

**A FIELD GUIDE TO
FOREST SITE IDENTIFICATION AND
INTERPRETATION FOR THE
CARIBOO FOREST REGION**

O. A. Steen and R. A. Coupé



Ministry of Forests
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SBPSmk

SUB-BOREAL PINE–SPRUCE

MOIST COOL SUBZONE

The SBPSmk occurs in two separate areas on the Fraser Plateau: 1) the southeastern portion of the Cariboo Forest Region in a northwest–southeast band from approximately McIntosh Lakes to Bonaparte Lake, and 2) the Blackwater–Nazko rivers area in the north-central portion of the Region. In the southeastern area, it occurs primarily on a low-relief plain, although the topography becomes hilly near Bonaparte Lake. In the north-central area, it occurs on gently rolling topography at middle elevations, above the SBSdw. Elevations are approximately 1000–1350 m in the southeastern area and 950–1250 m in the Blackwater–Nazko rivers area.

Distinguishing Adjacent Units from the SBPSmk

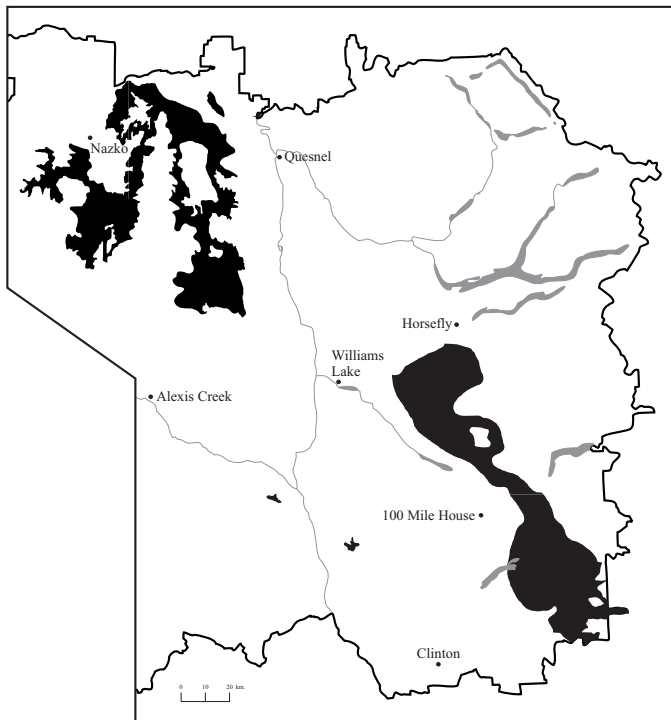
In the southeastern portion of the Cariboo Forest Region, the **IDFdk3** occurs at similar elevations west of the SBPSmk where precipitation is slightly less. The **SBSdw1** and **SBSdw2** occur at similar elevations north and east of the SBPSmk where topographic relief is greater, cold air drainage is improved, and frost is probably less frequent. The **SBSdw1** occurs east of the SBPSmk where precipitation amounts increase slightly, and the **SBSdw2** occurs north of the SBPSmk where precipitation amounts are similar. The **MSxk** occurs at higher elevations in the most southern area near Bonaparte Lake, while the **SBSmc1** occurs at higher elevations near Timothy Lake.

In the north-central portion of the Cariboo Forest Region, the **SBSdw2** occurs at elevations below the SBPSmk, and either the **SBSmc2** or **MSxv** occur at higher elevations. The **SBSmc2** occurs above the SBPSmk in the wettest portions of its distribution, while the **MSxv** occurs in drier portions. In the Baker Creek and Snaking River basins, which are apparently large cold air accumulation areas, the **SBPSdc** occurs in frost-prone areas below the SBPSmk.

In the **IDFdk3**, zonal sites have:

- Douglas-fir–dominated climax forests (Douglas-fir is predominant tree regeneration);
- timber milk-vetch;
- no bunchberry or black huckleberry.

Distribution of SBPSmk Subzone in the Cariboo Forest Region



In the **SBSdw1** and **SBSdw2**, zonal sites have:

- sarsaparilla, thimbleberry, trailing raspberry, and highbush-cranberry;
- Douglas-fir very common, often dominating the canopy in seral stands.

In the **SBSmc1** and **SBSmc2**, zonal sites have:

- five-leaved bramble, queen's cup, rosy twistedstalk, or bluejoint;
- subalpine fir very common, often present in canopy;
- little or no pinegrass (cover usually <5%).

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

- grouseberry;
- uncommon trembling aspen;
- many vegetation similarities to the SBPSmk.

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

- grouseberry or crowberry;
- little or no pinegrass (cover usually <5%).

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

- short-awned ricegrass or spike-like goldenrod;
- no black huckleberry;
- much less common Douglas-fir.

wetter sites have:

- occasional black spruce.

Site Units of the SBPSmk

Zonal Site Series 01 P1 - Pinegrass - Arnica Site Series dominates the SBPSmk landscape. These sites are generally level to gently sloping and vegetated by even-aged lodgepole pine forests with sparse densities of lodgepole pine, hybrid white spruce, and rarely subalpine fir regeneration. Douglas-fir is occasionally present in the canopy and regeneration layers. Stands occur as a patchwork of age classes and densities, depending upon fire history. Small aspen stands occur locally. The undergrowth is dominated by pinegrass, bunchberry, twinflower, and a thick carpet of feathermosses (especially red-stemmed feathermoss). Shrubs (especially prickly rose, birch-leaved spirea, and black huckleberry) are common but mostly less than 30 cm tall.

Drier Sites Sites drier than mesic are uncommon on the low-relief portion of the subzone. They are moderately common on the more hilly terrain in the Bonaparte Lake and Blackwater River areas. Most dry

SITE UNITS

sites occur on upper and crest slope positions and steep mid slope positions. Dry sandy or gravelly soils are uncommon. The vegetation of drier sites is distinguished by abundant kinnikinnick and the frequent occurrence of Douglas-fir.

02 P1 - Cladonia - Haircap moss Site Series includes small sites on the crests and upper slopes of hills and ridges where bedrock is near (<50 cm) the soil surface. The mature forest canopy is dominated by lodgepole pine, usually with an open, patchy canopy cover. Douglas-fir is frequently present. The undergrowth is dominated by dryland shrubs, patches of mosses, and cladonia and cladina lichens. Abundant cladonia and cladina lichens distinguish the vegetation. Grasses and forbs have a relatively low cover, and exposed mineral soil and rock is common. Principal shrubs are common juniper, saskatoon, and birch-leaved spirea. Principal mosses are haircap moss and wavy-leaved moss.

03 Fd - Pinegrass - Aster Site Series occurs on mid to upper slope positions of steep (>35%) south-facing slopes. Douglas-fir is common on these sites, probably because summer frost is relatively infrequent. The mature forest canopy is typically open and patchy and dominated by Douglas-fir trees of a range of sizes and ages. Large veteran trees are common. Douglas-fir also dominates tree regeneration layers. The undergrowth vegetation typically has a moderate to high cover of pinegrass and showy aster. Scattered low shrubs are present, especially common juniper and birch-leaved spirea. Cover of mosses and lichens is relatively sparse, and exposed mineral soil is common. Douglas-fir dominance of the canopy and regeneration layers and the absence of a well-developed moss layer distinguishes the vegetation of these sites.

04 P1 - Pinegrass - Feathermoss Site Series occurs on a range of sites that are only slightly drier than the /01 site series. They occur on upper and crest slope positions with deep soils, gentle south-facing slopes, and sandy soils. The mature forest canopy is dominated by even-aged lodgepole pine. Tree regeneration layers are usually sparse and predominantly Douglas-fir or hybrid white spruce. The undergrowth vegetation includes a feathermoss carpet (especially red-stemmed feathermoss), abundant pinegrass and dwarf shrubs, and a moderate cover of low shrubs. Abundant velvet-leaved blueberry or kinnikinnick distinguishes the vegetation from other sites. Prickly rose and soopolallie are common low shrubs.

05 SxwFd - Step moss Site Series occurs on mid and upper slope positions of steep (>35%) north- or east-facing slopes. These are moderately dry but cool sites with infrequent summer frost due to the steep slopes. The forest canopy is dominated by Douglas-fir or lodgepole pine, often with a significant component of hybrid white spruce, especially in the regeneration layers. In contrast to the vegetation of other site series, the undergrowth vegetation has a relatively sparse cover of shrubs and herbaceous plants but a nearly continuous carpet of feathermosses, primarily step moss and red-stemmed feathermoss. A relatively small cover of pinegrass is usually present.

Wetter Sites Sites wetter than mesic are common in the low-relief, poorly drained portions of the SBPSmk where wetlands are also common. In areas of greater relief, they occur on lower and toe slope positions, at the perimeter of stream channels and wetlands, and in local depressions. In contrast to mesic and drier sites, hybrid white spruce often dominates the forest canopy. The undergrowth is distinguished from mesic and drier sites by black twinberry, common mitrewort, trailing raspberry, and palmate coltsfoot.

06 Sxw - Twinberry Site Series is the most common site series of the SBPSmk that is wetter than /01 sites. It occurs on lower and toe slope positions and on broad, level areas with poorly developed drainage systems. These sites have relatively cold soils and frequent summer frost beneath canopy openings. The mature forest canopy is dominated by hybrid white spruce or a mixture of lodgepole pine and spruce. Subalpine fir is often present, especially in tree regeneration layers with spruce. Several forbs are present but pinegrass cover is sparse. Low shrubs have a moderate cover and include black twinberry, prickly rose, and highbush-cranberry. The undergrowth vegetation is distinguished by black twinberry, common mitrewort, trailing raspberry, and palmate coltsfoot, and by the absence of common horsetail, soft-leaved sedge, and scrub birch.

07 Sxw - Horsetail - Glow moss Site Series occurs in wet depressions and on wet sites at the toe of slopes where a water table or persistent seepage is present within 50 cm of the soil surface. Soils are typically gleyed or distinctly mottled, or are thin organic soils. The mature forest canopy is dominated by relatively short hybrid white spruce. Subalpine fir and lodgepole pine are sometimes present. A

SITE UNITS

moderate to high cover of shrubs is present and dominated by black twinberry, prickly rose, and black huckleberry. The herbaceous layer is distinguished by abundant common horsetail and the presence of soft-leaved sedge.

08 SbSxw - Scrub birch - Sedge Site Series is a forested wetland that occurs in very wet depressions where a water table is present within 30 cm of the soil surface. Soils are often organic. The forest canopy is relatively open and dominated by short (<15 m) black spruce or hybrid white spruce. Low shrubs have a moderate cover, usually including abundant scrub birch. The undergrowth is characterized by abundant soft-leaved sedge and wetland herbaceous species such as marsh cinquefoil and water sedge.

Non-forested Sites Wetlands are very common in the SBPSmk, especially in the low-relief area near McIntosh Lakes. They are predominantly fens, marshes, and swamps. Bogs and shrub-carrs are not common. Very small, localized grasslands occur on some south-facing slopes but they are very uncommon.

Key to Site Units of the SBPSmk

1a. Soils shallow (<50 cm) to bedrock; slope position crest or upper; moisture regime very xeric or xeric; bedrock outcrops common.

SBPSmk/02 PI - Cladonia - Haircap moss

1b. Soils deeper; slope position variable; moisture regime subxeric or wetter; bedrock outcrops not present.

2a. Slope gradient >35%; soil parent material mostly colluvium.

3a. Slope aspect SE, S, SW, or W (100–280°); total moss cover <50%; nodding onion usually present.

SBPSmk/03 Fd - Pinegrass - Aster

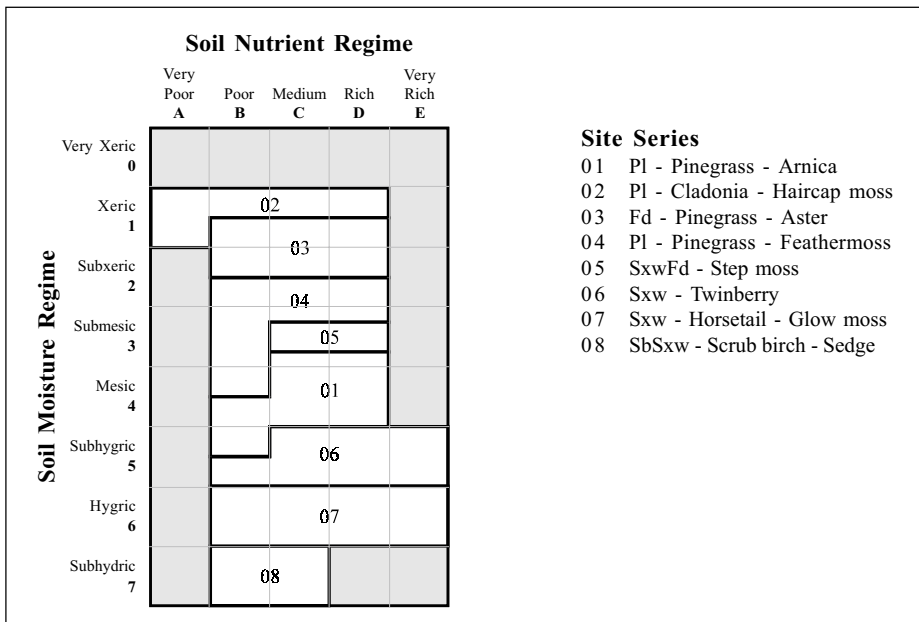
3b. Slope aspect NW, N, NE, or E (281–360°, 0–99°); moss cover nearly continuous; nodding onion generally absent.

SBPSmk/05 SxwFd - Step moss

2b. Slope gradient 0–35%; soil parent material not colluvium.

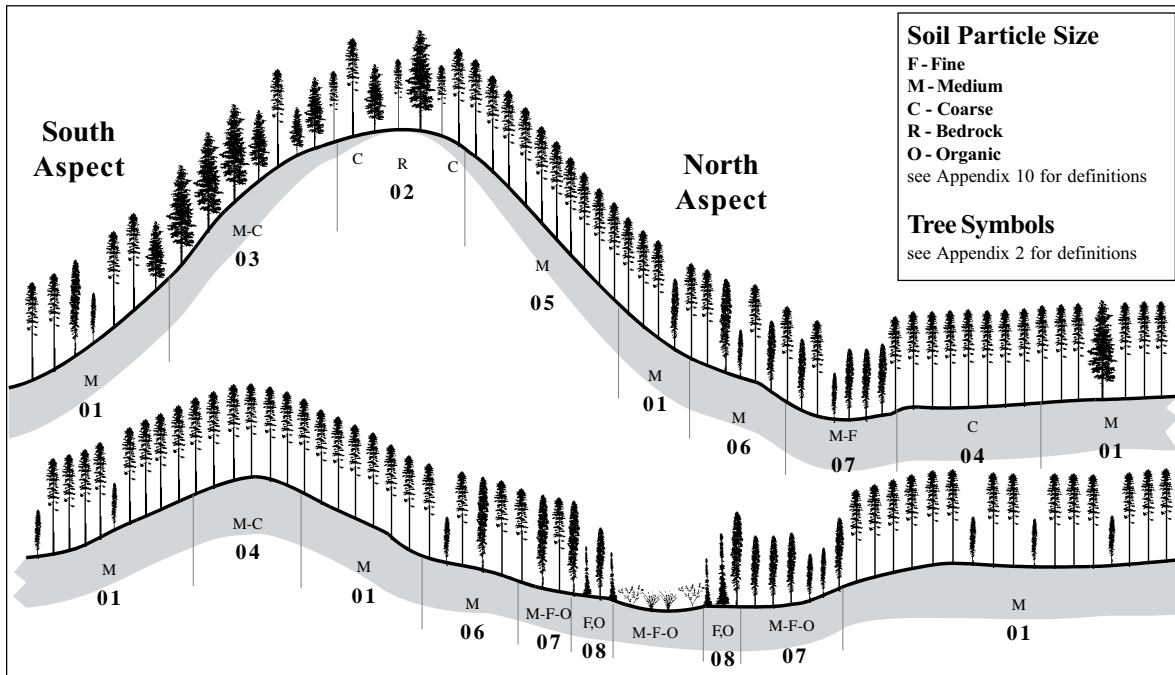
- 4a. Moisture regime submesic or mesic; common mitrewort and palmate coltsfoot absent or incidental; pinegrass dominates herb layer.
- 5a. Moisture regime submesic; soil texture sand or loamy sand, or slope position upper or crest; kinnikinnick cover >5%; short-awned ricegrass often present.
SBPSmk/04 Pl - Pinegrass - Feathermoss
 /04a **Typic Phase** (soil texture not sand)
 /04b **Sand Phase** (soils sand or loamy sand)
- 5b. Moisture regime mesic; soil texture not sand, and site not on upper or crest slope position; cover of kinnikinnick 0–5% (occasionally greater in western parts of subzone); short-awned ricegrass rarely present.
SBPSmk/01 Pl - Pinegrass - Arnica
- 4b. Moisture regime subhygric or wetter; common mitrewort and palmate coltsfoot present; pinegrass seldom dominates herb layer.
- 6a. Moisture regime subhygric; no evidence of persistent seepage or water table within 50 cm of surface; soils often have dull mottles but are not gleyed or organic; pinegrass present; common horsetail, soft-leaved sedge, and sphagnum moss absent or incidental.
SBPSmk/06 Sxw - Twinberry
- 6b. Moisture regime hygric or subhydric; evidence of persistent seepage or water table within 50 cm of surface; mineral soils distinctly mottled or gleyed, or soils organic; pinegrass absent or incidental; common horsetail, soft-leaved sedge, or sphagnum moss present.
- 7a. Moisture regime hygric; common horsetail very abundant; scrub birch, Labrador tea, and marsh cinquefoil absent or incidental.
SBPSmk/07 Sxw - Horsetail - Glow moss
- 7b. Moisture regime subhydric; common horsetail present but cover <5%; scrub birch, Labrador tea, and marsh cinquefoil present.
SBPSmk/08 SbSxw - Scrub birch - Sedge

SBPSmk Edatopic Grid



SBPSmk Landscape Profile

6•32 - 9



Site Features of SBPSmk Site Series

Site Series	01	02	03	04
Key Features	zonal and other gently to moderately sloping sites with mesic or near-mesic moisture regime	very dry upper and crest slope positions with shallow (< 50 cm) soils over bedrock	upper to mid slope positions on steep (> 35%) SE-, S-, SW-, and W-facing slopes.	upper and crest slope positions with deep loamy soils (/04a) and level to gently sloping sites with sand soils (/04b)
Soil Moisture / Nutrient Regimes	submesic, mesic (subhygric) / poor - rich	xeric / very poor - rich	xeric, subxeric / poor - rich	subxeric, submesic (mesic) / poor - rich
Slope Position	level, mid	crest, upper	upper (mid)	upper, crest, level
Aspect	all	all	SE, S, SW, W	all
Slope Grade (%)	0 - 35	> 35 on upper slopes; 0 - 15 on crests	> 35	0 - 35
Soil Texture	loamy	gravelly loamy	gravelly loamy	loamy, sand
Soil Humus Form and Thickness (cm)	Hemimor (Mormoder) 3 - 6	Xeromor, Hemimor 0 - 4	Xeromor, Hemimor 1 - 3	Hemimor 3 - 5
Occurrence / Size / Distribution	predominant / large / wide	uncommon / small / wide	uncommon / moderate / wide	common / moderate / wide

Site Features of SBPSmk Site Series (continued)

Site Series	05	06	07	08
Key Features	upper and mid slope positions on steep (> 35%) NW-, N-, NE-, or E-facing slopes	moist lower slopes; often adjacent to stream channels or wetlands; intermittent seepage	wet depressions and toe slope positions; water table generally within 30 - 50 cm of surface	very wet depressions; water table usually within 30 cm of surface; forested wetland
Soil Moisture / Nutrient Regimes	submesic / medium, rich	subhygric / poor - very rich	hygric / poor - very rich	subhydric / poor, medium
Slope Position	mid, upper	mid - toe	toe, depression	toe, depression
Aspect	NW, N, NE, E	all	N/A	N/A
Slope Grade (%)	> 35	0 - 15	< 5	< 5
Soil Texture	loamy, sand	loamy	loamy, silty, organic	silty, clayey, organic
Soil Humus Form and Thickness (cm)	Hemimor 3 - 6	Mormoder (Hemimor) 4 - 8	Hydromoder, Hydromor 15 - 40	Hydromor, Hydromoder 15 - 40
Occurrence / Size / Distribution	common / moderate / wide	common / small - moderate / wide	common / small / wide	common / small / wide

SBPSmk Vegetation Table^a

	Site Unit	02	03	04	05	01	06	07	08	
Tree Layer	<i>Populus tremuloides</i>		█							trembling aspen
	<i>Pinus contorta</i>	███		████		████				lodgepole pine
	<i>Pseudotsuga menziesii</i>		████		████					Douglas-fir
	<i>Picea engelmannii</i> x <i>glauca</i>					███	████	████	█	hybrid white spruce
Shrub Layer	<i>Juniperus communis</i>	██								common juniper
	<i>Spiraea betulifolia</i>	██	██	█	██	██				birch-leaved spirea
	<i>Vaccinium membranaceum</i>	██			██	██				black huckleberry
	<i>Rosa acicularis</i>	██	██	██	██	██	██	██		prickly rose
	<i>Shepherdia canadensis</i>		█	██	██	█	█			soopolallie
	<i>Vaccinium myrtilloides</i>			████						velvet-leaved blueberry
	<i>Lonicera involucrata</i>					█	███	██		black twinberry
	<i>Cornus stolonifera</i>							██		red-osier dogwood
	<i>Betula glandulosa</i>									scrub birch
	<i>Ledum groenlandicum</i>									Labrador tea
Herb Layer	<i>Allium cernuum</i>	██	██							nodding onion
	<i>Antennaria neglecta</i>	██	██							field pussytoes
	<i>Viola adunca</i>	██	██							early blue violet
	<i>Vaccinium caespitosum</i>	██		██		██				dwarf blueberry
	<i>Arctostaphylos uva-ursi</i>	██	██	████		██				kinnikinnick
	<i>Calamagrostis rubescens</i>	██	████	████	██	████	██			pinegrass
	<i>Aster conspicuus</i>		████	█	██	██				showy aster
	<i>Chimaphila umbellata</i>			██	██	██				prince's pine
	<i>Cornus canadensis</i>			████	██	████	███	██		bunchberry
	<i>Linnæa borealis</i>			████	██	██	██	██		twinflower
	<i>Mitella nuda</i>						██	██	██	common mitrewort
	<i>Petasites palmatus</i>						██	██		palmete coltsfoot
	<i>Rubus pubescens</i>					█	██	██	█	trailing raspberry
	<i>Carex disperma</i>							██	████	soft-leaved sedge
	<i>Equisetum arvense</i>							████	██	common horsetail
	<i>Potentilla palustris</i>								██	marsh cinquefoil
Moss Layer	<i>Stereocaulon</i> spp.	██								coral lichens
	<i>Polytrichum juniperinum</i>	████	█							juniper haircap moss
	<i>Cladina</i> spp.	██		██			█			reindeer lichens
	<i>Cladonia</i> spp.	██			██					cladonia lichens
	<i>Pleurozium schreberi</i>	██	█	████	████	████	████	██	█	red-stemmed feathermoss
	<i>Dicranum polysetum</i>	██		██		██	██			wavy-leaved moss
	<i>Ptilium crista-castrensis</i>		█		████	██	████	██	█	knight's plume
	<i>Hylacomium splendens</i>				████	█	██	████		step moss
	<i>Aulacomnium palustre</i>				██			██	█	glow moss
	<i>Sphagnum</i> spp.							█	████	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%

SBPSxc
SUB-BOREAL PINE–SPRUCE
VERY DRY COLD SUBZONE

The SBPSxc is the largest subzone of the Sub-Boreal Pine–Spruce Zone (approximately 10 898 km²), and occurs entirely west of the Fraser River within the Cariboo Forest Region. It is distributed along the leeward side of the Coast Mountains, in an area where the rainshadow effect of the mountains is most pronounced. It extends from approximately Lessard Lake in the northwest to Churn Creek in the southeast. At its eastern limits, it occurs about as far north as Palmer Lake. Elevations are generally 1100–1500 m south of the Chilcotin and Chilanko rivers, and 850–1300 m in more northern areas.

Distinguishing Adjacent Units from the SBPSxc

The **SBPSdc** occurs at similar elevations north of Palmer Lake in eastern portions of the SBPSxc, while the **SBPSmc** occurs at similar elevations north of Lessard Lake in the Dean River valley at the western limits of the SBPSxc. Boundaries between the SBPSxc and both the SBPSdc and SBPSmc are broad. The **MSxv** borders the upper elevations of the SBPSxc throughout most of its range including the high plateau rising toward the Itcha and Ilgachuz mountains and all along the leeward side of the Coast Mountains. The **MSdv** and **MSdc2** occur at higher elevations along very short segments of the SBPSxc border near Taseko Lakes and north of Tsuniah Lake, respectively. The **IDFdk4** occurs at elevations below the SBPSxc throughout most of its range, including the valleys of the Chilcotin, Chilanko, and Taseko rivers and Choelquoit Lake. The **IDFdk3** occurs below the SBPSxc at its northeastern limits near Raven Lake where the climate is comparatively moist and warm.

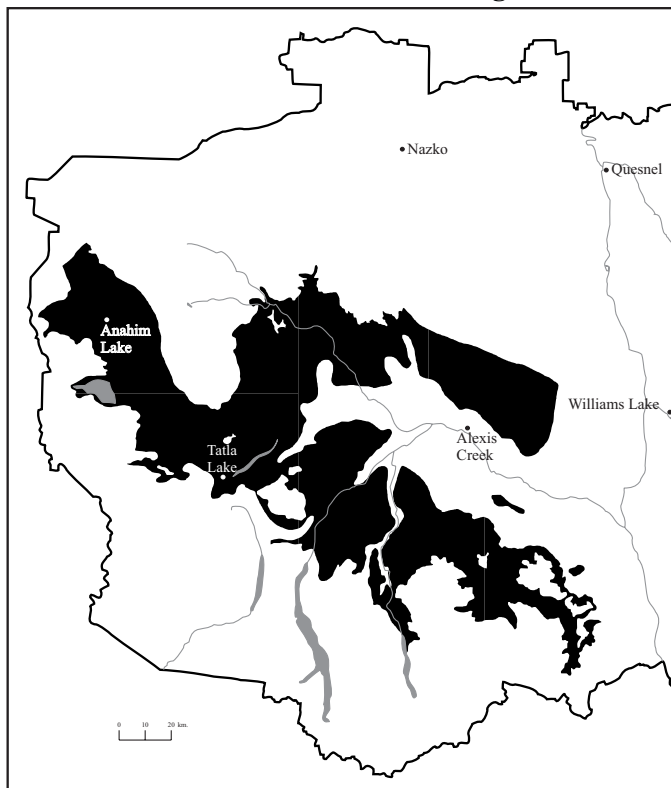
In the **SBPSdc**, zonal sites have:

- moss/lichen layer dominated by feathermosses rather than lichens;
- spruce common in forest canopy and regeneration layers;
- kinnikinnick cover generally <15%;
- more vigorous growth of pinegrass and dwarf blueberry.

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

- little or no pinegrass;
- moss/lichen layer dominated by feathermosses rather than lichens;
- spruce common in tree and regeneration layers.

Distribution of SBPSxc Subzone in the Cariboo Forest Region



In the **IDFdk4**, zonal sites have:

- Douglas-fir climax forest (Douglas-fir predominant tree regeneration);
- more vigorous pinegrass growth;
- common timber milk-vetch;
- no bunchberry or short-awned ricegrass.

In the **IDFdk3**, zonal sites have:

- Douglas-fir climax forests;
- more vigorous growth of pinegrass;
- common timber milk-vetch;
- moss/lichen layer dominated by feathermosses rather than lichens;
- no bunchberry or short-awned ricegrass.

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

- black crowberry or grouseberry;
- spruce well represented in regeneration layers;
- little or no pinegrass or trembling aspen;
- frequent subalpine fir.

In the **MSdc2** and **MSdv**, zonal sites have:

- subalpine fir;
- moss/lichen layer dominated by mosses rather than lichens;
- minor cover of kinnikinnick.

wetter sites have:

- common black crowberry or grouseberry.

Site Units of the SBPSxc

Zonal Site Series 01 P1 - Kinnikinnick - Feathermoss Site Series is the predominant site series of the SBPSxc, occurring on upper to lower slope position of most gently sloping sites with medium- and fine-textured soils. The forest canopy is formed of even-aged lodgepole pine in a patchwork of age classes and densities, depending upon fire history. Scattered aspen trees and small aspen stands occur locally but no other tree species are common in the overstory or understory. Lodgepole pine regeneration is sparse to moderately dense, depending upon canopy closure. It is often clumped. Undergrowth vegetation is low-growing and dominated by kinnikinnick, lichens, and patches of pinegrass. Low shrubs, including prickly rose and common juniper, are common but typically have low cover. Common juniper cover increases in old stands. Relatively few vascular species occur, but a rich variety of lichens, primarily *Cladonia* species, are present. Moss cover is sparse.

SITE UNITS

Drier Sites Sites drier than mesic are common and include sandy soils, south aspects, and upper and crest slope positions. The vegetation of these sites is similar to that of the zonal site series but is distinguished by less abundant pinegrass, greater cover of kinnikinnick, common juniper, and lichens, and typically a more open forest canopy.

02 P1 - Kinnikinnick - Cladonia Site Series includes all sites drier than the /01 site series. Sites with sand or loamy sand textured soils (/02b Sand Phase) are most common, but crest slope positions with shallow (<50 cm) soils over bedrock (/02c Shallow Phase) and steep south- and west-facing slopes (/02a Typic Phase) with deeper soils are also common. The mature forest canopy is relatively open and patchy. Low densities of pine regeneration often occur beneath canopy openings. The undergrowth is dominated by lichens (especially *Cladonia* species), kinnikinnick, and patches of pinegrass. Moss cover is sparse.

Wetter Sites Sites wetter than mesic are generally small and localized. They occur primarily at the fringe of wetlands and along stream channels. Due to the small volumes of seepage water in this subzone, moist seepage sites are uncommon and occur primarily as narrow bands on lowermost slope positions and in small depressions. The vegetation is distinguished from mesic and drier sites by the presence of white spruce, scrub birch, black twinberry, dwarf scouring-rush, palmate coltsfoot, common horsetail, trailing raspberry, or step moss.

03 Sxw - Scrub birch - Fen moss Site Series occurs on gentle lower and toe slope positions at the perimeter of shrub-carrs and some herbaceous wetlands. Sites are often only very slightly (<1 m) elevated above an adjacent shrub-carr. Soils are moist in the spring but surfaces often become dry by mid season. Growing-season frost is very common. The forest canopy is relatively open and dominated by short white spruce and often some lodgepole pine. Tree regeneration is typically sparse. Undergrowth vegetation is distinguished by abundant scrub birch and willows. Kinnikinnick is common but pinegrass is generally absent. Lichens are less abundant than on drier sites.

04 Sxw - Scrub birch - Feathermoss Site Series occurs on lower and toe slope positions, most commonly at the perimeter of herbaceous wetlands and occasionally as a narrow zone upslope of the SBPSxc/03. Growing-season frost is probably less common than in /03 sites. The

mature forest canopy is typically closed, and dominated by white spruce and lodgepole pine. Spruce regeneration is common. The undergrowth vegetation is characterized by a moderate cover of low shrubs and a relatively rich variety of forbs. Abundant coltsfoot and black twinberry, but little or no common horsetail or scrub birch, distinguish the vegetation. Shrub cover is generally less than in the /03 site series.

05 Sxw - Horsetail - Glow moss Site Series occurs at the toe of slopes and in depressions with a near-surface (<50 cm) water table. It includes small forested wetlands and wet sites that occur within the forest matrix and, less often, adjacent to non-forested wetlands. The forest canopy is relatively open and dominated by short white spruce trees. Lodgepole pine is uncommon. The undergrowth is a relatively species-rich community dominated by common horsetail but containing several other moist- to wet-site species including trailing raspberry, soft-leaved sedge, and bluejoint. Mosses cover most of the forest floor. The vegetation is distinguished by abundant common horsetail and a smaller cover of black twinberry and northern black currant than in /06 sites.

06 Sxw - Horsetail - Meadowrue Site Series occurs on wet sites adjacent to stream channels where seepage water input is nearly continuous, resulting in moist, relatively nutrient-rich soils. These are the most productive sites for tree growth in the SBPSxc but they are typically small. The forest canopy and tree regeneration layers are dominated by white spruce. The undergrowth includes a moderate cover of shrubs, especially black twinberry. It is distinguished by relatively abundant bunchberry, common mitrewort, soft-leaved sedge, and bluejoint, but a smaller percent cover (<10%) of common horsetail than in /05 sites.

SITE UNITS

Non-forested Sites Wetlands are very abundant in the SBPSxc and include fens, swamps, marshes, and shallow open water (Roberts 1984). Bogs are present but not common. The wetlands often form large integrated complexes of many wetland types with islands of upland forest. The elevation change between wetland and mesic upland forest may be as little as 1 m. Grasslands are not common in the SBPSxc although small communities dominated by *Stipa* species and timber oatgrass occur locally on some south-facing slopes. Moist meadows, saline meadows, and shrub-carrs are very common at the perimeter of non-forested wetlands, between the wetland and moist forest. The occurrence of these non-forested communities is probably due to growing-season frosts or saline soils, which discourage forest establishment.

Key to Site Units of the SBPSxc

- 1a. Moisture regime mesic or drier, no evidence of persistent seepage water or water table within 1 m of surface; kinnikinnick cover $\geq 10\%$; lichen cover greater than moss cover; spike-like goldenrod usually present; spruce absent or incidental.
 - 2a. Soils shallow (<50 cm) to bedrock; bedrock commonly exposed; slope position mostly crest or upper.

**SBPSxc/02 PI - Kinnikinnick - Cladonia;
/02c Shallow Phase**
 - 2b. Soils deeper (>50 cm); bedrock not exposed; slope position variable.
 - 3a. Slope gradient >20% or slope position clearly crest (not including low, subdued crests).
 - 4a. Slope aspect SE, S, SW, or W (100–290°) or slope position clearly crest.

**SBPSxc/02 PI - Kinnikinnick - Cladonia;
/02a Typic Phase**
 - 4b. Slope aspect NW, N, NE, or E (290–360°, 0–99°) and slope position not clearly crest (if crest, then low, subdued crest).

SBPSxc/01 PI - Kinnikinnick - Feathermoss

3b. Slope gradient <20% and slope position not clearly crest.

5a. Soil texture sand or loamy sand.

**SBPSxc/02 PI - Kinnikinnick - Cladonia;
/02b Sand Phase**

5b. Soil texture loamy, silty, or clayey.

SBPSxc/01 PI - Kinnikinnick - Feathermoss

1b. Moisture regime subhygric or wetter; evidence of seepage water input or water table within 1 m of soil surface; kinnikinnick cover <10%; moss cover usually greater than lichen cover; spike-like goldenrod usually absent; spruce usually dominates forest canopy.

6a. Moisture regime subhygric; no evidence of persistent seepage water or water table within 50 cm of soil surface; soft-leaved sedge and leafy mosses absent or incidental; lodgepole pine and common juniper usually present.

7a. Scrub birch cover >1% and grey-leaved willow cover usually >5%; tree canopy usually very open.

SBPSxc/03 Sxw - Scrub birch - Fen moss

7b. Scrub birch absent or cover <1% and grey-leaved willow cover <5%; tree canopy moderately open to closed.

SBPSxc/04 Sxw - Scrub birch - Feathermoss

6b. Moisture regime subhygric to subhydric; evidence of persistent seepage water or water table within 50 cm of the soil surface; soft-leaved sedge and leafy mosses present; lodgepole pine and common juniper absent or incidental.

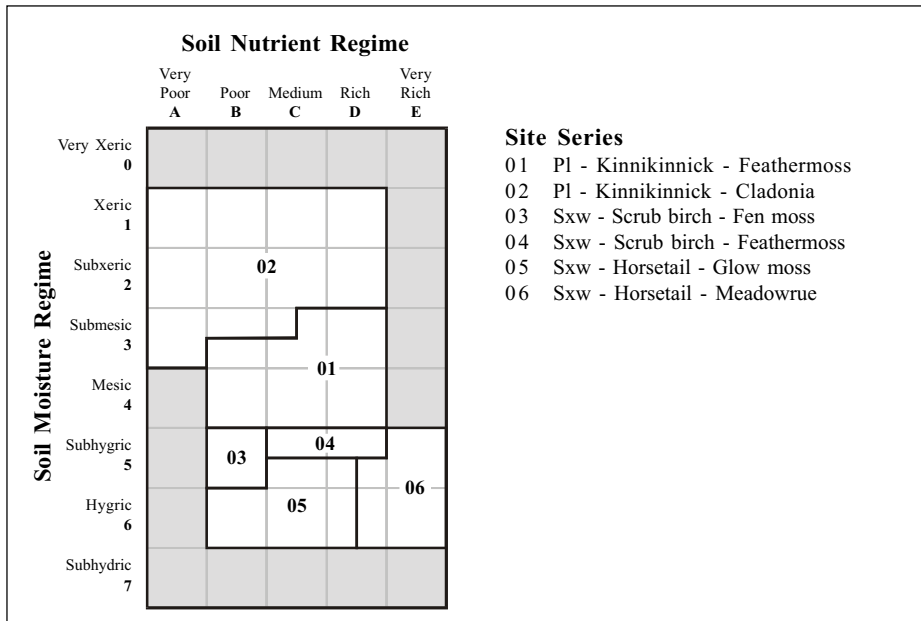
8a. Common horsetail cover >10%; combined cover of black twinberry and currant species usually <5%; sites seldom adjacent to permanent streams.

SBPSxc/05 Sxw - Horsetail - Glow moss

8b. Common horsetail cover <10%; combined cover of black twinberry and currant species >5%; sites usually adjacent to streams.

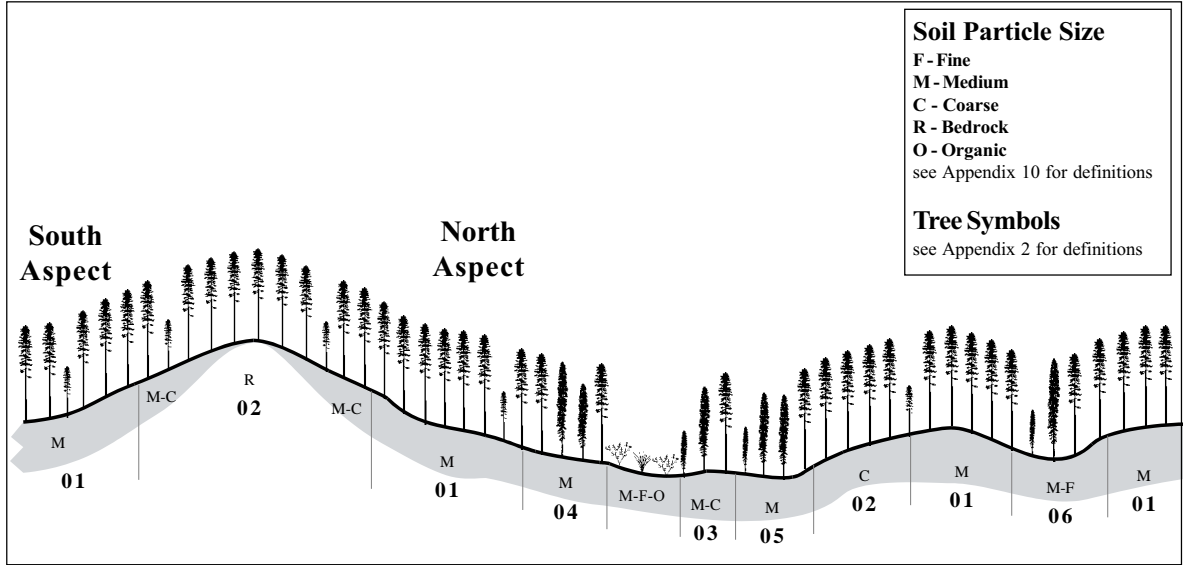
SBPSxc/06 Sxw - Horsetail - Meadowrue

SBPSxc Edatopic Grid



SBPSxc Landscape Profile

6•33 - 9



Site Features of SBPSxc Site Series

Site Series	01	02	03
Key Features	zonal and other gently to steeply sloping sites (not steep S or W aspects) with mesic or submesic moisture regime on upper to lower slope positions	wide range of submesic and drier sites: crest slope positions and S- to W- facing slopes > 15% (/02a), gentle slopes with sand soils (/02b), and shallow (< 50 cm) to bedrock soils (/02c)	moist, lower and toe slopes and depressions without persistent near-surface seepage or water table; often at perimeter of shrub-carrs in cold air accumulation basins
Soil Moisture / Nutrient Regimes	submesic, mesic / poor - rich	xeric - submesic / very poor - rich	subhygric / poor
Slope Position	level, mid, lower	crest - mid, level	lower, toe, depression
Aspect	all	all	all
Slope Grade (%)	0 - 30	all (mostly > 15)	0 - 10
Soil Texture	loamy	sand, loamy	loamy, sand
Soil Humus Form and Thickness (cm)	Hemimor, Xeromor 2 - 4	Xeromor 0 - 3, discontinuous	Hemimor 1 - 4
Occurrence / Size / Distribution	predominant / large / wide	very common / medium / wide	uncommon / small-moderate / wide

Site Features of SBPSxc Site Series (continued)

Site Series	04	05	06
Key Features	moist lower slopes with intermittent to persistent seepage but no water table within 50 cm of surface, often adjacent to non-forested wetlands	wet, lower and toe slope positions and depressions, usually with water table within 50 cm of the surface; seldom adjacent to permanent stream	wet sites along permanent streams, persistent seepage and free water usually within 50 cm of surface
Soil Moisture / Nutrient Regimes	subhygric / medium, rich	subhygric, hygric / poor - rich	subhygric, hygric / rich, very rich
Slope Position	lower, toe	(lower) toe, depression	lower, toe, depression
Aspect	all	all	all
Slope Grade (%)	0 - 25	0 - 10	0 - 15
Soil Texture	loamy	loamy, sand, silty	loamy, silty
Soil Humus Form and Thickness (cm)	Hemimor 2 - 10	Hemimor 6 - 20	Hemimor 6 - 20
Occurrence / Size / Distribution	common / small / wide	common / small / wide	uncommon / small / wide

SBPSxc Vegetation Table^a

	Site Unit	02	01	03	04	05	06	
Tree	<i>Pinus contorta</i>	■■■■	■■■■		■■			lodgepole pine
Layer	<i>Picea glauca</i>			■■■■	■■■■	■■■■	■■■■	white spruce
Shrub	<i>Juniperus communis</i>	■■	■■		■			common juniper
Layer	<i>Shepherdia canadensis</i>	■■	■■	■■	■■			soopolallie
	<i>Rosa acicularis</i>	■	■	■■	■■	■	■	prickly rose
	<i>Salix glauca</i>			■■■	■	■		grey-leaved willow
	<i>Betula glandulosa</i>			■■				scrub birch
	<i>Lonicera involucrata</i>				■■	■	■■■	black twinberry
	<i>Ribes hudsonianum</i>					■	■■	northern black currant
Herb	<i>Oryzopsis pungens</i>	■	■					short-awned ricegrass
Layer	<i>Solidago spathulata</i>	■	■					spike-like goldenrod
	<i>Arctostaphylos uva-ursi</i>	■■■	■■■	■■				kinnikinnick
	<i>Achillea millefolium</i>	■	■	■	■			yarrow
	<i>Epilobium angustifolium</i>	■	■	■	■	■	■	fireweed
	<i>Fragaria virginiana</i>	■	■	■	■	■	■	wild strawberry
	<i>Linnaea borealis</i>	■■	■■	■	■	■	■	twinflower
	<i>Galium boreale</i>			■	■	■		northern bedstraw
	<i>Aster ciliolatus</i>			■	■	■	■	fringed aster
	<i>Petasites palmatus</i>			■	■	■	■	palmate coltsfoot
	<i>Equisetum scirpoides</i>			■	■	■	■	dwarf scouring-rush
	<i>Equisetum arvense</i>				■	■■■	■■	common horsetail
	<i>Cornus canadensis</i>				■		■	bunchberry
	<i>Rubus pubescens</i>					■	■	trailing raspberry
	<i>Mitella nuda</i>					■	■	common mitrewort
	<i>Calamagrostis canadensis</i>					■	■	bluejoint
	<i>Carex disperma</i>					■	■■■	soft-leaved sedge
Moss	<i>Cladina</i> spp.	■■	■■	■				reindeer lichens
Layer	<i>Cladonia</i> spp.	■■■	■■■	■				cladonia lichens
	<i>Peltigera</i> spp.	■■■	■■	■	■			pelt lichens
	<i>Tomenthypnum nitens</i>			■			■	golden fuzzy fen moss
	<i>Pleurozium schreberi</i>		■■	■	■■■	■	■	red-stemmed feathermoss
	<i>Aulacomnium palustre</i>			■	■	■		glow moss
	<i>Hylocomium splendens</i>			■	■■■	■■■		step moss
	<i>Peltigera aphthosa</i>		■	■	■		■	freckle pelt
	<i>Mnium</i> spp.					■	■■■	leafy mosses
	<i>Drepanocladus uncinatus</i>						■	sickle moss

^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%