]

Vegetation potential: - moderate (trembling aspen, black twinberry,

thimbleberry, fireweed)

-a young trembling aspen canopy can help reduce

frost damage of planted stock.

Reforestation:

- preserve vigorous Sx regeneration.

 supplement advance regeneration by planting sturdy stock in groups on available raised

microsites.

 help maintain stand diversity on sites to be planted with Pl by mapping aspen patches prior to harvest and planting these areas with spruce.

-young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.

Concerns:

 -a combination of poorly structured soils and frost makes these sites difficult to regenerate; preserve good quality advance regeneration during harvesting.

 sites within this unit with fine-textured soils are very vulnerable to compaction under wet conditions; restrict traffic to winter operations.

- site conditions may lead to frost damage of Sx regeneration, especially in any naturally occurring or artificially created depression; leaving a partial canopy and/or choosing a frost-resistant species (e.g., Pl) is advised.

- sites within this unit with silty soils are susceptible to frost heaving; bareroot stock will likely resist frost heaving better than plug stock.

 if a root-restricting layer is present within 30 cm of soil surface, then sites will have a high

blowdown risk.

Sxw - TWINBERRY - OAK FERN



Lonicera involucrata

VEGETATION

Tree Layer: 35% cover

hybrid white spruce, subalpine fir

Shrub Layer: 50% cover

Lonicera involucrata (black twinberry)
Rubus parviflorus (thimbleberry)

Viburnum edule Ribes lacustre

subalpine fir hybrid white spruce

Herb Layer: 65% cover

Gymnocarpium dryopteris (oak fern)
Tiarella trifoliata (foamflower)

Streptopus amplexifolius (clasping twistedstalk)

Equisetum spp. (horsetails)

Mitella nuda (common mitrewort)

Athyrium filix-femina Dryopteris expansa Rubus pedatus Streptopus roseus

Smilacina racemosa Galium triflorum

Cornus canadensis

Moss Layer: 65% cover Ptilium crista-castrensis Rhytidiadelphus

triquetrus Pleurozium schreberi

Mnium spp.

(five-leaved bramble) (rosy twistedstalk) (false Solomon's-seal) (sweet-scented bedstraw) (bunchberry)

(highbush-cranberry)

(black gooseberry)

(knight's plume) (electrified cat's-tail

moss)

(lady fern) (spiny wood fern)

(red-stemmed feathermoss) (leafy mosses)

SOIL AND SITE:

Moisture Regime: 5 (subhygric) Nutrient Regime: C-D (medium-rich)

Slope Gradient (%): 0–32

Slope Position: mid to toe, usually level Parent Material: fluvial, occasionally

morainal Soil Texture: medium

Coarse Fragments (%): 0–35, usually <10

COMMENTS: these sites occur in pockets of cold air drainage

DISTRIBUTION: common; adjacent to stream

channels



Rubus parviflorus



Gymnocarpiun dryopteris

Sxw - TWINBERRY - OAK FERN

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.

microsites.

Site preparation: – see Section 12.1 Species choice: – Pl, *Sx*, *[Bl]*

Vegetation potential: – moderate to high (black twinberry, thimbleberry,

fireweed)

Reforestation: - preserve vigorous Sx regeneration.

-plant sturdy stock as soon after harvesting as

possible.

-young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.

 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 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 Sx and Bl regeneration, especially in any naturally occurring or artificially created depression; leaving a partial (an DP) and/or choosing a frost-

resistant species (e.g., Pl) are advised.

SBSwk1/08

Sxw - DEVIL'S CLUB



Oplopanax horridus



Gymnocarpium

dryopteris



Dryopteris expansa

VEGETATION

Tree Laver: 40% cover

hybrid white spruce, subalpine fir

Shrub Layer: 65% cover

Oplopanax horridus Rubus parviflorus Ribes lacustre Lonicera involucrata

Vaccinium ovalifolium Vaccinium

subalpine fir

membranaceum

Herb Layer: 65% cover

Gymnocarpium dryopteris (oak fern) Dryopteris expansa Athyrium filix-femina Cornus canadensis Streptopus roseus Smilacina racemosa

Rubus pedatus Tiarella trifoliata Moss Layer: 70% cover

Ptilium crista-castrensis Pleurozium schreberi

Mnium spp. [Rhytidiadelphus triquetrus

SOIL AND SITE:

Moisture Regime: Nutrient Regime: Slope Gradient (%):

Slope Position:

Parent Material:

Soil Texture: Coarse Fragments (%): 0–75, 0 in lacustrine

(devil's club) (thimbleberry) (black gooseberry)

(black twinberry) (oval-leaved blueberry)

(black huckleberry)

(spiny wood fern) (lady fern) (bunchberry) (rosy twistedstalk) (false Solomon's-seal) Streptopus amplexifolius (clasping twistedstalk)

(five-leaved bramble) (three-leaved foamflower)

(knight's plume) (red-stemmed feathermoss) (leafy mosses)

(electrified cat's-tail moss)]

5 (subhygric)

D-E (rich-very rich) 0–45, usually <15 variable; usually mid to

lacustrine, morainal, fluvial

medium to fine

COMMENTS: seepage usually expected early in

growing season

DISTRIBUTION: common

Sxw - DEVIL'S CLUB

INTERPRETATIONS

Site limitations:

-sites within this unit with medium- to finetextured 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) or protect advance regeneration.

Site preparation:

-see Section 12.1

Species choice:

-Sx, [Pl, Bl]

Vegetation potential: - very high (black twinberry, thimbleberry,

fireweed, lady fern)

Reforestation:

-plant sturdy stock as soon after harvesting as

possible.

-preserve advance regeneration where feasible.

-avoid planting Sx or Bl in obvious frost pockets unless risk can be reduced by providing cover.

-young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.

-due to the very high level of competition on theses sites, successfully regenerating them to Pl without high site treatment costs will be difficult.

- -sites with thick organic horizons (>10 cm) reduce spring soil temperatures, slowing root development; attempt to reduce organic horizon thickness during site preparation.
- -sites with thick organic horizons (>10 cm) and/or shallow (<30 cm) effective rooting depth 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 and/or choosing a frost-resistant species (e.g., Pl) is advised.
- -sites with fine-textured soils are vulnerable to compaction under wet conditions; restrict traffic to winter operations or dry soil conditions.

Sxw - HORSETAIL



Lonicera involucrata

VEGETATION

Tree Laver: 40% cover

hybrid white spruce, subalpine fir

Shrub Layer: 30% cover

Ribes lacustre Lonicera involucrata Viburnum edule Oplopanax horridus Rubus idaeus

subalpine fir

Herb Layer: 75% cover

Equisetum sylvaticum Cornus canadensis Equisetum arvense

Gymnocarpium dryopteris (oak fern) Dryopteris expansa Rubus pedatus

Athyrium filix-femina Tiarella trifoliata

Galium triflorum

Moss Layer: 70% cover Ptilium crista-castrensis

Rhytidiadelphus

triquetrus

Hylocomium splendens Mnium spp.

(highbush-cranberry) (devil's club)

(black gooseberry)

(black twinberry)

(red raspberry)

(wood horsetail) (bunchberry)

(common horsetail)

(spiny wood fern) (five-leaved bramble)

(lady fern) (foamflower)

(sweet-scented bedstraw)

(knight's plume) Pleurozium schreheri (red-stemmed feathermoss)

(electrified cat's-tail

moss) (step moss) (leafy mosses)

SOIL AND SITE:

Moisture Regime: Nutrient Regime: Slope Gradient (%):

Slope Position: Parent Material:

Soil Texture:

6 (hygric) B-D (poor-rich)

0 - 7level or depression fluvial, occasionally

morainal

medium to coarse

Coarse Fragments (%): 0-20

COMMENTS:

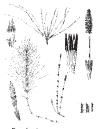
these sites may be influenced by seasonally high water tables associated with nearby rivers and streams; depressions often

flooded during snowmelt

DISTRIBUTION: common but small in area



Equisetum sylvaticum



Equisetum arvense

Sxw - HORSETAIL

INTERPRETATIONS

Site limitations:

- -very difficult sites to reforest; consider managing these sites primarily as wildlife habitat.
- sites with saturated soils are poorly aerated, which slows root development; plant seedlings on naturally or artificially raised microsites.

Site preparation:

- -see Section 12.1
 - avoid creating an excessive number of microsites, especially on sites within this unit with a water table <30 cm from the surface.
 - carefully assess plantable and preparable raised microsites to determine target stocking levels.

Species choice:

-Sx, [Bl, Pl]

Vegetation potential: -high (black twinberry, fireweed, bluejoint)

Reforestation:

- -preserve advance regeneration.
- supplement advance regeneration by planting sturdy stock in groups on available raised microsites.
- consider reducing inter-tree spacing to take advantage of available raised microsites.
- retain Ac veterans where possible for wildlife.
- -young Bl regeneration (<3 m tall) may be susceptible to heavy browsing by moose.

- -site conditions may lead to frost damage of regeneration, especially in any naturally occurring or artificially created depression; *leaving a partial canopy and/or choosing a frost-resistant species* (e.g., Pl) 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.
 - this unit may provide important habitat for wildlife; discuss prescription with fish and wildlife personnel.
- water table will likely rise above the ground surface in the spring causing seedling mortality on non-elevated sites.
- this unit is critical to the control of runoff streamflow.

Sxw - DEVIL'S CLUB - LADY FERN



Oplopanax horridus



Cornus stolonifera



Athyrium filix-femina

VEGETATION

Tree Laver: 25% cover

Shrub Layer: 75% cover

Oplopanax horridus Cornus stolonifera Lonicera involucrata Viburnum edule Ribes lacustre Rubus parviflorus

Alnus incana ssp. tenuifolia subalpine fir

Herb Layer: 50% cover Athyrium filix-femina Equisetum arvense Gymnocarpium dryopteris (oak fern)

Equisetum sylvaticum Rubus pedatus Tiarella trifoliata

Viola spp. Cornus canadensis Mitella nuda Dryopteris expansa

Moss Layer: 75% cover Pleurozium schreberi

Ptilium crista-castrensis Mnium spp.

SOIL AND SITE:

Moisture Regime: Nutrient Regime: Slope Gradient (%):

Slope Position: Parent Material:

Soil Texture:

Coarse Fragments (%): 0–20

COMMENTS: seepage often present

DISTRIBUTION: uncommon and small in area

hybrid white spruce, subalpine fir

(devil's club)

(red-osier dogwood) (black twinberry) (highbush-cranberry) (black gooseberry) (thimbleberry)

(mountain alder)

(lady fern)

(common horsetail)

(wood horsetail) (five-leaved bramble) (three-leaved

foamflower) (violets) (bunchberry)

(common mitrewort) (spiny wood fern)

(red-stemmed feathermoss) (knight's plume) (leafy mosses)

6 (hygric) D-E (rich-very rich)

0 - 7

level or depression fluvial, occasionally

morainal

medium to coarse

Sxw - DEVIL'S CLUB - LADY FERN

INTERPRETATIONS

Site limitations:

 these sites have saturated soils that are poorly aerated, which slows root development; plant seedlings on naturally or artificially raised microsites.

Site preparation:

-see Section 12.1

-avoid creating an excessive number of microsites, especially on sites within this unit with a water

table <30 cm from the surface.

 carefully assess plantable and preparable raised microsites to determine target stocking levels.

Species choice:

-Sx, [Bl, Pl]

Vegetation potential: -very high (fireweed, thimbleberry, lady fern, black

twinberry)

Reforestation:

-preserve advance regeneration.

 supplement advance regeneration by planting sturdy stock in groups on available raised

microsites.

-consider reducing inter-tree spacing to take advantage of available raised microsites.

-retain Ac veterans where possible for wildlife.

Concerns:

-site conditions may lead to frost damage of regeneration, especially in any naturally occurring or artificially created depression; *leaving a partial canopy and/or choosing a frost-resistant species* (e.g., Pl) 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.

 these sites may represent important wildlife habitat; discuss prescription with fish and wildlife personnel.

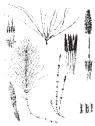
 water table will likely rise above the ground surface in the spring causing seedling mortality on non-elevated sites.

 this unit is critical to the control of runoff streamflow.

SbSxw - SCRUB BIRCH - SEDGE



Ledum groenlandicum



Equisetum arvense



Sphagnum spp.

VEGETATION

Tree Layer: 20% cover

Shrub Layer: 30% cover

Ledum groenlandicum Lonicera involucrata Betula glandulosa

Spiraea douglasii ssp. menziesii

black spruce subalpine fir

Herb Layer: 55% cover

Gaultheria hispidula Potentilla palustris Cornus canadensis Equisetum arvense Pyrola asarifolia Rubus pedatus Orthilia secunda

Equisetum sylvaticum Carex disperma

Calamagrostis canadensis (bluejoint) Moss Layer: 90% cover

Sphagnum spp. Pleurozium schreberi

Ptilium crista-castrensis Peltigera aphthosa Aulacomnium palustre

SOIL AND SITE:

Moisture Regime: Nutrient Regime: *Slope Gradient (%):

* Slope Position: Parent Material:

Soil Texture:

*Coarse Fragments (%): 0

[black spruce], [lodgepole pine]

(Labrador tea) (black twinberry) (scrub birch)

(pink spirea)

(creeping-snowberry) (marsh cinquefoil)

(bunchberry) (common horsetail) (pink wintergreen) (five-leaved bramble)

(one-sided wintergreen) (wood horsetail) (soft-leaved sedge)

(sphagnum mosses) (red-stemmed feathermoss)

(knight's plume) (freckle lichen) (glow moss)

6–7 (hygric-subhydric) A-D (very poor-rich) 0

level, depression organic, lacustrine,

fluvial

fine mineral, organic soils commonly mesic in texture

DISTRIBUTION: common but often restricted in size

SbSxw - SCRUB BIRCH - SEDGE

INTERPRETATIONS

Site limitations:

-site and soil conditions of this unit result in marginal forest productivity; seriously consider

excluding logging from this unit.

Silvicultural system: -avoid logging.

SBSwk1/12

SbPI - FEATHERMOSS



Vaccinium myrtilloides



Shrub Layer: 40% cover

Shrub Layer: 40% cover Vaccinium myrtilloides

Ledum groenlandicum [Shepherdia canadensis

Herb Layer: 25% cover

Cornus canadensis Linnaea borealis Gaultheria hispidula [Vaccinium caespitosum

[Lycopodium complanatum

[Arctostaphylos uva-ursi

Moss Layer: 95% cover

Hylocomium splendens Ptilium crista-castrensis [Sphagnum spp.



Ledum groenlandicum



Moisture Regime: 3–5 (submesic-

subhygric)

(velvet-leaved blueberry) (Labrador tea)

(soopolallie)]

(bunchberry)

(twinflower)

(creeping snowberry)

(dwarf blueberry)]

(ground-cedar)]

(kinnikinnick)]

(red-stemmed feathermoss)

(knight's plume)

(sphagnum mosses)]

(step moss)

Nutrient Regime: A-B (very poor-poor)

* Slope Gradient (%): 0–5 * Slope Position: level

*Parent Material: lacustrine; occasionally

glaciofluvial

Soil Texture: variable

Coarse Fragments (%): 0–50, generally <10



Gaultheria hispidula

DISTRIBUTION: uncommon and localized

ShPL - FFATHERMOSS

INTERPRETATIONS

Site limitations:

- -compact soil layers and/or low aeration porosity associated with fine-textured soils will reduce rooting depth and decrease productivity over a rotation; regenerate naturally whenever possible.
- -soils are often saturated in the spring, but may experience drought in summer, both resulting in poor root development; the poor productivity resulting from these limitations should dictate a limited intensive silvicultural investment.
 - 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.

Silvicultural system: – minimize or align large slash accumulations when logging to help meet site preparation objectives

and reduce fire hazard.

Site preparation: Species choice:

- see Section 12.1

Vegetation potential: -low

Reforestation:

- -attempt to regenerate naturally if potential exists.
- -if natural regeneration is not feasible, plant Pl.
- -Sx and Sb will generally be less productive on

these sites.

-Pl, (Sx, Sb)

- -full tree harvesting may lead to nutrient depletion and seriously reduce the number and distribution of cones; distribute woody debris and cones across these sites (i.e., lop and scatter).
- -site conditions leading to cold air ponding will lead to frost damage of regeneration; leaving a partial canopy and/or choosing a frost-resistant species (e.g., Pl) are advised.