

BOREAL LOW ZONE OF YUKON

Part 3:
Klondike Plateau
Boreal Low Subzone (BOLkp)

A Field Guide to
Ecosite Identification

The logo for Yukon, featuring the word "Yukon" in a bold, white, sans-serif font. Above the letter "o" is a stylized white sunburst or starburst icon.

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Part 3:
**Klondike Plateau Boreal
Low Subzone (BOLkp)**

A Field Guide to
Ecosite Identification

Karen McKenna, Sherri Elwell,
Del Meidinger and Mitchell Heynen

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Note: Part 1 of the Boreal Low Zone Series contains introductory information about ecosite identification in the field and the Yukon Bioclimate Ecosystem Classification System. Part 2 contains ecosite description chapters for the Southern Lakes Boreal Low Subzone as well as appendices.

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Ecological field sampling in the Klondike Plateau region began in the mid-1970s. The federal government (Department of Indian Affairs and Northern Development, DIAND) conducted expansive forest inventory, mensuration and mapping programs throughout the southern half of the Yukon from 1975 to 1982. Key contributors to this early work on ecological classification in Southern Lakes were Ed Oswald, John Senyk and Barry Brown, based out of the Pacific Forestry Research Centre, Canadian Forest Service, in Victoria, B.C.

During the period from 1990 to 2017, field data were collected under the auspices of various inventory programs by the territorial government, federal government, First Nations governments and private industry in the region. Biophysical inventory surveys were conducted by Government of Yukon in the Klondike Valley, Top of the World Highway, Stewart River, Beaver Creek area, Indian River area and Tombstone area. Private consulting companies completed intensive biophysical inventory and mapping programs for the Casino Gold and Coffee Gold areas to support the environmental assessment process.

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The classification published in this guide is based on analyses of data collected at more than 600 sites in the Klondike Plateau region by a variety of sources. This classification dataset was harmonized with the Yukon Biophysical Inventory System (YBIS) as well as additional data

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Introduction to Part 3

This field guide presents the site-level classification describing the ecosystems of the Klondike Plateau Boreal Low Subzone (BOLkp), following the Yukon Bioclimate Ecosystem Classification (YBEC) system. This publication is Part 3 in a series of field guides, which together describe the Boreal Low Bioclimate Zone of Yukon.

Detailed information describing the entire Boreal Low zone, the YBEC system and how to use the tools in this guide, are located in Part 1: Introduction of this series. Part 1 should be referred to as a supplementary document to this guide and can be located as a separate digital file or in a hard copy of the *Southern Lakes Boreal Low Subzone (BOLsl): A Field Guide to Ecosite Identification*.

1.0 KLONDIKE PLATEAU BOREAL LOW SUBZONE (BOLkp)

1.1 Description

The Klondike Plateau Boreal Low Subzone (BOLkp) is geographically located in west-central Yukon (Figure 1-1). The subzone extends in elevation from 350 to 1,000 metres (m) above sea level, occupying the narrow valley bottoms, steep-sided slopes and plateaus of the Yukon, Klondike, Stewart, Nisling, Indian, Sixtymile, Chandindu, lower White, and Fortymile river catchments. The subzone is largely contained in three physiographic regions, the Klondike Plateau, Tintina Trench and Southern Ogilvie Mountains, which respectively characterize the various landscape features of the subzone (Mathews 1986).

The Klondike Plateau region extends from the Kluane Plateau and Wellesley depression in the south to the Tintina Trench in the north, and accounts for the majority of the subzone area. This region is characteristic of a mature unglaciated landscape that has experienced extensive weathering and fluvial dissection, creating smooth hilltop ridges and deep V-shaped valleys. Soil landscapes reflect weathered and fractured bedrock, which has undergone prolonged periods of chemical and physical weathering in the absence of glaciation. Surface deposits are mostly composed of colluvium, with alluvium, glacial outwash and ancient fluvial terraces found along major river systems (Smith et al. 2004). Extensive deposits of silty reworked loess, up to several metres thick, are present in many valleys and in higher elevation draws as a result of aeolian transport during glacial climates. Reworked loess deposits are rich with fine-textured soils, which have higher soil moisture content and favourable to permafrost and organic soil development (Mathews 1986).

The northern extent of the subzone is limited to the valleys of the Tintina Trench and Southern Ogilvie Mountains physiographic regions. The Tintina Trench is a prominent physiographic depression that separates the Ogilvie Mountains from the Klondike Plateau (Smith et al. 2004). The trench worked as a funnel for ice during glacial periods, accumulating sediment and debris that form the low-relief rolling topography of the present landscape. Surface deposits within the trench consist of dissected, unconsolidated glacial and fluvial sediments originating largely from the Ogilvie Mountains to the north.

The Southern Ogilvie Mountains region borders the Tintina Trench to the north and is characterized by rugged terrain shaped by a history of

glaciation. Glacial processes have shaped this landscape, leaving evidence of moraines, U-shaped valleys and alpine cirques. Surface deposits consist mostly of colluvial material and glacial deposits, with small amounts of organic, alluvial and lacustrine deposits in glaciated valleys (Duk-Rodkin 1996).

The subzone is within the extensive discontinuous permafrost zone. Permafrost is commonly encountered in valley bottoms, and on lower and mid slopes with cool aspects and fine-textured, poorly drained soils. Soil moisture content and organic material thickness are critical components controlling the distribution and depth of permafrost in this area. The presence of permafrost is a key factor in wetland distribution in the subzone (Smith et al. 2004).

The climate of the Klondike Plateau Subzone is strongly continental, with warm summers and very cold winters. The mean annual temperature of the subzone is -4°C , with a mean coldest monthly (January) temperature of -26°C and mean warmest monthly (July) temperature of 16°C (Environment Canada 2018). Mean annual precipitation, as reported at the Dawson Airport, is 324 mm; the greatest monthly precipitation occurs in July. The average annual frost-free period is 70 days (Environment Canada 2018). Low-lying river valleys (e.g., the Yukon, lower Klondike and Stewart) experience the coldest winter temperatures because of cold air ponding; this creates a temperature inversion, trapping air in these confined areas. During the winter months this often causes warmer temperatures as the elevation increases (Bonnaventure et al. 2012).

Open to closed black and white spruce forests — in both pure and mixed stands with Alaska paper birch and trembling aspen — dominate this bioclimate subzone. Treed ecosystems are often of mixed overstorey due to frequent forest fires. Shrub understorey on circum-mesic sites typically consists of common Labrador tea, willows, prickly rose and less commonly soapberry. Shrub birch becomes more common on cool and nutrient-poor sites as elevation increases and is a characteristic species of the Boreal High Zone.

Dry sites are host to aspen-dominated woodlands on well-drained fluvial, glacial-fluvial or colluvial materials. Grasslands occur on steep south-facing slopes and are the warmest and driest sites in the subzone. Grasslands in the unglaciated Klondike Plateau can contain rare and endemic species from Beringian landscapes.

Moist ecosystems are typically dominated by black and white spruce, and commonly have a component of Alaska paper birch. Common Labrador tea, willows, horsetail, feathermosses and brown mosses are common in the understory. Permafrost can be present on moist sites and often occurs where soil horizons transition to mineral from humus soils associated with subsurface seepage. Moist sites, which have an abundance of brown moss and wetland species, are often classified as shrub or treed swamps.

Floodplain ecosystems are common in proximity to major rivers and their tributaries. Floodplain ecosites are typically dominated by white spruce, balsam poplar or river alder. These sites are rich in soil nutrients and show signs of accelerated growth compared to other ecosites in the region.

Wetlands are common in valley bottoms, riparian draws, cool north aspects and along toe and lower slopes with the presence of permafrost. Wetlands are either treed or non-treed, the latter of which consist of shrub- or graminoid-dominated vegetation. Treed wetlands have an open overstorey of stunted black and white spruce with a combination of willows, shrub birch and common Labrador tea in the understory. Common graminoids include spruce muskeg sedge, bluejoint reedgrass and cottongrasses. Permafrost plays an important role in wetland development and in determining hydrologic conditions.

Natural and anthropogenic disturbance play a key role in the landscape of the subzone. Forest fires are a common occurrence through the Klondike Plateau region and have resulted in a landscape that is dominated by seral vegetation. Frequent lightning strikes — in combination with the limited geographic barriers of the smooth plateau landscape — lead to frequent and extensive burns through the region. In extreme fire years up to 15% of the Klondike Plateau region has been affected by forest fire activity. On average, the BOLkp has the highest fire interval of the BOL subzones, with a recurrence cycle of 100 years (Grods et al. 2012)

Anthropogenic disturbance is common in the region, with current and historical placer mining activity along several rivers and creeks, including the Klondike, Fortymile, Sixtymile and Indian rivers (Smith et al. 2004). Hard rock mineral exploration activity is common in the central region of the subzone. Forestry and agriculture are practised on the floodplains and high productivity sites in proximity to Dawson city.

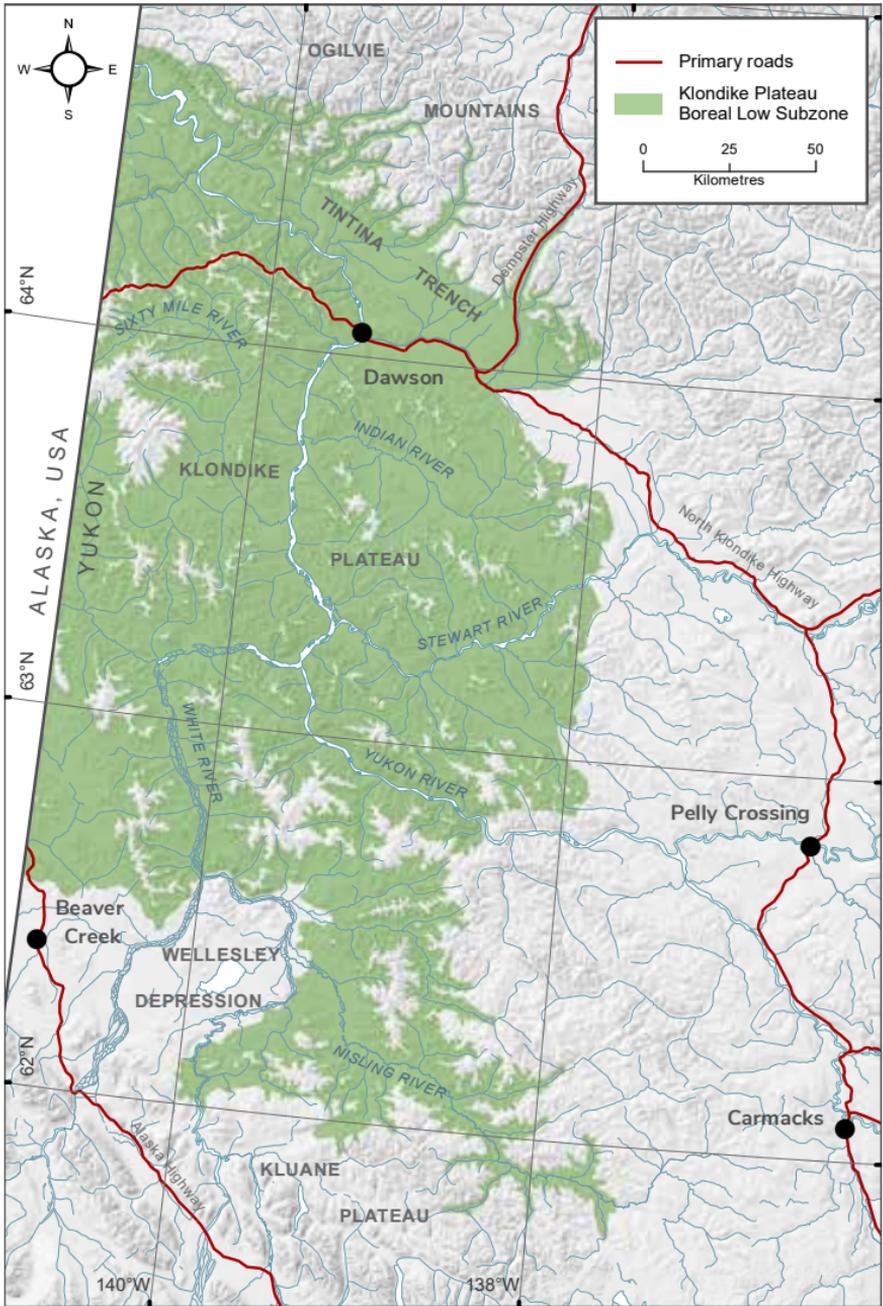


Figure 1-1: Extent of the Klondike Plateau Boreal Low Subzone

1.2 Distinguishing BOLkp from adjacent subzones

Boreal Low Yukon Plateau North (BOLyn)

- East of BOLkp
- Forests dominated by white and black spruce; reference ecosite is White spruce – Black spruce / Feathermoss
- Aspen is the dominant seral species of the subzone
- Pine is present but not common
- Lesser presence of Labrador tea (*Rhododendron groenlandicum*) on dry to moist sites
- History of glaciation; the subzone occupies the broad valleys of the Stewart, Macmillan, Ross and Pelly rivers and has extensive glacio-fluvial, morainal and glaciolacustrine deposits
- Slightly moister than BOLkp
- Slightly warmer in winter than BOLkp
- Permafrost is widespread, but slightly less extensive than in BOLkp

Boreal Low Ruby Ranges (BOLrr)

- South of BOLkp
- Forests dominated by white spruce; reference ecosite is White Spruce / Feathermoss
- Black spruce is less abundant and typically restricted to poorly drained sites with Cryosolic soils
- History of glaciation; glaciofluvial and morainal deposits common
- Drier than the BOLkp, receiving less precipitation and snow annually; occurs in the rain shadow of the Saint Elias Mountains
- Similar temperatures to BOLkp in winter, but cooler in summer
- Permafrost is widespread; near surface permafrost is common in valley bottoms as well as in alpine areas

Boreal High Klondike Plateau (BOHkp)

- Higher elevations, generally above 1,000 m
- More open canopy; characterized by white spruce – black spruce forests; Alaska paper birch also occurs
- Typical understorey with shrub birch (*Betula glandulosa*), willow (*Salix* spp., particularly *S. glauca*) and Labrador tea (*Rhododendron groenlandicum*)
- In addition to shrub birch, crowberry (*Empetrum nigrum*) and blueberry (*Vaccinium uliginosum*) are more abundant and frequent in BOHkp

- A trend to more reindeer lichen (*Cladina* spp.) than at lower elevations
- Moister than BOLkp
- Cooler in summer and warmer in winter than BOLkp due to cold air ponding at lower elevation
- Permafrost is widespread

1.3 Ecological classification in the Klondike Plateau area

Ecosites in the BOLkp were characterized through analysis of 634 ecological plots collected throughout the subzone between 1975 and 2018. Oswald and Senyk, of the Canadian Forest Service, Pacific Forest Research Centre, conducted ecological inventory and mapping throughout the Yukon in the mid-1970s (Oswald and Senyk 1977). Environment Yukon staff collected data in this subzone for various vegetation and wildlife habitat projects between 1990 and 2013. Data was also collected to support the environmental assessment of the Casino Gold Mine project (2008, 2010) and Coffee Gold Mine project (2014–15). Plots were collected by Cryogeographic Consulting for the Indian River Wetlands Project in 2016 and 2017. Plots were also collected by the authors during the summer of 2017 and 2018. Due to access considerations within the subzone, many of the existing plots are located in the Klondike River Valley, the Yukon River Valley west of Dawson City, and the areas surrounding the Casino Gold and Coffee Gold projects.

The data used for the analysis includes:

- 5 plots collected by Oswald and Senyk;
- 199 plots collected by Environment Yukon staff and contractors;
- 117 plots collected for the Casino Gold Mine project;
- 165 plots collected for the Coffee Gold Mine project;
- 105 plots from Indian River wetland mapping; and
- 43 plots collected in 2017 by Cryogeographic Consulting and EDI Environmental Dynamics Inc.

All available data was used to develop the classification and descriptions. Most ecosites are based on a reasonable set of data, but some have relatively little. In some ecosites, soils data is very limited and certain plant groups, e.g., bryophytes and willows, are often not identified to species. This limits the information that can be presented for these vegetation communities. Remote access and data distribution limit the ability to ground-truth the entire subzone boundary and elevational transition. Efforts were made through field verification and vegetation analysis to confirm these defining attributes. Over time and where necessary, identified gaps will be filled.

2.0 ECOSITES OF THE BOLkp

The BOLkp ecosites are displayed on an edatopic grid (Figure 2-1), which illustrates their relationship to each other based on relative soil nutrient and moisture regimes. The ecosites of the BOLkp are also listed in Table 2-1, along with their codes and names. The ecosites have been organized into five major ecological groupings to assist with their identification.

These are the five groupings:

- Dry to Mesic Ecosites;
- Mesic to Moist Ecosites;
- Floodplain Ecosites;
- Bog and Fen Ecosites; and
- Swamp, Marsh and Shallow Water Ecosites.

Table 2-2 summarizes how to identify the ecosystem group.

Once an ecosystem group has been identified the following three identification tools can be used to identify the specific ecosite within a group:

- a landscape profile shows a typical distribution of ecosites on the landscape;
- an ecosite identification table presents key features for identifying the ecosites; and
- a vegetation table lists the common species for each ecosite and uses colour and symbols to indicate their relative frequency and abundance.

Following the edatopic grid and identification tools for each grouping, each ecosite is further described and characterized. This information includes a general description, a table of site and soil characteristics, a vegetation summary, a vegetation association table and photos. The user can identify an ecosite and describe the vegetation community by identifying the vegetation association.

Note that some fen and shallow water ecosites are grouped on landscape profiles and edatopic grids because of similar site characteristics and soil moisture and soil nutrient regimes.

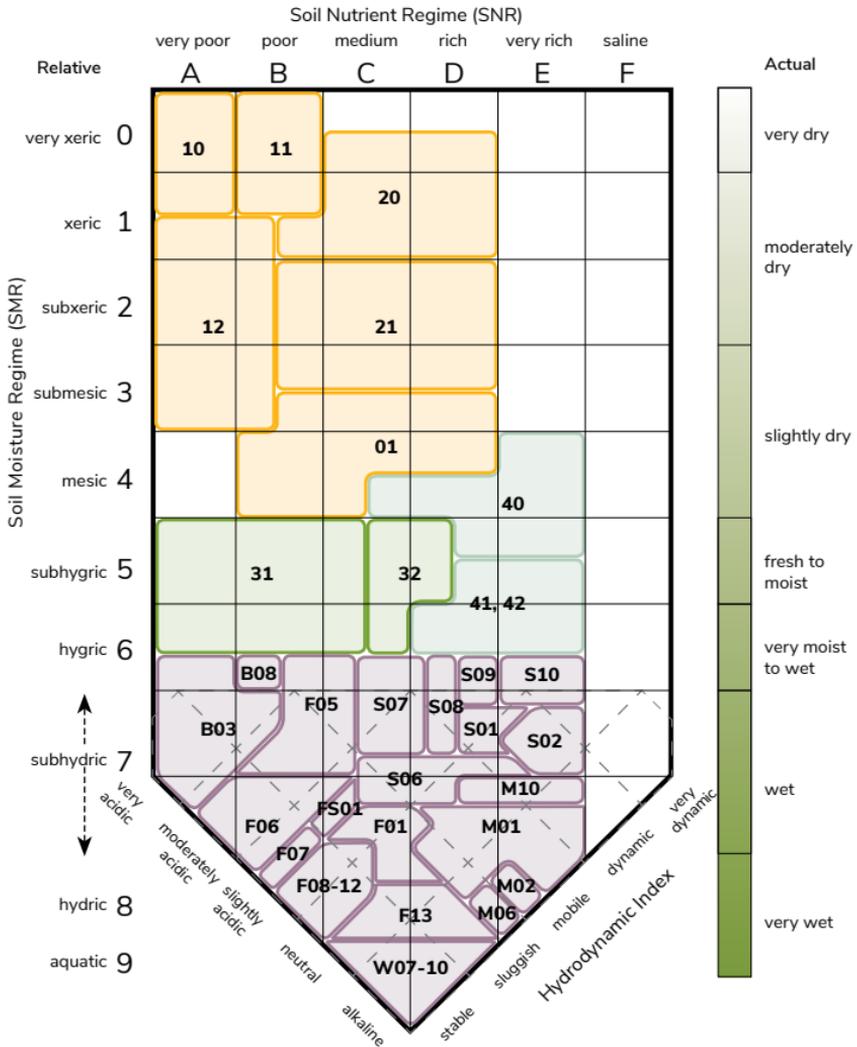


Figure 2-1: Edatopic grid for BOLkp ecosites

Table 2-1: BOLkp ecosite codes and names

Code	Ecosite Grouping and Name	Code	Ecosite Grouping and Name
Dry to Mesic Ecosites		Fen (continued.)	
10	Lichen – Rock Moss Talus	F10	Livid Sedge – Mud Sedge Fen
11	Prickly Saxifrage – Lichen Rock Outcrop	F11	Tufted Club-rush – Beaked Sedge Fen
12	AS – Lichen Woodland	F12	Lesser Panicked Sedge Fen
20	Pasture Sage Grassland	F13	Water Horsetail – Sedge Fen
21	A – Kinnikinnick Woodland	FS01	SbSw – Leatherleaf Fen/Swamp
01	ASW – Lowbush Cranberry Forest	Swamp	
Mesic to Moist Ecosites		S01	Willow – Bluejoint Swamp
31	SbSw – Red Bearberry Forest	S02	River Alder Swamp
32	SbSwW – Horsetail Forest	S06	Willow – Sedge – Peat Moss Swamp
Floodplain Ecosites		S07	Sb – Labrador Tea Swamp
40	Sw – Riparian Forest	S08	SbSw – Red Bearberry – Brown Moss Swamp
41	B – Riparian Forest	S09	Sw – Shrub Birch – Bluejoint Swamp
42	River Alder Riparian	S10	Sw – Horsetail – Brown Moss Swamp
Wetland Ecosites		Marsh	
Bog		M01	Beaked – Water Sedge Marsh
B03	Sb – Labrador Tea Bog	M02	Water Horsetail Marsh
B08	Palsa Bog	M06	Mannagrass Marsh
Fen		M10	Bluejoint Marsh
F01	Water Sedge Fen	Shallow Water	
F05	Sb – Tussock Sedge Fen	W07	Hornwort Shallow Water
F06	Shrub birch – Tussock Sedge Fen	W08	Wild Calla Shallow Water
F07	Leatherleaf – Peat Moss Fen	W09	Pond-lily Shallow Water
F08	Slender Sedge – Beaked Sedge Fen	W10	Water-milfoil – Bladderwort Shallow Water
F09	Creeping Sedge Fen		

Table 2-2: How to identify the ecosite group

Moisture	Site/Soils	Overstorey/Shrubs	Ground Cover
Dry Ecosites			
SMR: 0-3 Drainage: VR-W	Often moderate to strong mid to upper slopes; sometimes gentle to level on coarse-textured soils; rock outcrops, talus, and shallow to moderately deep soils, although shallow soils common; permafrost absent	Forests (A, ASw, ASb, ASwW, Sw, Sb), grasslands, dry meadows, lichen communities	Drought-tolerant lichens, rock mosses, ground shrubs, grasses, forbs; moss cover sparse
Mesic Ecosites			
SMR: 3-4 Drainage: W-M	Often moderate to strong mid or upper slopes, sometimes level successional sites; near-surface permafrost uncommon	Forests (Sb, SbSw, Sw, A, W, ASw, SbW, SbSwW, SwW); mixed and deciduous stands are often successional; rose and Labrador tea common	Feathermosses and lowbush cranberry dominate
Moist Ecosites			
SMR: 5-6 Drainage: I-P (M) No prolonged water table, seepage, distinct or prominent mottles or gleying within 40 cm	Mostly lower and toe slopes and level sites; sometimes mid slopes; moisture receiving; permafrost typical; cold air influence on some sites	Forests (A, W, SbSwW, SwB, Sb, SbSw, Sw, SwW); Labrador tea and/or rose common	Feathermosses, horsetail and bluejoint reedgrass common

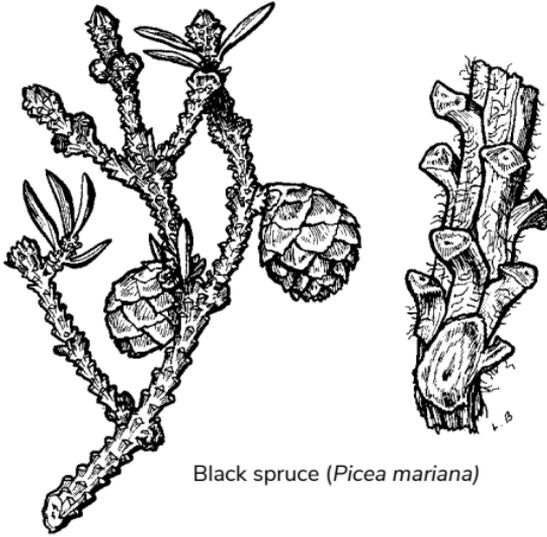
Table 2-2: How to identify the ecosite group (continued)

Moisture	Site/Soils	Overstorey/Shrubs	Ground Cover
Floodplain Ecosites			
SMR: 4–5 (6)* Drainage: W–M (I) No prolonged water table, seepage, or distinct or prominent mottles or gleying within 30 cm	Mostly level sites; fluvial parent materials; flooding is the major geologic process; permafrost uncommon	Forests (B, W, SwB, SwW, Sw) or river alder; willows, prickly rose and highbush cranberry common	Horsetails; ground cover may be sparse
Wetland Ecosites			
Bog Ecosites			
SMR: 6–7* Drainage: P–VP Stable water table; surface is usually fairly dry, raised above the water table	Level or depressional sites; ≥40 cm poorly decomposed peat; soils are Organic Cryosols; permafrost about 35–55 cm from surface	Open and sparse Sb; Labrador tea common Sw on palsas bogs with variable shrubs	Moderate to high cover of peat mosses; cloudberry, lowbush cranberry and bog cranberry are usually present Feathermosses and brown mosses on palsas bogs
Fen Ecosites			
SMR: 7–8 (6)* Drainage: P–VP Water table at or near surface, or seepage on top of permafrost	Mid to toe slopes, or level or depressional sites; 20–40 cm or more of fibric or mesic peat; soils are Fibrisols, Mesisols or Cryosols; permafrost may be present	Mostly non-treed, with trees <10% cover; can be shrub dominated with sometimes sparse to open Sb or Sw	Sedges or tussock cotton-grass; peat mosses and brown mosses

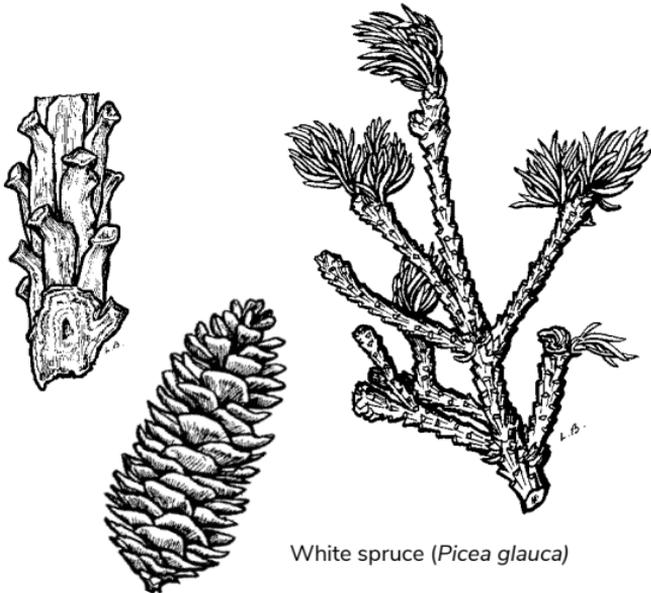
*Moisture values in parentheses represent values that occur occasionally.

Table 2-2: How to identify the ecosite group (continued)

Moisture	Site/Soils	Overstorey/Shrubs	Ground Cover
Swamp Ecosites			
SMR: 6-7 Drainage: I-P Fluctuating water table; seepage may be present; signs of gleying or water table within 40 cm; distinct or prominent mottles within 40 cm, with 20 cm+ peaty surface horizon; subsurface water flow, flooding or winter aufeis common	Mid to toe slopes, or level or depressional sites; often along rivers, creeks in valleys or draws; generally shallow layer (5-30 cm) of well-decomposed peat over mineral soil; permafrost may be present; soils are Gleysolic Cryosols and Gleysols	Forest (Sb, Sw, W)- or shrub-dominated (willows, river alder)	Variable understorey, including bluejoint reedgrass, sedges, and/or horsetails; mosses include feather, brown, peat and leafy mosses
Marsh Ecosites			
SMR: 7-8 Drainage: I-VP Fluctuating water table; water table may be present at surface	Sandy, silty or loamy mineral soils; often Gleysols; permafrost may be present	Trees <10% cover; shrubs <10% cover	Sedge (beaked, water), water horsetail, mannagrass, or bluejoint reedgrass dominated
Shallow Water Ecosites			
SMR: 9 Drainage: Aquatic Permanent water less than 2 m deep	Aquatic	Trees <10% cover; shrubs <10% cover	Emergent aquatics, including hornwort, wild calla, pond lily, water milfoil, or bladderwort



Black spruce (*Picea mariana*)



White spruce (*Picea glauca*)

DRY TO MESIC ECOSITES

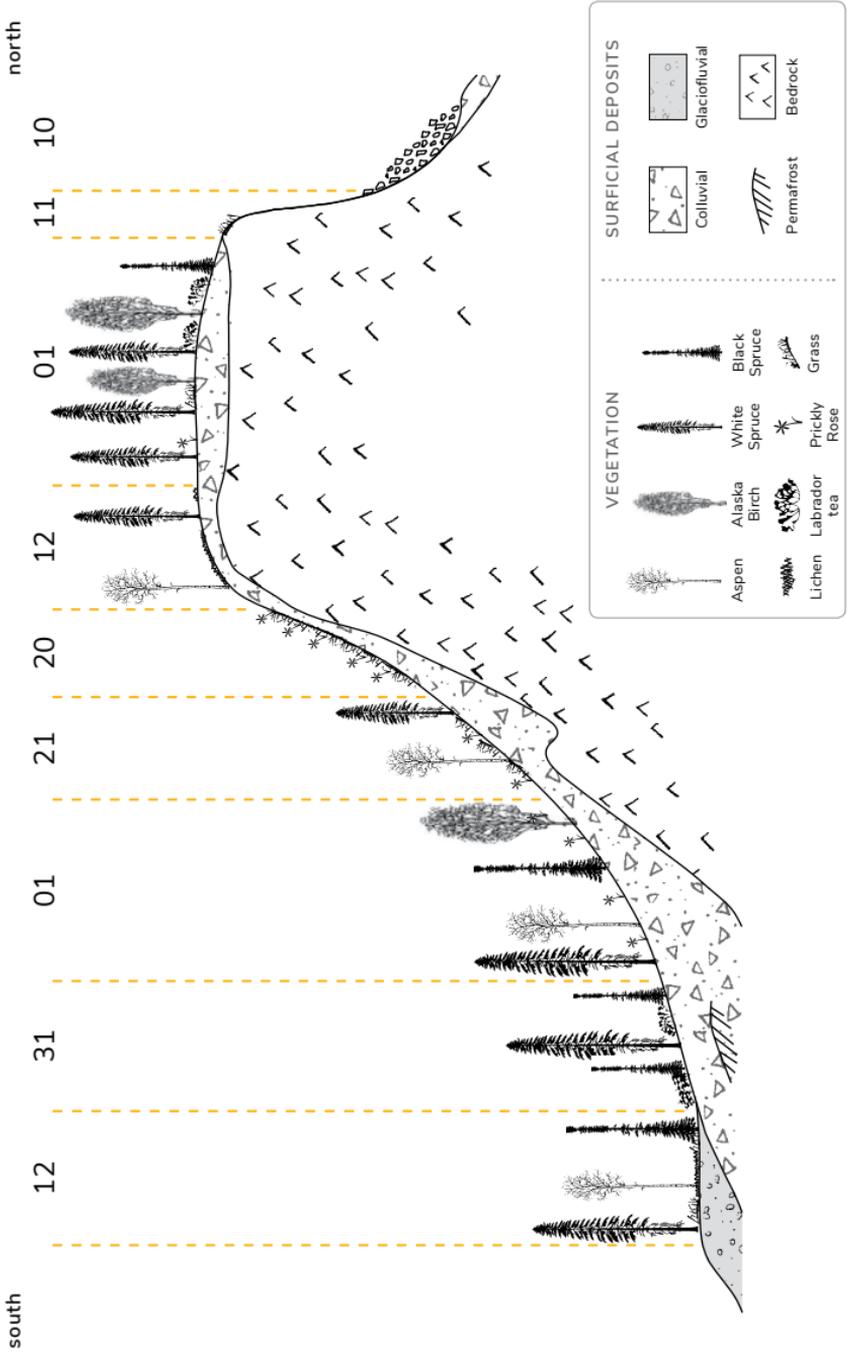


Figure 2-2: Dry to Mesic Ecosites – Landscape Profile

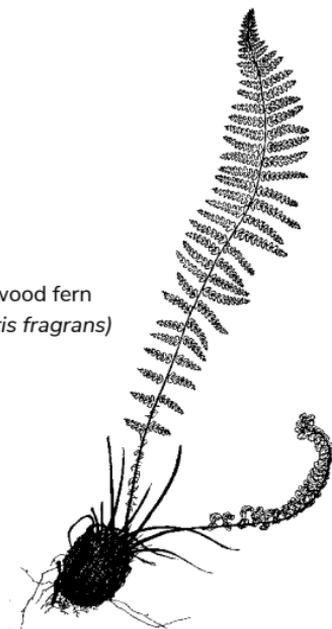
Table 2-3: Dry to Mesic Ecosites — Ecosite Identification Table

Dry to Mesic Ecosites	Moisture	Site/Soils	Overstorey/Shrubs	Ground Cover
10 Lichen – Rock Moss Talus	SMR: 0–1 Drainage: VR	active and inactive talus (boulders); absent to minimal soil development	absent to low shrub cover due to mobile substrates or lack of soil	drought-tolerant lichens and rock mosses dominate; herb cover sparse
11 Prickly Saxifrage – Lichen Rock Outcrop	SMR: 0–1 Drainage: VR–R	rock outcrops with limited soil development; soils thin and rocky	low overstorey/shrub cover due to lack of soil	drought-tolerant cryptogams and herbs dominate
12 AS – Lichen Woodland	SMR: 1–3 Drainage: R–W	gentle to moderate slopes, soil is shallow or coarse-textured, commonly mor humus form; Brunisols	spruce or aspen/spruce overstorey; if mixedwood overstorey it commonly has kinnikinnick understorey and occurs on level to gentle slopes	lichen or lichen – ground shrub cover
20 Pasture Sage Grassland	SMR: 0–1 Drainage: VR–R	very steep warm slopes, shallow soils common; humus form commonly muli; Brunisols	non-forested (<10% trees); moderate rose or juniper shrub cover possible	grasses and forbs dominate; moderate kinnikinnick cover possible
21 A – Kinnikinnick Woodland	SMR: 2–3 Drainage: R–W	moderate to steep, warm slopes; mor or moder humus form; Brunisols	aspen or aspen/white spruce overstorey	kinnikinnick and grasses dominate understorey; moss and lichen sparse
01 ASW – Lowbush Cranberry Forest	SMR: 3–4 Drainage: W–MW	mostly moderate to strong middle or upper slopes, sometimes level; commonly mor humus form; Brunisols	tree cover may be coniferous, mixed or deciduous; rose and Labrador tea common	feathermosses and lowbush cranberry dominate

A – aspen; S – spruce (white, black); W – Alaska birch



kinnikinnick
(*Arctostaphylos uva-ursi*)



fragrant wood fern
(*Dryopteris fragrans*)



pasture sage
(*Artemisia frigida*)

MESIC TO MOIST ECOSITES

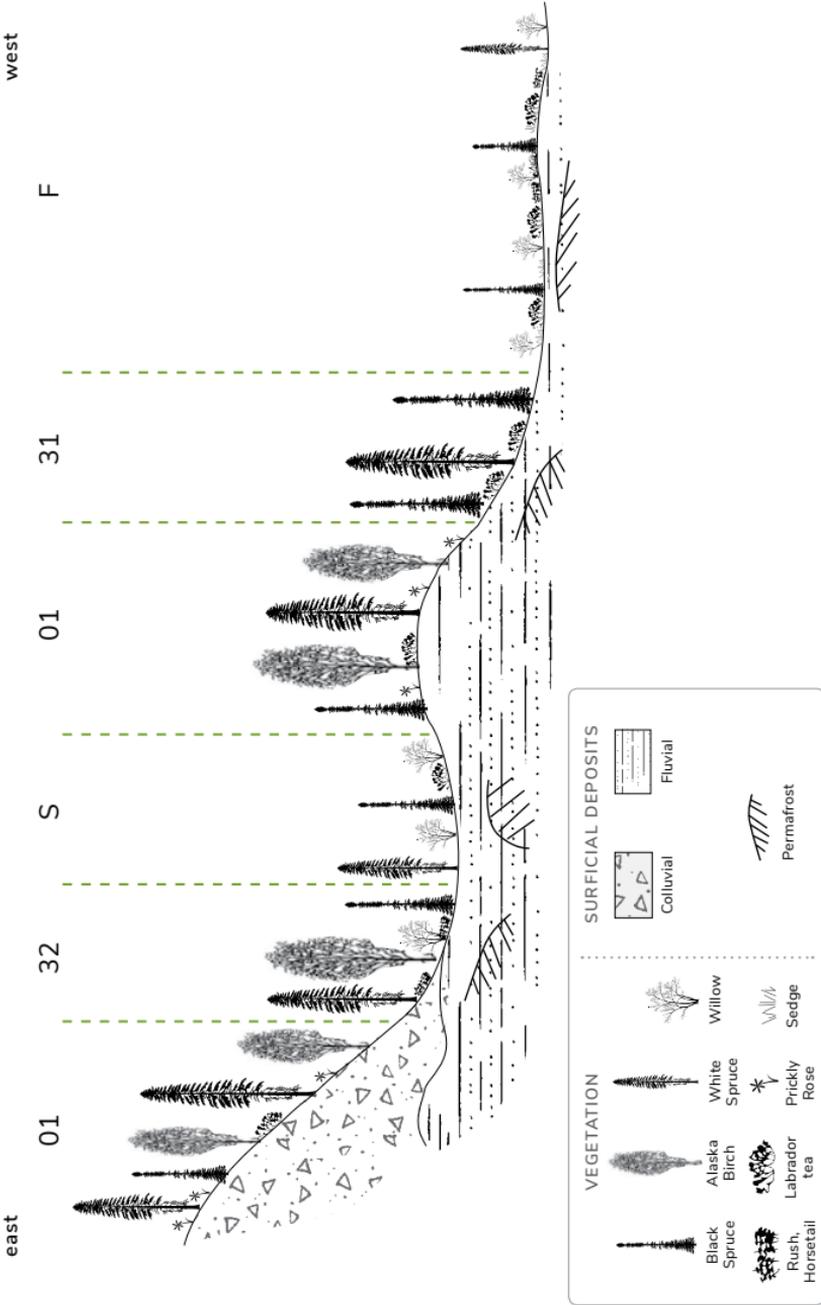
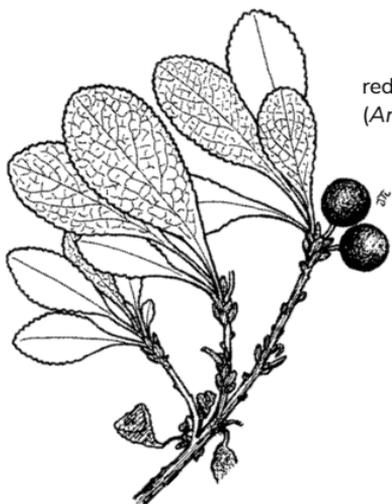


Figure 2-3: Mesic to Moist Ecosites – Landscape Profile

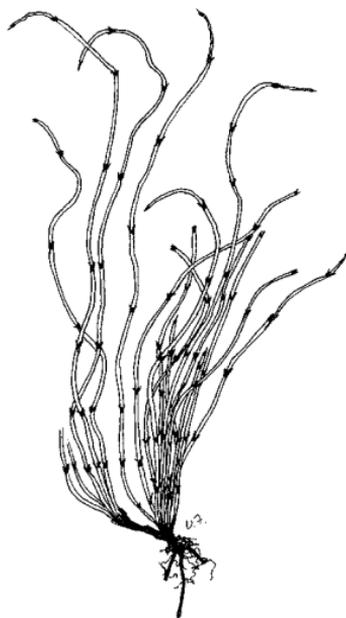
Table 2-5: Mesic to moist Ecosites — Ecosite Identification Table

Mesic to moist ecosites	Moisture	Site/Soils	Overstorey/shrubs	Ground Cover
01 ASW – Lowbush Cranberry Forest	SMR: 3–4 Drainage: W–M	mostly moderate to strong middle or upper slopes, sometimes level, commonly mor humus form; Brunisols	tree cover may be coniferous, mixed or deciduous in successional stands; rose and Labrador tea common	feathermosses and lowbush cranberry dominate
31 SbSw – Red Bearberry Forest	SMR: 5–6 Drainage: M–P	mostly lower and toe slopes and level sites; permafrost typical; cold air influence; Cryosols, Brunisols	spruce dominated; moderate cover of Labrador tea	feathermosses, red bearberry, ground shrubs and reindeer lichen dominate
32 SbSwW – Horsetail Forest	SMR: 5(6) Drainage: W–I	middle to toe slopes and level sites; moisture receiving; permafrost may be present; Cryosols, Brunisols	tree cover may be coniferous, mixed or deciduous; moderate cover of willows, Labrador tea and/or rose can be present	feathermosses, horsetail and bluejoint reedgrass common

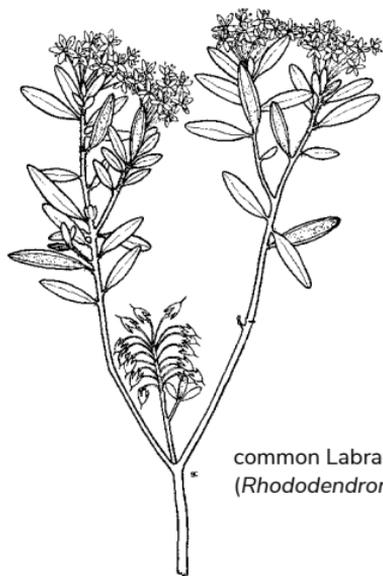
A – aspen; S – spruce (Sb – black; Sw – white); W – Alaska birch



red bearberry
(*Arctous rubra*)



dwarf scouring-rush
(*Equisetum scirpoides*)



common Labrador tea
(*Rhododendron groenlandicum*)

FLOODPLAIN ECOSITES

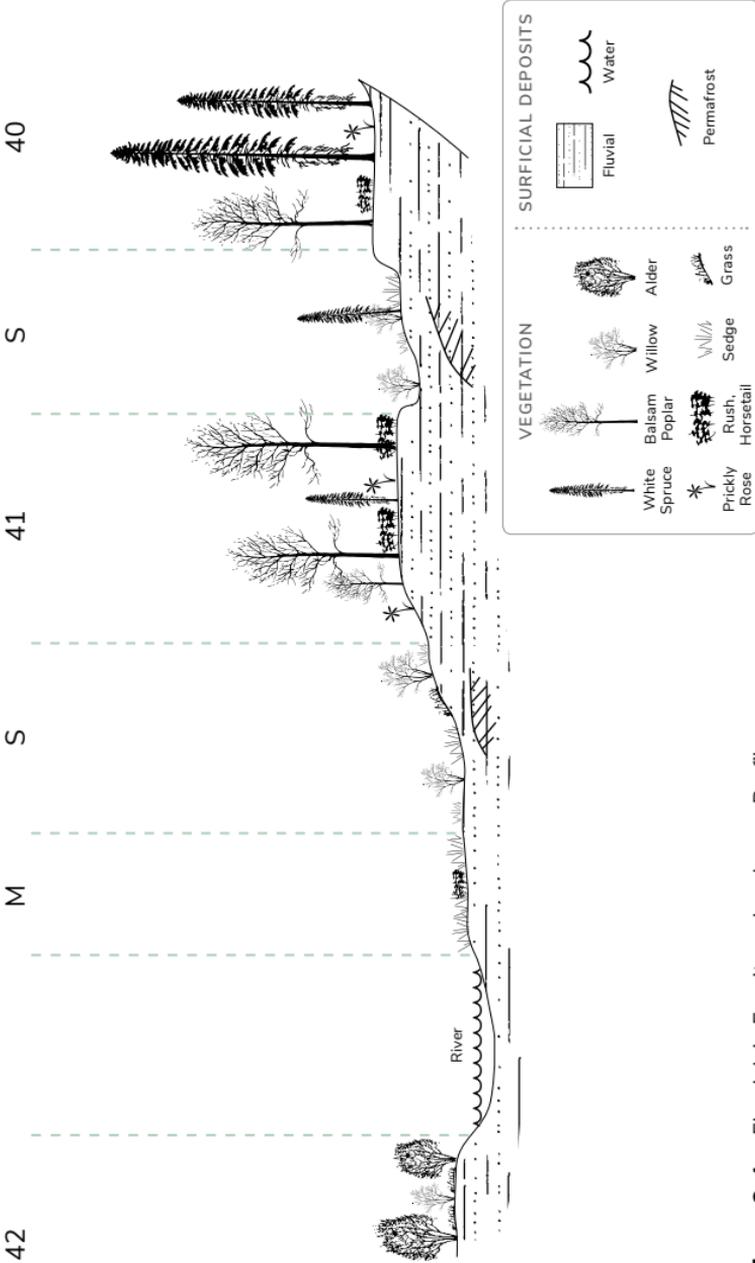
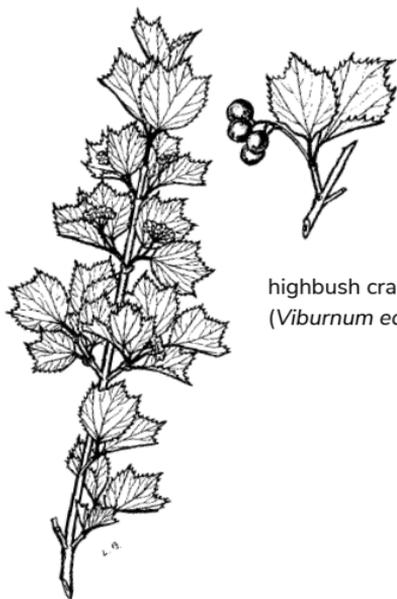


Figure 2-4: Floodplain Ecosites – Landscape Profile

Table 2-7: Floodplain Ecosites — Ecosite Identification Table

Floodplain Ecosites	Moisture	Site/Soils	Overstorey/Shrubs	Ground Cover
40 Sw – Riparian Forest	SMR: 4–5 Drainage: M–W	fluvial parent material; subject to occasional flooding; commonly moder humus form	white spruce dominated; balsam poplar commonly present; prickly rose and highbush cranberry may be abundant	horsetails and feathermoss are characteristic; forbs common
41 B – Riparian Forest	SMR: 5 Drainage: M–I	fluvial parent material; subject to frequent flooding; mostly mor or moder humus form	balsam poplar or Alaska paper birch dominated; prickly rose and highbush cranberry may be abundant	may be sparse ground cover or mixed forbs, grasses, mosses; horsetails are characteristic
42 River Alder Riparian	SMR: 5(–6) Drainage: M–I	fluvial parent material; subject to frequent flooding; mor humus form, if present	river alder and willow dominated	understorey cover dependant on recent flood history; <i>Tillexus</i> wormwood and grasses common

B – balsam poplar; Sw – white spruce



highbush cranberry
(*Viburnum edule*)



river alder
(*Alnus incana*)



Tilesius' wormwood
(*Artemisia tilesii*)

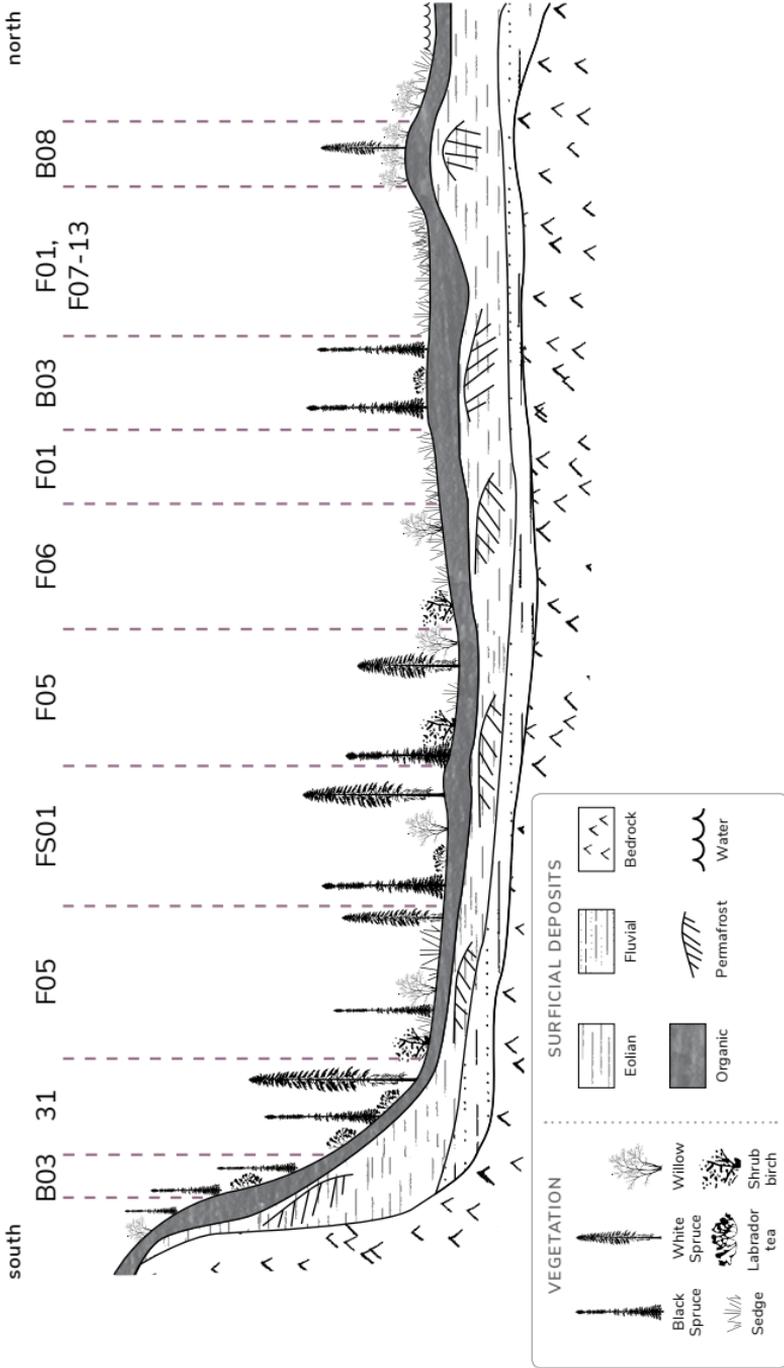


Figure 2-5: Bog and Fen Ecosites – Landscape Profile

WETLAND ECOSITES – BOG AND FEN

Table 2-9: Bog and Fen Ecosites — Ecosite Identification Table

Wetland Ecosites		Moisture	Site/Soils	Overstorey/Shrubs	Ground Cover
B03	Sb – Labrador Tea Bog	SMR: 6–7; stable water table	Usually on level valley sites, may be on very steep north slopes; ≥40 cm poorly decomposed peat; soils are Organic Cryosols; permafrost at about 35–55 cm	Sparse to closed black spruce canopy; Labrador tea dominant in shrub layer	Moderate to high cover of peat moss; cloudberry, lowbush cranberry and bog cranberry are characteristic
	Palsa Bog	SMR: 6; stable water table	On palsas; ≥35 cm poorly decomposed peat; soils are Organic Cryosols; permafrost at about 20–30 cm	Sparse to open, short white spruce canopy; Labrador tea and blueberry dominant in shrub layer	Lowbush cranberry and red bearberry common; feather-mosses dominate
F01	Water Sedge Fen	SMR: 7–8; water table at or near the surface	≥40 cm poorly to moderately decomposed peat; soils are Fibrisols, Mesisols, Organic Cryosols	Trees <10%; shrubs <10%	Water sedge or beaked sedge dominate
F05	Sb – Tussock Sedge Fen	SMR: 5–7; seepage on top of permafrost	Usually level to gently sloping lower or toe slopes; 20 to >40 cm fibric and mesic peat; soils are Turbic, Static and Organic Cryosols	Sparse to open stunted black or white spruce; shrubs may include shrub birch, Labrador tea, and willow	Understorey is dominated by tussock cottongrass or spruce muskeg sedge
F06	Shrub birch – Tussock Sedge Fen	SMR: 5–7; seepage on top of permafrost	Usually level to gently sloping lower or toe slopes; 20 to >40 cm fibric or mesic peat; Soils are Turbic, Static or Organic Cryosols	Trees <10%; tall to medium shrub cover dominated by shrub birch	Understorey is dominated by tussock cottongrass or spruce muskeg sedge
F07	Leatherleaf – Bog Rosemary Fen	SMR: 7–8; water table at or near the surface	Level; 20 to >40 cm fibric or mesic peat; soils are Turbic, Static or Organic Cryosols, Fibrisols, Mesisols	Trees <10%; leatherleaf and bog rosemary dominate	Peat moss dominates

BOGS

FENS

WETLAND ECOSITES – BOG AND FEN

Table 2-9: Bog and Fen Ecosites — Ecosite Identification Table (continued)

Wetland Ecosites	Moisture	Site/Soils	Overstorey/Shrubs	Ground Cover
F08 Slender Sedge – Beaked Sedge Fen	SMR: 8; water table at or near the surface	Level; 20 to >40 cm fibric or mesic peat; soils are Fibrisols or Mesisols	Trees <10%; shrubs <10%	Slender sedge dominates, sometimes with beaked sedge
F09 Creeping Sedge Fen	SMR: 8; water table at or near the surface	Level; 20 to >40 cm fibric or mesic peat; soils are Fibrisols or Mesisols	Trees <10%; shrubs <10%	Creeping sedge with sig- nificant cover; beaked, mud or water sedge may also be present with a high cover
F10 Livid Sedge – Mud Sedge Fen	SMR: 8; water table at or near the surface	Level; 20 to >40 cm fibric or mesic peat; soils are Fibrisols or Mesisols	Trees <10%; shrubs <10%	Mud and livid sedges are characteristic
F11 Tufted Clubrush – Beaked Sedge Fen	SMR: 8; water table at or near the surface	Level; 20 to >40 cm fibric or mesic peat; soils are Organic	Trees <10%; shrubs <10%	Tufted clubrush is characteristic; other sedges sometimes of high cover
F12 Lesser Panicled Sedge Fen	SMR: 8; water table at or near the surface	Level; 20 to >40cm fibric or mesic peat; Soils are Fibrisols or Mesisols	Trees <10%; shrubs <10%	Lesser panicled sedge dominates
F13 Water Horsetail – Sedge Fen	SMR: 8; water table at or near the surface	Level; may be at margins of ponds; 20 to >40 cm fibric or mesic peat; soils are Fibrisols or Mesisols	Trees <10%; shrubs <10%	Water horsetail dominates, often with water or beaked sedge
FS01 SbSw – Leather- leaf Fen/Swamp	SMR: 5-7; seepage may be present on top of permafrost	Usually level to gently sloping lower or toe slopes; 20 to >40 cm fibric or mesic peat; soils are Turbic, Static or Organic Cryosols	Sparse to open black or white spruce; shrubs include leatherleaf, Labrador tea and willow	Understorey dominated by bluejoint reedgrass; peat and brown mosses

FENS

Sb – black spruce; Sw – white spruce

Table 2-10: Bog and Treed and Shrub Fen Ecosites — Vegetation Table

Stratum	Ecosites No. of plots	B03 18	B08 2	F05 83	F06 46	F07 13	FS01 8	key species for comparing units	
								■	□
Tree layer	<i>Picea mariana</i>	■■■	■	□□□			■ ■ ■	■ ■ ■	black spruce
	<i>Picea glauca</i>						□ □ □	□ □ □	white spruce
Shrub layer	<i>Picea mariana</i>	■■■		■■■	□		■ ■ ■	■ ■ ■	black spruce
	<i>Picea glauca</i>		■■■	□ □ □	□	□	■ ■ ■	■ ■ ■	white spruce
	<i>Betula glandulosa</i>	■ ■ ■		■ ■ ■	■■■		□ □ □	□ □ □	shrub birch
	<i>Chamaedaphne calyculata</i>		■	□ □ □	■■■	■■■	■ ■ ■	■ ■ ■	leatherleaf
	<i>Rhododendron</i> spp.	■■■	■■■	■■■	■■■	■ ■ ■	■ ■ ■	■ ■ ■	Labrador teas
	<i>Salix</i> spp.	□ □ □	■■■	■■■	■■■	■ ■ ■	■ ■ ■	■ ■ ■	willow
	<i>Vaccinium uliginosum</i>	□ □ □	■■■	■ ■ ■	□ □ □	□ □	□ □	■ ■ ■	blueberry
	<i>Calamagrostis canadensis</i>	□ □	■	□ □	□ □ □	□ □ □	■ ■ ■	■ ■ ■	bluejoint reedgrass
	<i>Arctagrostis latifolia</i>		■			■ ■ ■			polar grass
	<i>Carex lugens</i>			■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	spruce muskeg sedge
Ground shrub layer	<i>Eriophorum vaginatum</i>	□ □	■	■ ■ ■	■ ■ ■		□	□	tussock cottongrass
	<i>Andromeda polifolia</i>					■ ■	■ ■	■ ■	bog rosemary
	<i>Empetrum nigrum</i>	■ ■							crowberry
	<i>Vaccinium oxycoccos</i>	■ ■				■ ■			bog cranberry
	<i>Vaccinium vitis-idaea</i>	■■■	■■■	■ ■ ■	□ □ □		□ □ □	□ □ □	lowbush cranberry
Forb layer	<i>Arctous rubra</i>		■ ■ ■	□ □					red bearberry
	<i>Comarum palustre</i>		■		□ □		■ ■	■ ■	marsh cinquefoil
Moss layer	<i>Rubus chamaemorus</i>	■■■		■ ■ ■	□ □	□ □	□ □	□ □	cloudberry
	<i>Aulacomnium/Tomentypnum</i>	□ □		■ ■ ■	□ □ □		□ □	□ □	brown mosses
	<i>Hylocomium/Pleurozium</i>	■■■	■■■	■■■	■ ■ ■	□ □ □	■ ■ ■	■ ■ ■	feathermosses
	<i>Sphagnum</i> spp.	■■■	■■■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	peat mosses
Lichen layer	<i>Cladina</i> spp.	■■■	■	■ ■ ■	□ □	□ □	□ □	□ □	reindeer lichens

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50% | Abundance (average percent cover) ■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%

WETLAND ECOSITES – FEN

Table 2-11: Graminoid Fen Ecosites — Vegetation Table

Stratum	Ecosites No. of plots	F01 17	F08 3	F09 3	F10 6	F11 3	F12 6	F13 3	key species for comparing units
Graminoid layer	<i>Calamagrostis canadensis</i>	□□		□			■ ■	□□	bluejoint reedgrass
	<i>Carex aquatilis</i>	■ ■ ■ ■ ■ ■ ■ ■		□□□		■ ■	■ ■ ■ ■ ■ ■ ■ ■	□□□	water sedge
	<i>Carex chondorrhiza</i>		□	■ ■ ■ ■ ■ ■ ■ ■			■ ■ ■ ■ ■ ■ ■ ■		creeping sedge
	<i>Carex diandra</i>			□			■ ■ ■ ■ ■ ■ ■ ■		lesser panicled sedge
	<i>Carex lasiocarpa</i>		■ ■ ■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■ ■ ■ ■	□□			slender sedge
	<i>Carex limosa</i>		■	□□□	■ ■ ■ ■ ■ ■ ■ ■	□□			mud sedge
	<i>Carex livida</i>		■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	□	□	livid sedge
	<i>Carex utriculata</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	□	beaked sedge
	<i>Eriophorum angustifolium</i>		□□	■ ■			■ ■ ■ ■ ■ ■ ■ ■	□□	narrow-leaved cottongrass
	<i>Trichophorum cespitosum</i>					■ ■ ■ ■ ■ ■ ■ ■			tufted clubrush
Forb layer	<i>Comarum palustre</i>	■ ■ ■ ■ ■ ■ ■ ■	□	■ ■ ■ ■ ■ ■ ■ ■			■ ■ ■ ■ ■ ■ ■ ■	□□	marsh cinquefoil
	<i>Drosera anglica</i>				■ ■				English sundew
	<i>Epilobium palustre</i>			□			■		marsh willowherb
	<i>Equisetum fluviatile</i>	□□		□	■ ■		■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	water horsetail
	<i>Menyanthes trifoliata</i>		□□	□□	■ ■		■ ■ ■ ■ ■ ■ ■ ■		bog buckbean
Aquatic layer	<i>Utricularia intermedia</i>		■ ■		■	□			flat-leaved bladderwort
	<i>Hamatocaulis vernicosus</i>			■ ■ ■ ■ ■ ■ ■ ■			□□□□		varnished hook-moss
	<i>Drepanocladus</i> spp.			□□	■ ■ ■ ■ ■ ■ ■ ■	□	□□		hook-mosses

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50% | Abundance (average percent cover) ■ ■ ■ ■ ■ ■ ■ ■ >25% ■ ■ ■ ■ ■ ■ ■ ■ 10–25% ■ ■ ■ ■ ■ ■ ■ ■ 1–3% ■ ■ ■ ■ ■ ■ ■ ■ <1%

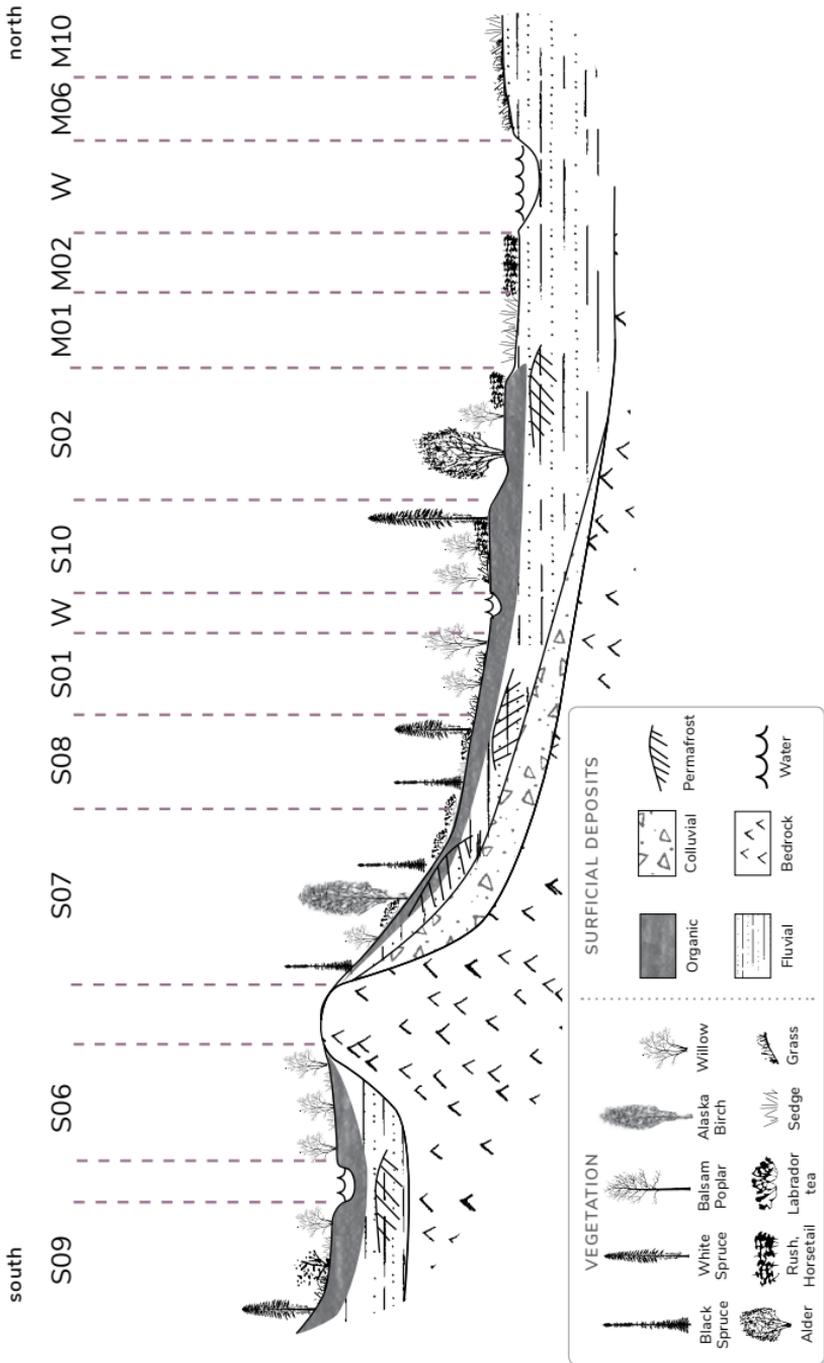


Figure 2-6: Swamp, Marsh and Shallow Water Ecosites – Landscape Profile

WETLAND ECOSITES – SWAMP

Table 2-12: Swamp Ecosites — Ecosite Identification Table

Wetland Ecosites		Moisture	Site/Soils	Overstorey/Shrubs	Ground Cover
S01	Willow – Bluejoint Swamp	SMR: 6–7; fluctuating water table	sandy and loamy fluvial soils; classified as Regosols and Cryosols; permafrost often present	trees <10%; tall and medium willow dominates the shrub layer	>10% cover bluejoint reedgrass; mixed mosses
	River Alder Swamp	SMR: 5–6; fluctuating water table; seepage may be present	sandy and loamy fluvial soils; classified as Regosols and Cryosols; permafrost may be present	trees <10%; river alder diagnostic, sometimes with willows	mixed ground cover
	Willow – Sedge – Peat Moss Swamp	SMR: 5–7; fluctuating water table; seepage commonly present	sandy and loamy fluvial soils; classified as Regosols, Gleysols and Cryosols; permafrost may be present	trees <10%; willow dominates the tall and medium shrub layer	mixed ground cover; a high cover of peat moss or sedges may be present; horsetails characteristic but not consistent
S07	Sb – Labrador Tea Swamp	SMR: 5–6; fluctuating water table; seepage over permafrost	soils usually 20–30 cm (sometimes more) of peat over silty and loamy mineral soil; Turbic, Static or Organic Cryosols; permafrost present; transitional to upland ecosites	open to closed canopy of black spruce; shrubs dominated by Labrador tea	mosses are mixed peat, brown and feather-mosses; lowbush cranberry is characteristic

SWAMPS

Table 2-12: Swamp Ecosites — Ecosite Identification Table (continued)

Wetland Ecosites		Moisture	Site/Soils	Overstorey/Shrubs	Ground Cover
SWAMPS	S08 SbSw – Red Bearberry – Brown Moss Swamp	SMR: 5–7; fluctuating water table; seepage may be present	Soils usually consist of 20–30 cm (sometimes more) of peat over silty and loamy mineral soil; Turbic or Organic Cryosols; permafrost present; transitional to upland ecosites	Open to closed canopy of black and/or white spruce; shrubs include Labrador tea, blueberry, willows	Mosses dominated by glow and golden fuzzy fen mosses, although feathermosses also present
	S09 Sw – Shrub Birch – Bluejoint Swamp	SMR: 6–7; fluctuating water table; seepage within 50 cm	Soils probably consist of 20–30 cm of surface peat over silty reworked loess; Cryosols; permafrost may be present	Sparse to open canopy of white spruce; shrub birch is charac- teristic; willow is also typical	A significant cover of bluejoint reedgrass; spruce muskeg sedge may occur with less cover than bluejoint
	S10 Sw – Horsetail – Brown Moss Swamp	SMR: 5–6; fluctuating water table; seepage or mottles usually within 50 cm	Sandy and loamy fluvial materials; soils are Brunisols and Static Cryosols; may have permafrost	Sparse to open canopy of white spruce; often with Alaska paper birch; willows, Labrador tea, blueberry are typical shrubs	Common horsetail is an indicator; bluejoint reedgrass usually present; mosses include feathermosses and mixed wet mosses

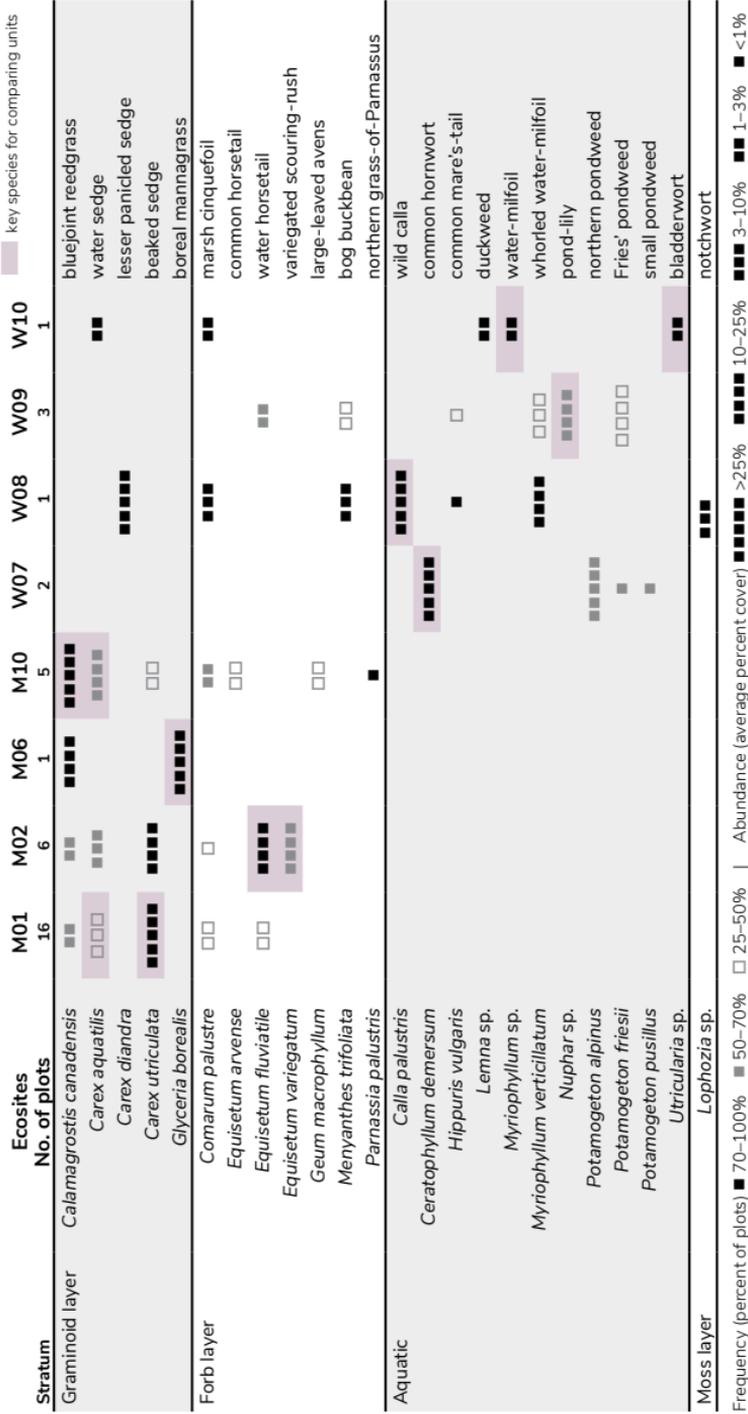
Sb – black spruce; Sw – white spruce; W – Alaska birch

WETLAND ECOSITES - MARSH AND SHALLOW WATER

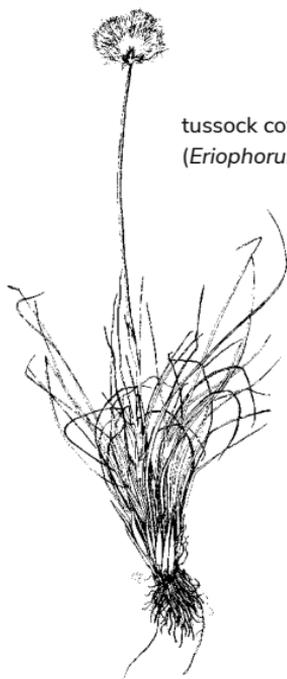
Table 2-14: Marsh and Shallow Water Ecosites — Ecosite Identification Table

Wetland Ecosites		Moisture	Site/Soils	Overstorey/ Shrubs	Ground Cover	
MARSHES	M01 Beaked – Water Sedge Marsh	SMR: 7–8; fluctuating water table	Sandy, silty or loamy mineral soils; soils are Regosols, Gleysols or Static Cryosols; permafrost may be present in small narrow valleys	Trees <10%; shrubs <10%	Ground cover dominated by beaked or water sedge	
	M02 Water Horsetail Marsh	SMR: 6-8; fluctu- ating water table	Sandy and loamy mineral soils; Gleysols	Trees <10%; shrubs <10%	Water or variegated horsetail dominates; sedges can co-dominate	
	M06 Mannagrass Marsh	SMR: 8; water table at surface	Mineral soils; Gleysols	Trees <10%; shrubs <10%	Mannagrass dominates; bluejoint reedgrass may be present	
	M10 Bluejoint Marsh	SMR: 6-7; fluctuating water table	Sandy and loamy mineral soils; Gleysols	Trees <10%; shrubs <10%	Bluejoint reedgrass dominates; water sedge cover may be high but lower than bluejoint	
	W07 Hornwort Shallow Water	SMR: 9	Shallow water ponds, lake and river margins <2 m in depth	Trees <10%; shrubs <10%	Common hornwort dominates	
	W08 Wild Calla Shallow Water	SMR: 9	Shallow water ponds, lake and river margins <2 m in depth	Trees <10%; shrubs <10%	Wild calla is present; Other species can in- clude lesser panicked sedge, marsh cinquefoil, bog buckbean and water milfoil	
	W09 Pond-lily Shallow Water	SMR: 9	Shallow water ponds, lake and river margins <2 m in depth	Trees <10%; shrubs <10%	Pond-lily dominates the emergent vegetation	
	W10 Water-milfoil – Bladderwort Shallow Water	SMR: 9	Shallow water ponds, lake and river margins <2 m in depth	Trees <10%; shrubs <10%	Emergents trace to low cover: water milfoil and bladderwort present	
	SHALLOW WATER					

Table 2-15: Marsh and Shallow Water Ecosites — Vegetation Table



Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50% □ 10–25% ■ 3–10% ■ 1–3% ■ <1%
 Abundance (average percent cover) ■ >25% ■ 10–25% ■ 3–10% ■ 1–3% ■ <1%



tussock cottongrass
(*Eriophorum vaginatum*)



leatherleaf
(*Chamaedaphne calyculata*)



water sedge
(*Carex aquatilis*)

3.0 GUIDE TO BOLkp ECOSITES

BOLkp/01 ASW – Lowbush Cranberry Forest

General description

The ASW – Lowbush Cranberry Forest ecosite occurs primarily on moderate to strong mid slopes; occasionally on level sites. Soils are well to moderately well drained, with a submesic to mesic moisture regime. This is the reference ecosite for the BOL Klondike Plateau Subzone.

Stands are often of mixed overstorey, with varying species dominance, consisting of white spruce (*Picea glauca*), black spruce (*Picea mariana*), Alaska paper birch (*Betula neoalaskana*) and/or trembling aspen (*Populus tremuloides*). Alaska paper birch is the most common successional species in the subzone. Both black and white spruce and Alaska paper birch are common in the regeneration layer. The understorey consists of a variety of shrubs and herbs, including prickly rose (*Rosa acicularis*), Labrador tea (*Rhododendron groenlandicum*), lowbush cranberry (*Vaccinium vitis-idaea*), and bastard toad-flax (*Geocaulon lividum*). Feathermosses, typically step moss (*Hylocomium splendens*), are generally abundant, except for some deciduous-dominated stands.

The vegetation composition of ecosite 01 is diverse. The presence and abundance of some species occur along an elevational gradient within the ecosite. Aspen and aspen – spruce co-dominated stands occur predominantly at lower elevations in the subzone (<700 m). These stands, which are successional to conifer dominated stands, typically have a lower feathermoss cover than mature stands. In some locations, such as the Klondike River Valley, aspen has regenerated following logging disturbance, whereas in other areas it occurs on moderate southerly aspects and on shallower soils. Labrador tea, in general, increases in presence and abundance with increasing elevation. Other species, such as shrub birch and crowberry are more common at higher elevations in the subzone, closer to the boundary with the Boreal High (BOH) zone.

Edatopic Grid

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BOLkp/01-SbSwW21

(Spruce - Alaska birch / Willow
- Labrador tea / Lowbush cranberry / Feathermoss - Lichen)

This ecosite is commonly found on colluvial parent materials; however, the ecosite is also found on fluvial, glaciofluvial and aeolian deposits. Soils are typically Brunisols, although Cryosols also occur. The forest floor humus depth is usually less than 15 cm thick, but can be up to 30 cm.

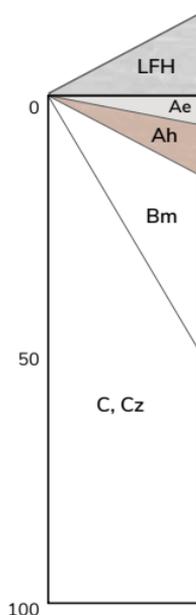
Comments

Ecosite 01 can be differentiated from other broadly circum-mesic ecosites as follows:

- Ecosite 12 occurs on drier and poorer sites; moss cover is lower, but lichen cover is higher — reindeer, cladonia, cetraria, and pelt lichens present. Mixedwood sites have higher kinnikinnick ground shrub cover.
- Ecosite 21 is drier with an aspen-dominated or aspen-white spruce co-dominated canopy; occurs on moderate to steep warm aspects; the understorey is typically dominated by kinnikinnick and grasses (primarily purple reedgrass) and has low moss cover.
- Ecosite 31 is found on moister sites, usually on level, lower to toe slope positions with some cold air influence; stands are conifer-dominated and characterized by red bearberry and Labrador tea. Willows, dwarf scouring-rush and reindeer lichen are common associates; near-surface permafrost typical.
- Ecosite 32 is found on moister sites, often on moisture-receiving lower to toe slope positions; deciduous, mixedwood and coniferous forests can occur. However, the understorey is characterized by horsetails; prickly rose and bluejoint reedgrass are common associates.
- Ecosite 40 is found on floodplains with subsurface seepage and occasional flooding, leading to an influx of nutrients, giving these sites a richer nutrient regime. Stands are predominately white spruce dominated, with balsam poplar commonly occurring as a lesser canopy component; the understorey commonly contains prickly rose, highbush cranberry and horsetail.

Site and soil characteristics

Plots in unit	143
Moisture regime	mesic to submesic [3–4]
Nutrient regime	poor to medium [B–C(D)]
Meso slope position	predominately midslope, occasionally level
Aspect	variable
Slope gradient	moderate to steep, or level
Surficial material	variable, predominantly colluvial
Soil texture	variable
Soil classification	typically Eutric or Dystric Brunisols; Cryosol
Humus form	mostly mor, moder
Humus depth	3–30 cm
Soil drainage	well to moderately well
Seepage/water table	none
Permafrost	uncommon

**Vegetation summary**

Tables showing the relative abundance of species for each vegetation association are presented by overstorey dominance.

Aspen-dominated and mixed aspen – spruce stands

The following vegetation associations characterize the variation in species composition for aspen or aspen – white spruce dominated stands on this ecosite.

- A28** Aspen / Labrador tea
- A29** Aspen / Prickly rose / Fireweed
- ASw26** Aspen – White spruce / Fireweed – Kinnikinnick
- ASw27** Aspen – White spruce (Black spruce) / Labrador tea / Bastard toad-flax

The frequency and abundance of species for these associations are shown in the vegetation table on page 3-46.

Alaska paper birch-dominated stands

The following vegetation associations characterize the variation in species composition for Alaska paper birch-dominated stands on this ecosite.

- W25** Alaska birch / Alder – Prickly rose
W27 Alaska birch / Prickly rose / Bluejoint reedgrass
W28 Alaska birch / Labrador tea / Lowbush cranberry / Step moss

The frequency and abundance of species for these associations are shown in the vegetation table on page 3-47.

Mixed Alaska paper birch stands with black spruce

The following vegetation associations characterize the variation in species composition mixed Alaska paper birch – black spruce stands on this ecosite.

- SbW22** Black spruce – Alaska birch / Lowbush cranberry / Feathermoss
SbSwW21 Spruce – Alaska birch / Willow – Labrador tea / Lowbush cranberry / Feathermoss – Lichen
SbSwW25 Spruce – Alaska birch / Prickly rose / Twinflower – Tall bluebells / Feathermoss

The frequency and abundance of species for these associations are shown in the vegetation table on page 3-48.

Alaska paper birch – white spruce co-dominated stands

The following vegetation associations characterize the variation in species composition for Alaska paper birch – white spruce dominated stands on this ecosite.

- SwW24** White spruce – Alaska birch / Prickly rose / Lowbush cranberry / Feathermoss
SwW28 White spruce – Alaska birch / Alder / Step moss
SwW29 White spruce – Alaska birch / Alder – Labrador tea
SwW30 White spruce – Alaska birch / Labrador tea

The frequency and abundance of species for these associations are shown in the vegetation table on page 3-49.

Black spruce-dominated and black and white spruce co-dominated stands

The following vegetation associations characterize the variation in species composition for black spruce dominated stands and mixed black spruce – white spruce stands on this ecosite.

- Sb22** Black spruce / Lowbush cranberry / Feathermoss
Sb23 Black spruce / Labrador tea / Feathermoss
Sb26 Black spruce / Shrub birch / Lowbush cranberry / Feathermoss
SbSw22 Black spruce – White spruce / Lowbush cranberry / Feathermoss
SbSw30 Black spruce – White spruce / Labrador tea / Feathermoss

The frequency and abundance of species for these associations are shown in the vegetation table on page 3-50.

White spruce-dominated stands

The following vegetation associations characterize the variation in species composition for white spruce dominated stands on this ecosite.

- Sw27** White spruce / Feathermoss
Sw29 White spruce / Labrador tea / Crowberry / Feathermoss
Sw30 White spruce / Shrub birch / Crowberry / Feathermoss

The frequency and abundance of species for these associations are shown in the vegetation table on page 3-51.

BOLkp/01: Alaska paper birch-dominated stands — Vegetation Table

Stratum	Vegetation Association	No. of plots	W25	W27	W28	Key species for comparing units
Tree layer	<i>Betula neoalaskana</i>	3	■■■■■	■■■■■	■■■■■	Alaska paper birch
	<i>Picea glauca</i>	3	■ ■	□	■ ■ ■	white spruce
Shrub layer	<i>Betula neoalaskana</i>		□ □	□	■ ■	Alaska paper birch
	<i>Alnus viridis</i>		■■■■■	□	□ □	green alder
	<i>Rhododendron groenlandicum</i>		■ ■ ■ ■ ■	□	■■■■■	common Labrador tea
	<i>Ribes triste</i>		■ ■	■■■■■	□	wild red currant
	<i>Rosa acicularis</i>		■■■■■	■■■■■	■ ■ ■	prickly rose
	<i>Salix</i> spp.		□ □ □	□ □	■ ■ ■	willow
Ground shrub layer	<i>Empetrum nigrum</i>		■ ■ ■	■ ■ ■	■ ■ ■	crowberry
	<i>Vaccinium vitis-idaea</i>		■ ■ ■	■ ■ ■	■■■■■	lowbush cranberry
Graminoid layer	<i>Poaceae</i>		■■■■■	■■■■■	■■■■■	grasses
	<i>Chamaenerion angustifolium</i>		□	□	■	fireweed
Forb layer	<i>Diphysastrum complanatum</i>		■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	ground-cedar
	<i>Geocaulon lividum</i>		■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	bastard toad-flax
	<i>Lycopodium annotinum</i>		■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	stiff club-moss
Moss layer	<i>Mertensia paniculata</i>		■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	tall bluebells
	<i>Hylacomium splendens</i>		■■■■■	■■■■■	■■■■■	step moss
Lichen layer	<i>Cladina</i> spp.		■ ■ ■ ■ ■	■ ■ ■ ■ ■	■ ■ ■ ■ ■	reindeer lichens

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50% | Abundance (average percent cover) ■■■■■ >25% ■■■■■ 10–25% ■■■■■ 3–10% ■■■ 1–3% ■ <1%

BOLkp/01: Black spruce-dominated and black and white spruce co-dominated stands — Vegetation Table

Stratum	Vegetation Association No. of plots	Sb22 8	Sb23 5	Sb26 2	SbSw22 4	SbSw30 3	Key species for comparing units
Tree layer	<i>Picea glauca</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	white spruce
	<i>Picea mariana</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	black spruce
Shrub layer	<i>Picea glauca</i>				■ ■ ■ ■ ■ ■ ■ ■	□ □	white spruce
	<i>Picea mariana</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	□	■ ■ ■ ■ ■ ■ ■ ■	black spruce
	<i>Betula neolaskana</i>	□	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	□ □	Alaska paper birch
	<i>Betula glandulosa</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	shrub birch
	<i>Rhododendron groenlandicum</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	common Labrador tea
Ground shrub layer	<i>Rosa acicularis</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	prickly rose
	<i>Salix</i> spp.	□	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	willows
	<i>Vaccinium uliginosum</i>	□ □	□ □	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	□ □	blueberry
Ground shrub layer	<i>Empetrum nigrum</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	crowberry
	<i>Vaccinium vitis-idaea</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	lowbush cranberry
Graminoid layer	Poaceae	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	grasses
Forb layer	<i>Chamaenerion angustifolium</i>				■ ■ ■ ■ ■ ■ ■ ■	□	fireweed
	<i>Cornus canadensis</i>		■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■ ■ ■ ■	bunchberry
	<i>Equisetum sylvaticum</i>		■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■		■ ■ ■ ■ ■ ■ ■ ■	wood horsetail
	<i>Geocaulon lividum</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	bastard toad-flax
	<i>Goodyera repens</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	dwarf rattlesnake orchid
	<i>Mertensia paniculata</i>	□ □	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	□ □	tall bluebells
	<i>Orthilia secunda</i>				■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	one-sided wintergreen
	Moss layer	<i>Dicranum scoparium</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■
Lichen layer	<i>Hylocomium/Pleurozium/Ptilium</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	feathermosses
	<i>Polytrichum</i> spp.	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	haircap mosses
	<i>Cladina</i> spp.	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	reindeer lichens
	<i>Cladonia</i> spp.	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	cladonia lichens
	<i>Nephroma arcticum</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	green light
Moss layer	<i>Peltigera</i> spp.	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	pelt lichens

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50% | Abundance (average percent cover) ■■■■■ >25% ■■■■■ 10–25% ■■■■■ 3–10% ■■■ 1–3% ■ <1%

BOLkp/01: White spruce-dominated stands — Vegetation Table

Stratum	Vegetation Association No. of plots	Sw27 17	Sw29 4	Sw30 3	key species for comparing units
Tree layer	<i>Picea glauca</i>	■■■■■	■■■■■	■■■■■	white spruce
	<i>Picea mariana</i>	■■■■■	■	■■■■■	black spruce
Shrub layer	<i>Picea glauca</i>	■■■	■■■	■■■	white spruce
	<i>Betula neoalaskana</i>	■■■	■■■	■■■	Alaska paper birch
	<i>Betula occidentalis</i>	■■■	■■■	■■■	water birch
	<i>Betula glandulosa</i>	■	■	■■■■■	shrub birch
	<i>Dasiphora fruticosa</i>	■	■■■	■	shrubby cinquefoil
	<i>Rhododendron groenlandicum</i>	■■■■■	■■■■■	□□□	common Labrador tea
	<i>Rosa acicularis</i>	■■■	■	■■■	prickly rose
	<i>Salix</i> spp.	■■■	■■■	■■■	willow
	<i>Shepherdia canadensis</i>	■	■	■■■	soapberry
	<i>Vaccinium uliginosum</i>	■■■	■■■	■■■	blueberry
Ground shrub layer	<i>Empetrum nigrum</i>	■	■	□□	crowberry
	<i>Linnaea borealis</i>	■■■	■■■	■■■	twinnflower
	<i>Vaccinium vitis-idaea</i>	■■■	■■■	■■■	lowbush cranberry
Graminoid layer	<i>Poaceae</i>	■■■	■■■	■■■	grasses
	<i>Arctostaphylos</i>	■■■	■■■	■	red bearberry
Forb layer	<i>Equisetum arvense</i>	■	■	■	common horsetail
	<i>Equisetum scirpoides</i>	■■■	■■■	■	dwarf scouring-rush
	<i>Geocaulon lividum</i>	■■■	■■■	■	bastard toad-flax
	<i>Mertensia paniculata</i>	■■■	■■■	■	tall bluebells
	<i>Petasites frigidus</i>	■■■	■■■	■■■	arctic sweet coltsfoot
	<i>Saussurea angustifolia</i>	■	■	■■■	northern sawwort
Moss layer	<i>Dicranum</i> spp.	■■■	■	■■■	heron's-bill mosses
	<i>Hylacomium splendens</i>	■■■	■■■	■■■	step moss
	<i>Rhytidium rugosum</i>	■■■	■■■	■■■	crumpled-leaf moss
Lichen layer	<i>Cladonia</i> spp.	■■■	■■■	□□□	reindeer lichens
	<i>Cladonia</i> spp.	□□	■	■■■	cladonia lichens
	<i>Peltigera</i> spp.	■■■	■■■	■■■	pelt lichens

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50% | Abundance (average percent cover) ■■■■■ >25% ■■■■■ 10–25% ■■■■■ 3–10% ■■■ 1–3% ■ <1%



BOLkp/01-A28 (Aspen / Labrador tea)



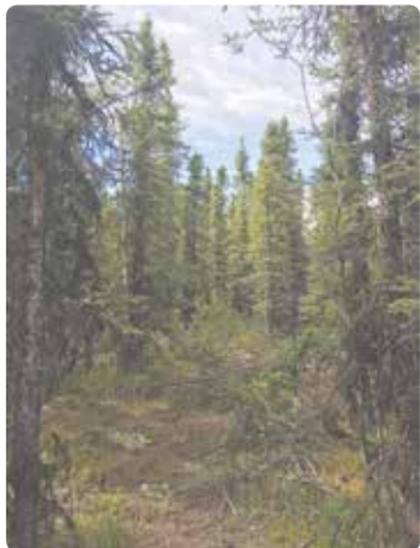
BOLkp/01-ASw27 (White spruce (Black spruce) / Labrador tea / Bastard toad-flax)



BOLkp/01-ASw26 (Aspen – White spruce / Fireweed – Kinnikinnick)



BOLkp/01-Sb22 (Black spruce / Lowbush cranberry / Feathermoss)



BOLkp/01-Sb26 (Black spruce / Shrub birch / Lowbush cranberry / Feathermoss)



BOLkp/01-SwW24 (White spruce – Alaska birch / Prickly rose / Lowbush cranberry / Feathermoss)

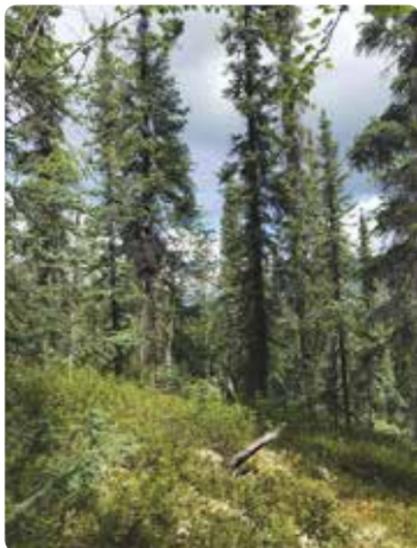


BOLkp/01-Sw27 (White spruce / Feathermoss)



BOLkp/01-Sw29 (White spruce / Labrador tea / Crowberry / Feathermoss)

BOLkp/01 DRY TO MESIC ECOSITES



BOLkp/01-SbSwW21 (Spruce -
Alaska birch / Willow - Labrador tea /
Lowbush cranberry / Feathermoss -
Lichen)



BOLkp/01-SbW22 (Black spruce -
Alaska birch / Lowbush cranberry /
Feathermoss)

Note: Photos are not available for all vegetation associations pertaining to this ecosite.

BOLkp/10 Lichen – Rock Moss Talus**General description**

The Lichen – Rock Moss Talus ecosite occurs on moderate to steep talus slopes, commonly on cool aspects. These sites are the driest in the subzone. Soil development is minimal, and sites are very rapidly drained.

Due to lack of soil and/or mobile substrates, drought-tolerant cryptogams, predominantly lichen (*Cladina* spp., *Cetraria* spp.) and rock mosses (*Racomitrium* spp.) dominate. Moss cover is commonly higher on more stable sites. Vascular plant cover is commonly low and can include northern fir-moss (*Huperzia selago*), mountain avens (*Dryas* spp.), and prickly saxifrage (*Saxifraga tricuspidata*).

Comments

Ecosite 10 is differentiated from other non-treed dry ecosites as follows:

- Ecosite 11 occurs on extremely shallow soils associated with rock outcrops; herb cover is typically higher because of more stable substrates and pockets of deeper soil development.
- Ecosite 20 occurs on richer grassland sites with greater soil development; occurs on steep, warm slopes; higher cover of shrubs, grasses and forbs.

As the vegetation is described based on only two plots, it is possible that other species will occur on these sites. Communities in this ecosite are dominated by cryptogams and occur on talus.

Edatopic Grid

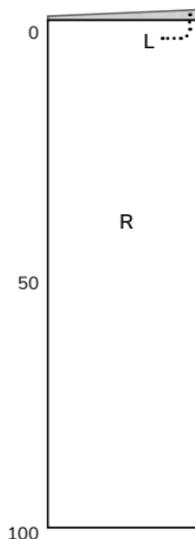
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BOLkp/10-Clad01 (Reindeer lichen – Rock moss)

Site and soil characteristics

Plots in unit	2
Moisture regime	very xeric to xeric [0–1]
Nutrient regime	very poor to poor [A–B]
Meso slope position	middle to lower
Aspect	variable
Slope gradient	strong to steep
Surficial material	colluvial (talus)
Soil characteristics	large boulders dominate; absent to minimal soil development
Soil drainage	very rapidly
Site disturbance	slope colluviation

**Vegetation summary**

The following vegetation association characterizes the variation in species composition for Ecosite 10.

Clad01 Reindeer lichen – Rock moss

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/10: Vegetation Table

Stratum	Vegetation Association No. of plots	Clad01 2	
Shrub layer	<i>Rhododendron groenlandicum</i>	■	common Labrador tea
	<i>Vaccinium uliginosum</i>	■	blueberry
Ground shrub layer	<i>Dryas</i> sp.	■■■	mountain avens
	<i>Vaccinium vitis-idaea</i>	■	lowbush cranberry
Graminoid layer	<i>Anthoxanthum monticola</i>	■■	alpine sweetgrass
Forb layer	<i>Dryopteris fragrans</i>	■	fragrant wood fern
	<i>Huperzia selago</i>	■■■	fir clubmoss
	<i>Saxifraga tricuspidata</i>	■■	prickly saxifrage
Moss layer	<i>Racomitrium</i> spp.	■■■■■	rock-mosses
Lichen layer	<i>Cladina mitis</i>	■■■■■	green reindeer lichen
	<i>Cladina rangiferina</i>	■■	grey reindeer lichen
	<i>Cladina stellaris</i>	■■■■■	star-tipped reindeer lichen
	<i>Flavocetraria cucullata</i>	■■■	curled snow lichen
	<i>Umbilicaria</i> spp.	■■	rocktripe lichens

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%



BOLkp/10-Clad01 (Reindeer lichen – Rock moss)



BOLkp/10-Clad01 (Reindeer lichen – Rock moss)



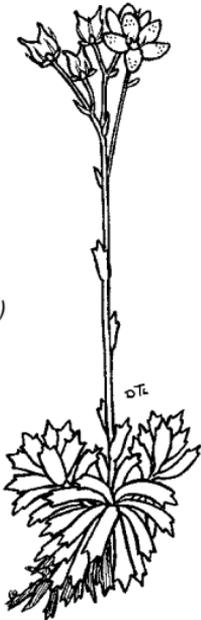
BOLkp/10-Clad01 (Reindeer lichen – Rock moss)

DRY TO MESIC ECOSITES



entire-leaved mountain-avens
(*Dryas integrifolia*)

prickly saxifrage
(*Saxifraga tricuspidata*)



BOLkp/11 Prickly Saxifrage – Lichen Rock Outcrop**General description**

The Prickly Saxifrage – Lichen Rock Outcrop ecosite is associated with moderate to steep, thin soiled, rock outcrop ecosystems. These sites are among the driest in the subzone. Soils are very rapidly to rapidly drained.

Due to minimal soil development and rocky substrate, drought-tolerant cryptogams and herbs dominate. A high cover of lichen, particularly reindeer lichen (*Cladina* spp.) is characteristic of the ecosite. Herbs commonly present include prickly saxifrage (*Saxifraga tricuspidata*), fragrant wood fern (*Dryopteris fragrans*), and purple reedgrass (*Calamagrostis purpurescens*). Tree and shrub cover are typically very low, but spruce, common juniper (*Juniperus communis*) and prickly rose (*Rosa acicularis*) can occur. Kinnikinnick (*Arctostaphylos uva-ursi*) can be present in the ground shrub layer.

Comments

Ecosite 11 is differentiated from other non-treed dry ecosites as follows:

- Ecosite 10 is associated with talus slope ecosystems; herb cover is minimal due to mobile substrates or lack of soil.
- Ecosite 20 occurs on richer grassland sites with greater soil development; occurs on steep, warm slopes; higher cover of shrubs, grasses and forbs.

Currently there is minimal soil and humus information available for this ecosite.

As the vegetation is described based on only two plots, it is possible that other species will occur on these sites. Communities in this ecosite are dominated by cryptogams and occur on rock outcrops.

Edatopic Grid

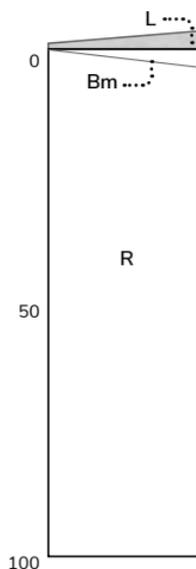
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BOLkp/11-Clad02 (Prickly saxifrage – Reindeer lichen)

Site and soil characteristics

Plots in unit	2
Moisture regime	very xeric to xeric [0–1]
Nutrient regime	very poor to poor [A–B]
Meso slope position	middle, upper, crest
Aspect	variable
Slope gradient	steep
Surficial material	bedrock
Soil characteristics	variable texture, minimal soil development
Humus form	absent to minimal, litter layer
Soil drainage	very rapidly to rapidly

**Vegetation summary**

The following vegetation association characterizes the variation in species composition for Ecosite 11.

Clad02 Prickly saxifrage – Reindeer lichen

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/11: Vegetation Table

Stratum	Vegetation Association No. of plots	Clad02 2	
Tree layer	<i>Betula neoalaskana</i>	■	Alaska paper birch
	<i>Picea glauca</i>	■ ■	white spruce
	<i>Picea mariana</i>	■ ■	black spruce
Shrub layer	<i>Betula neoalaskana</i>	■ ■	Alaska paper birch
	<i>Juniperus communis</i>	■	common juniper
	<i>Picea glauca</i>	■	white spruce
	<i>Picea mariana</i>	■	black spruce
	<i>Rosa acicularis</i>	■	prickly rose
Ground shrub layer	<i>Dryas integrifolia</i>	■	entire-leaved mountain-avens
	<i>Vaccinium vitis-idaea</i>	■	lowbush cranberry
	<i>Arctostaphylos uva-ursi</i>	■ ■ ■	kinnikinnick
Graminoid layer	<i>Calamagrostis purpurascens</i>	■ ■ ■	purple reedgrass
	<i>Festuca</i> sp.	■	fescue
Forb layer	<i>Anticlea elegans</i>	■	mountain death-camas
	<i>Delphinium</i> sp.	■	larkspur
	<i>Dryopteris fragrans</i>	■ ■ ■ ■	fragrant wood fern
	<i>Micranthes reflexa</i>	■	Yukon saxifrage
	<i>Minuartia</i> spp.	■	stitchworts
	<i>Saxifraga tricuspidata</i>	■ ■ ■ ■	prickly saxifrage
	<i>Silene repens</i>	■	pink catchfly
Moss layer	<i>Bryophyta</i>	■ ■ ■ ■	mosses
Lichen layer	<i>Cladina</i> spp.	■ ■ ■ ■ ■	reindeer lichens
	<i>Cladonia</i> spp.	■ ■ ■	cladonia lichens
	<i>Flavocetraria cucullata</i>	■	curled snow lichen
	<i>Peltigera</i> spp.	■	pelt lichens
	unknown	■ ■	lichen crust

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■ ■ ■ ■ ■ >25% ■ ■ ■ ■ 10–25% ■ ■ ■ 3–10% ■ ■ 1–3% ■ <1%



BOLkp/11-Clad02 (Prickly saxifrage – Reindeer lichen)



BOLkp/11-Clad02 (Prickly saxifrage – Reindeer lichen)



BOLkp/11-Clad02 (Prickly saxifrage – Reindeer lichen)

BOLkp/12 AS – Lichen Woodland**General description**

The AS – Lichen Woodland ecosite occurs on the driest and most nutrient poor of the treed sites on the landscape. These sites are often situated on level to gently sloping ground with coarse-textured soils but may also occur on sloping, midslope to crest positions, with shallow soils over bedrock.

Spruce and mixed aspen-spruce stands predominate, commonly with less than 50% canopy cover. Dominant shrubs typically include kinnikinnick (*Arctostaphylos uva-ursi*) and lowbush cranberry (*Vaccinium vitis-idaea*). Bastard toad-flax (*Geocaulon lividum*) is commonly present; however, herb cover is typically low. Grasses, if present, are generally less than 5% cover and can include purple reedgrass (*Calamagrostis purpurascens*) and fescue (*Festuca* spp.).

The lichen ground cover is key in characterizing this ecosite but may be absent or of low cover on some sites where it is replaced by ground shrubs, predominately kinnikinnick. Lichen cover is usually dominated by reindeer lichens (*Cladina* spp.); a significant cover of cetraria, cladonia and pelt lichens may be present. Moss cover is low to moderate and is typically comprised of dry-site mosses like haircap moss (*Polytrichum* sp.) and feathermosses (primarily *Hylocomium splendens* and *Pleurozium schreberi*).

Ground shrub cover is typically higher in younger stands as ground shrubs regenerate quickly after a fire. Lichen dominance increases with length of time since disturbance.

The soils are rapidly to well drained, occurring predominately on glacio-fluvial, fluvial and colluvial surficial materials. Soils are most commonly classified as Eutric or Dystric Brunisols.

Edatopic Grid

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BOLkp/12-ASw27 Aspen – White spruce (Black spruce) / Labrador tea / Bastard toad-flax)

Comments

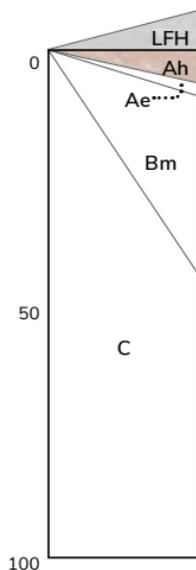
Ecosite 12 is differentiated from other treed dry ecosites as follows:

- Ecosite 21 has an aspen-dominated or mixed aspen-spruce canopy and occurs on moderate to steep warm aspects. Sites are richer and typically have lower lichen cover and higher grass cover. Mixed aspen-spruce stands in ecosite 12 occur on gentle slope positions or neutral aspects.
- Ecosite 01 occurs on moister or richer sites and generally has better tree growth, higher moss cover and lower lichen cover; lowbush cranberry is typically the most abundant species in the ground shrub layer.

Only 5 of the 17 plots have detailed soil information; thus, there is some uncertainty about the soils description due to limited data.

Site and soil characteristics

Plots in unit	17
Moisture regime	xeric to submesic [1–3]
Nutrient regime	very poor to poor [A–B]
Meso slope position	often level to gentle, midslope, upper slope or crest
Aspect	variable
Slope gradient	level to moderate
Surficial material	colluvial, gravelly fluvial terraces, glaciofluvial
Soil texture	sandy, gravelly
Soil classification	typically Eutric and Dystric Brunisols
Humus form	mor
Humus depth	0–8 cm
Soil drainage	well to rapidly
Seepage/water table	none
Permafrost	none



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite 12.

- ASb05** Aspen – Black spruce / Kinnikinnick
- ASw05** Aspen – White spruce / Kinnikinnick
- ASw27** Aspen – White spruce (Black spruce) / Labrador tea /
Bastard toadflax
- Sb10** Black spruce / Labrador tea / Lichen Woodland
- Sw28** White spruce / Shrub birch / Crowberry / Reindeer lichen

The frequency and abundance of species for these associations are shown in the following vegetation table.



BOLkp/12-ASb05 (Aspen – Black spruce / Kinnikinnick)



BOLkp/12-ASw27 (Aspen – White spruce (Black spruce) / Labrador tea / Bastard toad-flax)



BOLkp/12-Sb10 (Black spruce / Labrador tea / Lichen Woodland)



BOLkp/12-Sw28 (White spruce / Shrub birch / Crowberry / Reindeer lichen)

Note: Photos are not available for all vegetation associations pertaining to this ecosite.

BOLkp/20 Pasture Sage Grassland**General description**

The Pasture Sage Grassland ecosite is associated with steep south-facing slopes. These sites commonly have shallow soils and are often found on slopes with bedrock exposures. These sites are among the warmest and driest in the subzone and have a growing season microclimate comparable to regions many degrees of latitude farther south.

The vegetation is characterized by a high cover of grasses and forbs. Trees and most shrubs are absent or scant; however, prickly rose (*Rosa acicularis*) or common juniper (*Juniperus communis*) can be present with moderate cover. Kinnikinnick (*Arctostaphylos uva-ursi*) can also dominate some sites. Pasture sage (*Artemisia frigida*) and purple reedgrass (*Calamagrostis purpurascens*) commonly dominate the herb layer. Other common species include wild strawberry (*Fragaria virginiana*), Pennsylvania cinquefoil (*Potentilla pensylvanica*), northern bedstraw (*Galium boreale*), slender wheatgrass (*Elymus trachycaulus*) and sticky goldenrod (*Solidago simplex*). A lichen crust, of low to moderate cover, is commonly present.

Warm, dry and shallow site conditions, as well as fire, are typically important in maintaining these sites as grasslands. Aspen can begin to invade open slopes with long periods between fires.

Soil textures are commonly sandy and loamy and are typically classified as Eutric or Melanic Brunisols. Parent material is typically colluvial and soils are very rapidly to rapidly drained.

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**BOLkp/20- Arfr02** Pasture sage – Purple reedgrass

Comments

Ecosite 20 is differentiated from other non-treed dry ecosites as follows:

- Ecosite 10 is associated with talus slopes; herb cover is minimal due to mobile substrates or lack of soil.
- Ecosite 11 occurs on extremely shallow soils associated with rock outcrops; shrub and grass cover are typically low.

Ecosite 20 can occur in association with Ecosite 21. Ecosite 21 occurs on steep, south-facing slopes but has an aspen or aspen-white spruce dominated overstorey (typically > 25%) and typically a ground shrub dominated understorey. Scattered stunted aspen can occur on Ecosite 20, but are typically low in cover (<5%).

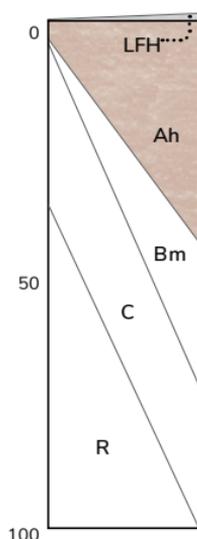
The variation in ecosite 20 is described by five vegetation associations: two herbaceous associations, one ground shrub association and two shrub associations. Variation within these associations are as follows:

- Grass and forb dominated sites occur across a range of slope positions, primarily on warm, steep slopes. The most abundant grass is purple reedgrass (*Calamagrostis purpurascens*), although slender wheatgrass (*Elymus trachycaulus*) dominates on some sites. A low cover of small sedges commonly occurs, including low northern sedge (*Carex concinna*) and blunt sedge (*C. obtusata*). These sites can occur on steep river-cut slopes and therefore are more common at lower elevations in the subzone. Sites may have shallower soils than other grassland associations.
- Sites with moderate kinnikinnick cover (>10%) occur on steep warm aspects and can also be associated with rock outcrop areas. Kinnikinnick is typically the most abundant species, often accompanied by grasses or pasture sage (*Artemisia frigida*).
- Sites with a moderate cover of prickly rose (> 15%) occur on steep, middle to upper slopes, and are more common at slightly higher elevations than grass-dominated associations. Prickly rose (*Rosa acicularis*) dominates the shrub layer; however, soapberry (*Shepherdia canadensis*), common juniper (*Juniperus comminus*) and shrub-layer aspen can be present with low cover. Pasture sage and purple reedgrass are typically dominant components of the diverse herb layer. Sites with common juniper leading in shrub cover can also occur.

Only 3 of the 14 plots have detailed soil information; therefore, there is some uncertainty about the soils description due to limited data.

Site and soil characteristics

Plots in unit	14
Moisture regime	very xeric to submesic [0–1]
Nutrient regime	poor to rich [B–D]
Meso slope position	lower, mid and upper slope
Aspect	southerly
Slope gradient	steep
Surficial material	predominantly colluvial
Soil texture	sandy to loamy
Soil classification	Melanic and Eutric Brunisols
Humus form	mull, moder
Humus depth	0–2 cm
Soil drainage	rapid to very rapid
Seepage/water table	none
Permafrost	none
Site disturbance	slope colluviation
Exposure	insolation

**Vegetation summary**

The following vegetation associations characterize the variation in species composition for Ecosite 20.

- Arfr02** Pasture sage – Purple reedgrass
Aruv02 Kinnikinnick
Eltr03 Slender wheatgrass – Sticky goldenrod
Juco03 Common juniper / Pasture sage
Roac02 Prickly rose / Purple reedgrass

The frequency and abundance of species for these associations are shown in the following vegetation table.



BOLkp/20-Arfr02 (Pasture sage – Purple reedgrass)



BOLkp/20-Juco03 (Common juniper / Pasture sage)



BOLkp/20-Roac02 (Prickly rose / Purple reedgrass)

Note: Photos are not available for all vegetation associations pertaining to this ecosite.

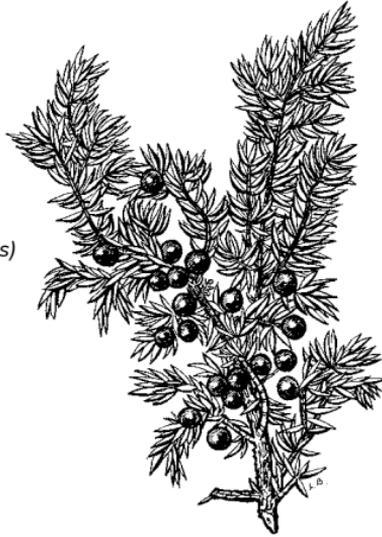
DRY TO MESIC ECOSITES



prickly rose (*Rosa acicularis*)



common juniper
(*Juniperus communis*)



soapberry (*Shepherdia canadensis*)

BOLkp/21 A – Kinnikinnick Woodland**General description**

The A – Kinnikinnick Woodland ecosite is associated with moderate to steep, south-facing slopes, and steep east- and west-facing slopes.

Aspen typically dominates the canopy, although white spruce is commonly present and can co-dominate. Aspen dominates the regenerating tree layer. A moderate to high cover of ground shrubs, primarily kinnikinnick (*Arctostaphylos uva-ursi*), and grasses, primarily purple reedgrass (*Calamagrostis purpurascens*), characterizes the understorey. Prickly rose (*Rosa acicularis*) and/or soapberry (*Shepherdia canadensis*) are usually present and may be of moderate cover. Forbs are variable and are commonly low in cover. Moss and lichen cover are also typically low.

The surficial material is typically colluvial. Soils are commonly sandy or loamy in texture and are typically classified as Dystric, Melanic or Eutric Brunisols. Soils are well to rapidly drained.

Comments

Ecosite 21 is differentiated from other treed dry ecosites as follows:

- Ecosite 12 has higher lichen cover or lower grass cover than 21; sites have poorer nutrient availability and occur predominately on coarse-textured or shallow soils over bedrock; where mixedwood forests occur, they are not found on moderate to steep warm aspects.
- Ecosite 01 aspen-dominated and mixed aspen-spruce stands do not typically occur on warm moderate to steep slopes; they occur on moister sites with lower cover of kinnikinnick and/or grasses. Unlike Ecosite 01, the successional development of Ecosite 21 stands is restricted to aspen dominance due to fire on warm slopes.

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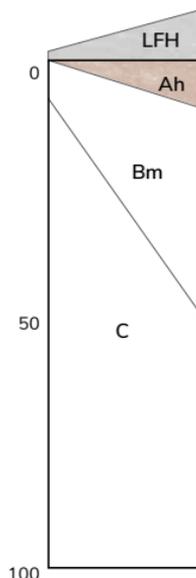


BOLkp/21-ASw06 (Aspen – White spruce / Soapberry / Fireweed)

Grass cover on Ecosite 21 is dominated by purple reedgrass, but can include bluegrasses (*Poa* sp.) and/or fescues (*Festuca* sp.).

Site and soil characteristics

Plots in unit	44
Moisture regime	subxeric to submesic [2-3]
Nutrient regime	poor to rich [B-D]
Meso slope position	lower, middle and upper slope
Aspect	primarily southerly, east and west
Slope gradient	moderate to steep
Surficial material	colluvial, glaciofluvial
Soil texture	sandy to loamy
Soil classification	usually Eutric, Dystric or Melanic Brunisol
Humus form	mostly mor, moder
Humus depth	1-9 cm
Soil drainage	well to rapidly
Seepage/water table	none
Permafrost	none
Exposure	insolation



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite 21.

- A02** Aspen / Juniper
- A03** Aspen / Kinnikinnick
- A04** Aspen / Prickly rose / Grass – Kinnikinnick
- ASw05** Aspen – White spruce / Kinnikinnick
- ASw06** Aspen – White spruce / Soapberry / Fireweed
- ASw07** Aspen – White spruce / Purple reedgrass - Kinnikinnick
- ASwW03** Aspen – White spruce – Alaska birch / Juniper

The frequency and abundance of species for these associations are shown in the following vegetation table.



BOLkp/21-A04 (Aspen / Prickly rose / Grass – Kinnikinnick)



BOLkp/21-ASw05 (Aspen – White spruce / Kinnikinnick)



BOLkp/21-ASw06 (Aspen – White spruce / Soapberry / Fireweed)



BOLkp/21-ASw07 (Aspen – White spruce / Purple reedgrass – Kinnikinnick)

Note: Photos are not available for all vegetation associations pertaining to this ecosite.

BOLkp/31 SbSw – Red Bearberry Forest**General description**

The SbSw – Red Bearberry Forest ecosite occurs on subhygric to hygric sites with medium to poor nutrient regime. The sites are gently to moderately sloping lower to toe slopes or level sites, influenced by cold air ponding. Ecosite 31 is found primarily on fluvial and colluvial parent materials.

Stands have a moderately well to well-developed canopy of white spruce (*Picea glauca*), black spruce (*Picea mariana*) or a combination of them both. A small component of Alaska paper birch (*Betula neoalaskana*) can be present. The characteristic understorey species are Labrador tea (*Rhododendron groenlandicum*) and red bearberry (*Arctous rubra*), with willows (*Salix* spp.), woodland horsetail (*Equisetum sylvaticum*), dwarf scouring-rush (*Equisetum scirpoides*) and lowbush cranberry (*Vaccinium vitis-idaea*) commonly occurring. Feathermosses, primarily step moss (*Hylocomium splendens*), dominate the forest floor; a smaller component of brown mosses (*Aulacomnium* sp., *Tomentypnum* sp.) or peat mosses (*Sphagnum* spp.) can also occur.

Soils are often loamy in texture and can show signs of cryoturbation with near surface, late persisting frost. Soils are moderately well to poorly drained and are typically classified as Cryosols, although Brunisols can occur. A peaty surface horizon can be present.

Edatopic Grid

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BOLkp/31-Sb32 (Black spruce / Blueberry willow / Scouring-rush / Step moss)

Comments

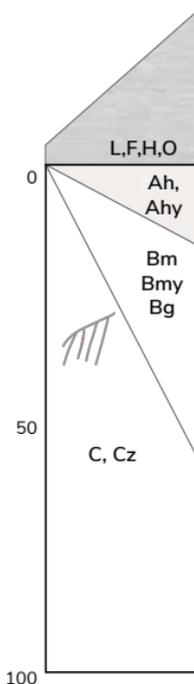
Ecosite 31 is differentiated from other treed circum-mesic to moist ecosites as follows:

- Ecosite 01 is drier and are typically found on middle to upper slopes or level sites lacking cold air influence; deciduous and mixedwood stands are common; soils are typically Brunisols.
- Ecosite 32 is found on moisture-receiving, gentle to moderately sloping, middle to toe slope locations; stands are commonly deciduous or mixedwood, with prickly rose, horsetails and bluejoint reedgrass; depth to permafrost is often greater than in Ecosite 31.
- Ecosite 40 is found on floodplains with subsurface seepage and occasional flooding. This leads to an influx of nutrients, giving these sites a richer nutrient regime. Stands are predominately white spruce dominated with rose, highbush cranberry and horsetails.
- Ecosite 41 is a richer floodplain site dominated by balsam poplar or Alaska paper birch.

Several wetlands are dominated by black spruce; these are on wetter sites and have greater consistency and cover of species typical of wetlands, including shrub birch, leatherleaf, spruce muskeg sedge, tussock cottongrass, cloudberry, peat mosses, glow moss, and golden fuzzy fen moss. Similar wetland ecosites include S07, S08 and B03.

Site and soil characteristics

Plots in unit	22
Moisture regime	subhygric to hygric [5-6]
Nutrient regime	poor to medium [A-C]
Meso slope position	mostly lower to toe slope; level
Aspect	variable
Slope gradient	level to moderate
Surficial material	fluvial, colluvial, organic
Soil texture	loam, fine loamy, sandy loam
Soil classification	commonly Cryosols, Brunisols can occur
Humus form	mor, moder
Humus depth	5-35 cm
Soil drainage	moderately well to poorly
Seepage/water table	mottles usually present; seepage may occur
Permafrost	may be present
Exposure	cold air influence

**Vegetation summary**

The following vegetation associations characterize the variation in species composition for Ecosite 31.

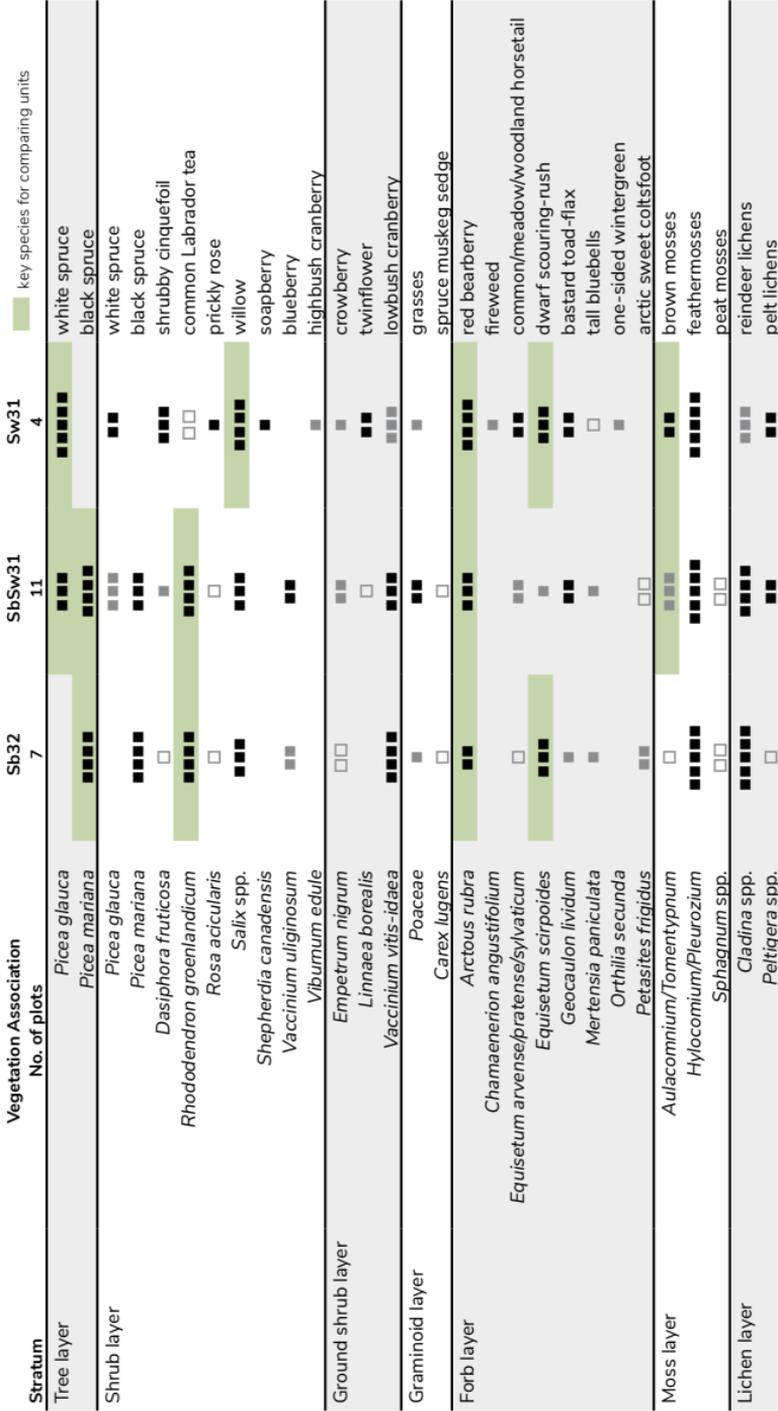
Sb32 Black spruce / Blueberry willow / Scouring-rush / Step moss

SbSw31 Black spruce – White spruce / Blueberry willow / Feathermoss

Sw31 White spruce / Willow / Red bearberry / Feathermoss

The frequency and abundance of species for these associations are shown in the following vegetation table.

BOLkp/31: Vegetation Table



Frequency (percent of plots) ■ 70-100% ■ 50-70% □ 25-50% | Abundance (average percent cover) ■■■■■ >25% ■■■■■ 10-25% ■■■ 3-10% ■■ 1-3% ■ <1%



BOLkp/31-Sb32 (Black spruce / Blueberry willow / Scouring-rush / Step moss)



BOLkp/31-Sb32 (Black spruce / Blueberry willow / Scouring-rush / Step moss)



BOLkp/31-SbSw31 (Black spruce – White spruce / Blueberry willow / Feathermoss)

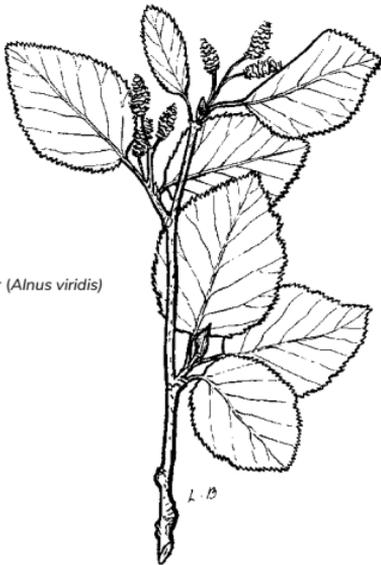


BOLkp/31-Sw31 (White spruce / Willow / Red bearberry / Feathermoss)

MESIC TO MOIST ECOSITES



shrubby cinquefoil (*Dasiphora fruticosa*)



green alder (*Alnus viridis*)

BOLkp/32 SbSwW – Horsetail Forest**General description**

The SbSwW – Horsetail Forest ecosite occurs on mesic to moist (subhygric) sites with a medium to rich nutrient regime. The sites generally occur on moisture-receiving, gentle to moderate, middle to toe-slopes and gully locations. Soils are well to imperfectly drained.

Stands can be deciduous, mixedwood or coniferous-dominated, and consist of white spruce (*Picea glauca*), black spruce (*Picea mariana*), Alaska paper birch (*Betula neoalaskana*) or trembling aspen (*Populus tremuloides*), with varying dominance. The shrub layer is commonly moderately to well-developed and can contain Labrador tea (*Rhododendron groenlandicum*), prickly rose (*Rosa acicularis*), green alder (*Alnus viridis*) and/or willows (*Salix* spp.). Horsetails (*Equisetum arvense*, *pratense*, *sylvaticum*) are typically present in the herb layer and are characteristic of the ecosite. Other common understorey species include bluejoint reedgrass (*Calamagrostis canadensis*), lowbush cranberry (*Vaccinium vitis-idaea*), and tall bluebells (*Mertensia paniculata*). Arctic sweet coltsfoot (*Petasites frigidus*) can be present on moister sites. Step moss (*Hylocomium splendens*) generally dominates the sparse to well-developed moss layer.

Soils are generally derived from colluvial or fluvial parent material, are variable in texture, and are typically classified as Brunisols or Cryosols. Permafrost, mottles and seepage at depth may be present.

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BOLkp/32-SwW34 (White spruce – Alaska paper birch / Red osier dogwood – High-bush cranberry / Horsetail)

Comments

Ecosite 32 is differentiated from other treed circum-mesic to moist, ecosites as follows:

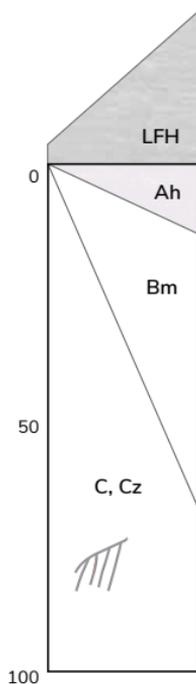
- Ecosite 01 is drier and is typically found on middle to upper slopes or level sites; it lacks moister site indicators such as horsetails.
- Ecosite 31 is also found on moist sites, although sites are commonly influenced by cold air and contain more prevalent red bearberry, dwarf scouring-rush, willow, and reindeer lichens; stands are conifer-dominated, and seldom mixed conifer-deciduous; permafrost can be present.
- Ecosite 40 is found on floodplains with subsurface seepage and occasional flooding. This leads to an influx of nutrients, giving these sites a richer nutrient regime. Stands are predominately white spruce-dominated with some river alder, highbush cranberry and horsetails; sites are level.
- Ecosite 41 is a richer floodplain site, dominated by balsam poplar or Alaska paper birch.

Several wetlands are dominated by black spruce; these are on wetter sites and have greater consistency and cover of species typical of wetlands including shrub birch, leatherleaf, spruce muskeg sedge, tussock cottongrass, cloudberry, peat mosses, glow moss, and golden fuzzy fen moss. Similar wetland ecosites include S07, S08 and B03.

Only 4 of the 20 plots have detailed soil information; therefore, there is some uncertainty to the soils description due to limited data.

Site and soil characteristics

Plots in unit	20
Moisture regime	subhygric [5–6]]
Nutrient regime	medium to rich [C–D]
Meso slope position	middle, lower, and toe slope; level
Aspect	variable
Slope gradient	mostly gentle to moderately sloping
Surficial material	colluvial, fluvial
Soil texture	silt loam, loam, sandy loam
Soil classification	Brunisol, Cryosol
Humus form	mor, moder
Humus depth	5–35 cm
Soil drainage	well to imperfectly
Seepage/water table	may have mottles or seepage at depth
Permafrost	may be present

**Vegetation summary**

The following vegetation associations characterize the variation in species composition for Ecosite 32.

- W30** Alaska birch / Currant / Horsetail
- SbSwW34** Spruce – Alaska birch / Alder – Highbush cranberry / Horsetail
- SwB35** White spruce – Balsam poplar / Soapberry / Horsetail
- SwW34** White spruce – Alaska birch / Red osier dogwood – Highbush cranberry / Horsetail
- Sb31** Black spruce / Horsetail / Step moss

The frequency and abundance of species for these associations are shown in the following vegetation table.



BOLkp/32-W30 (Alaska paper birch / Currant / Horsetail)



BOLkp/32-SwW34 (White spruce – Alaska paper birch / Red osier dogwood – Highbush cranberry / Horsetail)



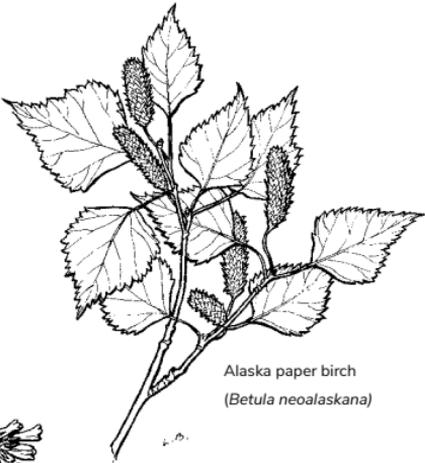
BOLkp/32-Sb31 (Black spruce / Horsetail / Step moss)

Note: Photos are not available for all vegetation associations pertaining to this ecosite.

FLOODPLAIN ECOSITES



bluejoint reedgrass
(*Calamagrostis canadensis*)



Alaska paper birch
(*Betula neoalaskana*)



tall bluebells (*Mertensia paniculata*)

BOLkp/40 Sw – Riparian Forest

General description

The Sw – Riparian Forest ecosite is found on moderately well- to well-drained fluvial parent materials. These sites occasionally flood for a short duration, but are primarily influenced by subsurface water. This can lead to an influx of nutrients, giving these sites a medium to rich nutrient regime.

White spruce (*Picea glauca*) typically dominates the canopy. A component of balsam poplar (*Populus balsamifera*) or Alaska paper birch (*Betula neoalaskana*) is common, and either species can co-dominate younger sites. A variety of shrubs are found on these sites; prickly rose (*Rosa acicularis*) and/or highbush cranberry (*Viburnum edule*) can be abundant. Willows (*Salix* spp.) and river alder (*Alnus incana*) can also be present. Horsetails (*Equisetum arvense, pratense*) are characteristic of these high bench floodplain sites but may be absent or sparse. Other herbs commonly present include tall bluebells (*Mertensia paniculata*) and bluejoint reedgrass (*Calamagrostis canadensis*). Feathermosses, generally step moss (*Hylocomium splendens*), dominate the forest floor.

Soils are typically sandy to loamy in texture and are classified as Eutric Brunisols or Regosols.

Comments

Ecosite 40 can be differentiated from other treed mesic to moist ecosites as follows:

- Ecosite 01 is not influenced by active flooding or subsurface water and typically does not occur on fluvial floodplains; where 01 sites are on fluvial parent materials they occur too high above the flood waters to have richer-site indicators such as horsetails or river alder.
- Ecosite 31 is sometimes on fluvial parent materials, but sites are not typically influenced by flooding; sites are influenced by cold air and have near-surface permafrost. Labrador tea, red bearberry and dwarf scouring-rush are common.

Edatopic Grid

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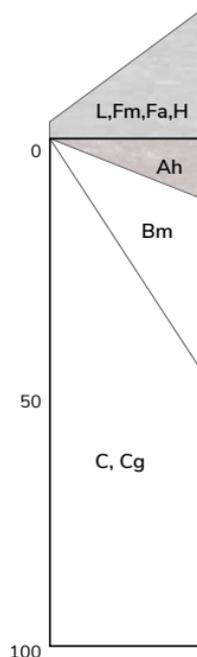


BOLkp/40-SwW34 (White spruce – Alaska paper birch / Red osier dogwood – Highbush cranberry / Horsetail)

- Ecosite 32 typically occurs on moisture-receiving, level to moderately sloping, middle to toe slope locations and is not usually associated with broad floodplain sites. Mixedwood and coniferous-dominated stands commonly contain black spruce.
- Ecosite 41 also occurs along river floodplains but is dominated by balsam poplar or Alaska paper birch and occurs on slightly lower fluvial benches, closer to the subsurface waters and subject to more regular flooding.

Site and soil characteristics

Plots in unit	18
Moisture regime	mesic to subhygric [4–5]
Nutrient regime	medium to very rich [C–E]
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	fluvial
Soil texture	loamy sand to silt loam
Soil classification	Eutric Brunisol, Humic Regosol, Regosol
Humus form	moder
Humus depth	5–30 cm
Soil drainage	imperfectly to well
Seepage/water table	usually mottles at depth
Permafrost	uncommon
Site disturbance	occasional short-duration flooding



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite 40.

- SwB22** White spruce – Balsam poplar / Highbush cranberry / Tall bluebells
- SwB28** White spruce – Balsam poplar / Step moss
- SwB29** White spruce – Balsam poplar / Highbush cranberry / Horsetail
- SwW34** White spruce – Alaska birch / Red osier dogwood – Highbush cranberry / Horsetail
- Sw36** White spruce / Highbush cranberry / Horsetail

The frequency and abundance of species for these associations are shown in the following vegetation table.



BOLkp/40-SwB29 (White spruce – Balsam poplar / Highbush cranberry / Horsetail)



BOLkp/40-SwB29 (White spruce – Balsam poplar / Highbush cranberry / Horsetail)



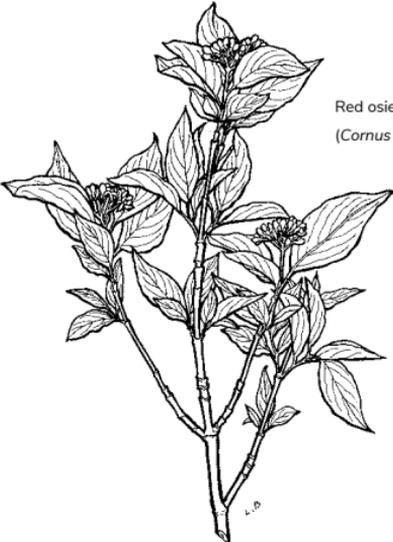
BOLkp/40-SwW34 (White spruce – Alaska paper birch / Red osier dogwood – Highbush cranberry / Horsetail)



BOLkp/40-Sw36 (White spruce / Highbush cranberry / Horsetail)

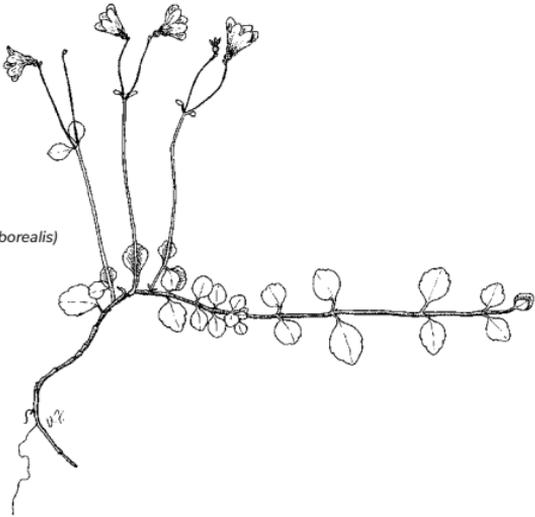
Note: Photos are not available for all vegetation associations pertaining to this ecosite.

FLOODPLAIN ECOSITES



Red osier dogwood
(*Cornus stolonifera*)

twinflower (*Linnaea borealis*)



BOLkp/41 B – Riparian Forest**General description**

The B – Riparian Forest ecosite is most commonly found along the banks of larger rivers in the subzone, but may also be found on smaller drainages. These fluvial sites vary in the frequency of surface flooding and depth of subsurface water. Sites are generally slightly lower and moister than the Sw – Riparian Forest (Ecosite 40), with more frequent flooding.

Stands have a well-developed canopy dominated by young to maturing balsam poplar (*Populus balsamifera*), often with a component of white spruce (*Picea glauca*). Sites along smaller drainages can be dominated by Alaska paper birch (*Betula neoalaskana*). A variety of shrubs are found on these sites; prickly rose (*Rosa acicularis*), highbush cranberry (*Viburnum edule*), red osier dogwood (*Cornus stolonifera*) and/or river alder (*Alnus incana*) may be abundant. Horsetails (*Equisetum arvense*, *pratense*) are characteristic of these floodplain units but may be low in cover. Grasses include bluejoint reedgrass (*Calamagrostis canadensis*) and Pumpelly brome (*Bromus pumpellianus*). Moss cover is absent or sparse due to high leaf litter and/or frequent flooding.

Soils are typically sandy to loamy in texture and classified as Regosols. Sites usually have a rich to very rich nutrient regime due to flood deposition, decomposition of leaf litter and/or subsurface seepage.

Comments

Ecosite 41 can be differentiated from other treed moist ecosites as follows:

- Ecosite 31 can occur on fluvial parent materials, but sites are not influenced by frequent flooding; sites have cold air influence and typically have near surface permafrost; stands are conifer-dominated.

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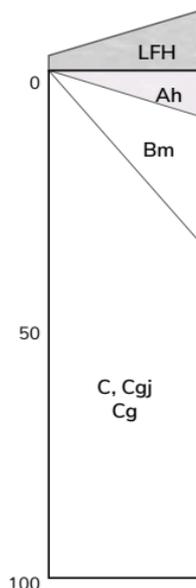


BOLkp/41-B23 (Balsam poplar / Highbush cranberry / Horsetail)

- Ecosite 32 deciduous-dominated stands occur on moisture receiving, gentle to moderately sloping, middle to toe slope locations; commonly have higher moss cover; permafrost can be present.
- Ecosite 40 also occurs along river floodplains but occurs on slightly higher benches with less influence of subsurface water or flooding; stands are dominated by white spruce and have a more well-developed moss layer.

Site and soil characteristics

Plots in unit	12
Moisture regime	subhygric [5]
Nutrient regime	rich to very rich [D–E]
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	fluvial
Soil texture	loamy sand, sand, silt loam
Soil classification	Regosol, Eutric and Dystric Brunisols
Humus form	mor, moder
Humus depth	2–5 cm
Soil drainage	moderately well to well
Seepage/water table	mottles at depth
Permafrost	none
Site disturbance	flooding



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite 41.

B23 Balsam poplar / Highbush cranberry / Horsetail

W29 Alaska birch / Prickly rose / Horsetail

The frequency and abundance of species for these associations are shown in the following vegetation table.

BOLkp/41: Vegetation Table

Stratum	Vegetation Association No. of plots	B23 8	W29 2	key species for comparing units
Tree layer	<i>Betula neolaskana</i>	□ □	■ ■ ■ ■ ■ ■ ■ ■	Alaska paper birch
	<i>Picea glauca</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	white spruce
	<i>Populus balsamifera</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	balsam poplar
Shrub layer	<i>Betula neolaskana</i>	□ □	■ ■ ■ ■ ■ ■ ■ ■	Alaska paper birch
	<i>Picea glauca</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	white spruce
	<i>Populus balsamifera</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	balsam poplar
	<i>Alnus incana</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	river alder
	<i>Cornus stolonifera</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	red osier dogwood
	<i>Ribes triste</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	wild red currant
	<i>Rosa acicularis</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	prickly rose
	<i>Rubus idaeus</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	red raspberry
	<i>Salix</i> spp.	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	willow
	<i>Viburnum edule</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	highbush cranberry
Graminoid layer	Poaceae	■ ■ ■ ■ ■ ■ ■ ■	grasses	
Forb layer	<i>Artemisia tilesii</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	Tilesius' wormwood
	<i>Equisetum arvense/pratense</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	common/meadow horsetail
	<i>Galium boreale</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	northern bedstraw
	<i>Mertensia paniculata</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	tall bluebells
Moss layer	<i>Cornus canadensis</i>	□ □	■ ■ ■ ■ ■ ■ ■ ■	bunchberry
	<i>Brachythecium</i> sp. <i>Hylacomium/Pleurozium</i>	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	ragged-moss feathermosses

Frequency (percent of plots) ■ 70-100% ■ 50-70% □ 25-50% | Abundance (average percent cover) ■■■■■ >25% ■■■■■ 10-25% ■■■ 3-10% ■■ 1-3% ■ <1%



BOLkp/41-B23 (Balsam poplar /
Highbush cranberry / Horsetail)



BOLkp/41-B23 (Balsam poplar /
Highbush cranberry / Horsetail)

Note: Photos are not available for all vegetation associations pertaining to this ecosite.

BOLkp/42 River Alder Riparian**General description**

The River Alder Riparian ecosite is a low bench floodplain ecosite, found on fluvial parent materials. These sites are inundated during spring freshet and typically experience between 20 to 40 days of flooding. They can occur along the banks of larger rivers in the subzone, such as the Yukon and Klondike Rivers. These sites are generally moister than B – Riparian Forest (Ecosite 41) sites, with more frequent flooding.

Low bench ecosystems have a tall shrub structure dominated by river alder (*Alnus incana*) and willows (*Salix* spp.), and other species tolerant of extended flooding and erosion. The herb layer is often sparse but can be more well developed, depending on the recent flood history. Common species include Tilesius' wormwood (*Artemisia tilesii*), fireweed (*Chamaenerion angustifolium*), horsetails (*Equisetum arvense*, *E. pratense*), bluejoint reedgrass (*Calamagrostis canadensis*), and large-leaved avens (*Geum macrophyllum*).

Typically, there is absent to weak humus development at the surface due to the scouring and recurring sediment deposition associated with flooding. Soils are typically sandy in texture and are classified as Regosols and Cumulic Regosols. Sites have a rich nutrient regime due to flood deposition and subsurface seepage.

Comments

Ecosite 42 can be differentiated from other moist, nutrient-rich ecosites by the dominance of river alder.

Ecosite S02 is also river alder dominated. These sites experience flooding, but receive slower moving water influences and more prolonged seepage inputs than Ecosite 42 sites. Mosses include peat and leafy mosses, in addition to feathermosses. Soils are commonly Gleyed Regosols or Gleysols.

Edatopic Grid

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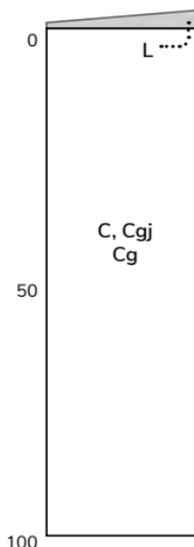


BOLkp/42-Alin30 (River Alder / Tilesius' wormwood – Horsetail)

Site and soil characteristics

BOLkp/42 Site and soil characteristics

Plots in unit	3
Moisture regime	subhgric to hygric [5(-6)]
Nutrient regime	rich to very rich [D-E]
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	fluvial
Soil texture	sandy
Soil classification	Regosol
Humus form	absent, mor
Humus depth	0–2 cm
Soil drainage	imperfectly to rapidly
Seepage/water table	mottles may be present
Permafrost	none
Site disturbance	frequent flooding



Vegetation summary

The following vegetation association displays the species composition for Ecosite 42.

Alin30 River alder / Tilesius' wormwood – Horsetail

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/42: Vegetation Table

Stratum	Vegetation Association No. of plots	Alin30 3	
Shrub layer	<i>Alnus incana</i>	■ ■ ■ ■	river alder
	<i>Picea glauca</i>	■	white spruce
	<i>Populus balsamifera</i>	■ ■	balsam poplar
	<i>Rosa acicularis</i>	■ ■ ■	prickly rose
	<i>Rubus idaeus</i>	■	red raspberry
	<i>Salix</i> spp.	■ ■ ■ ■	willows
Graminoid layer	<i>Poaceae</i>	■ ■ ■	grasses
Forb layer	<i>Achillea millefolium</i>	■	common yarrow
	<i>Artemisia tilesii</i>	■ ■ ■	Tilesius' wormwood
	<i>Chamaenerion angustifolium</i>	■	fireweed
	<i>Eurybia sibirica</i>	■	Siberian aster
	<i>Galium boreale</i>	■ ■	northern bedstraw
	<i>Geum macrophyllum</i>	■	large-leaved avens
	<i>Mertensia paniculata</i>	■	tall bluebells
Moss layer	<i>Bryophyta</i>	■ ■ ■	mosses

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■ ■ ■ ■ ■ >25% ■ ■ ■ ■ ■ 10–25% ■ ■ ■ 3–10% ■ ■ 1–3% ■ <1%



BOLkp/42-Alin30 (River Alder / Tilesius' wormwood – Horsetail)



BOLkp/42-Alin30 (River Alder / Tilesius' wormwood – Horsetail)

BOLkp/B03 Sb – Labrador Tea Bog**General description**

The Sb – Labrador Tea Bog ecosite includes typical black spruce – peat-moss bogs as well as sloping bogs. This ecosite primarily develops on more than 40 cm of poorly decomposed peat. Soils are acidic and low in nutrients.

Diagnostic species include black spruce (*Picea mariana*), Labrador teas (*Rhododendron groenlandicum*, *R. tomentosum*), lowbush cranberry (*Vaccinium vitis-idaea*), cloudberry (*Rubus chamaemorus*), bog cranberry (*Vaccinium oxycoccos*), peat mosses (*Sphagnum* spp.), and reindeer lichens (*Cladina* spp.). Other common species include shrub birch (*Betula glandulosa*), blueberry (*Vaccinium uliginosum*), crowberry (*Empetrum nigrum*), and feathermosses (*Hylocomium splendens*, *Pleurozium schreberi*). Peat mosses are dominated by *Sphagnum fuscum*, with patches of *S. capillaceum* and *S. angustifolium*.

Soils are usually classified as Organic Cryosols, but occasionally non-Organic Cryosols are recorded with 30–40 cm peat. Permafrost is usually found at 20–55 cm from the surface.

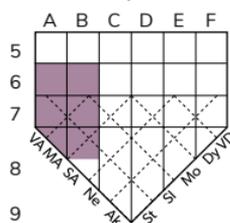
B03 ecosites occur in two different site positions in the BOLkp. More “typical” bogs occur within large tussock fens on gentle to level terraces seted in silty reworked loess or fluvial deposits with a cover of peat. B03 bogs are also found on very steep cold north-facing slopes, where the lack of solar warming helps maintain cold conditions favourable for peat development.

Comments

Ecosite B03 can be differentiated from other black spruce treed wetland ecosites as follows:

- Ecosite B08 is found on palsas or raised peat mounds and is usually characterized by white spruce.
- Ecosite S07 has similar vegetation to the B03, but with less peat moss. It has swampy soil conditions, with generally <30 cm peat, permafrost and a water table subject to greater fluctuations.

Edatopic Grid

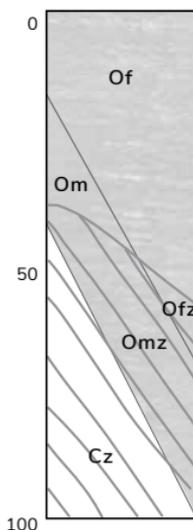


BOLkp/B03-Sb44 (Black spruce / Labrador Tea / Cloudberry – Lowbush cranberry / Peat moss)

- Ecosite F05 includes peaty sites but with greater water movement; key vegetation indicators are spruce muskeg sedge or tussock cotton-grass. Shrub birch or leatherleaf are usually of greater cover than in B03.
- Ecosite FS01 is a transitional fen/swamp ecosite and is characterized by leatherleaf and bluejoint reedgrass.
- Ecosite S08 is a swampy ecosite characterized by glow moss and golden fuzzy fen moss with no or a low cover of peat mosses
- Ecosite 31 occurs on moist, nutrient poor sites that are not wetlands; the sites are drier. Species characteristic of B03, such as cloudberry and peat mosses, are not generally present or are of lower cover in Ecosite 31.

Site and soil characteristics

Plots in unit	18
Moisture regime	hygric to subhydric [6–7]
Nutrient regime	poor to very poor [A–B]
Meso slope position	variable
Aspect	none or steep northerly
Slope gradient	level or moderate to steep
Surficial material	organic
Soil texture	usually fibric
Soil classification	Turbic, Static and Organic Cryosols
Humus form	mor
Humus depth	≥35 cm
Soil drainage	imperfect to poor, occasionally very poor
Seepage/water table	seepage or water table may be within 50 cm
Permafrost	present



Vegetation summary

The following vegetation association characterizes the species composition for Ecosite B03.

Sb44 Black spruce / Labrador Tea / Cloudberry - Lowbush cranberry / Peat moss

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/B03: Vegetation Table

Stratum	Vegetation Association No. of plots	Sb44 18	
Tree layer	<i>Picea mariana</i>	■■■	black spruce
Shrub layer	<i>Picea mariana</i>	■■■■	black spruce
	<i>Betula glandulosa</i>	■■■	shrub birch
	<i>Betula neoalaskana</i>	■■	Alaska paper birch
	<i>Rhododendron groenlandicum</i>	■■■■	common Labrador tea
	<i>Rhododendron tomentosum</i>	■■■■	northern Labrador tea
	<i>Salix</i> spp.	□□□	willows
	<i>Vaccinium uliginosum</i>	□□□	blueberry
Ground shrub layer	<i>Empetrum nigrum</i>	■■	crowberry
	<i>Vaccinium oxycoccos</i>	■■	bog cranberry
	<i>Vaccinium vitis-idaea</i>	■■■	lowbush cranberry
Forb layer	<i>Petasites frigidus</i>	□□	arctic sweet coltsfoot
	<i>Rubus chamaemorus</i>	■■■	cloudberry
Moss layer	<i>Hylocomium splendens</i>	■■■	step moss
	<i>Pleurozium schreberi</i>	■■■■	red-stemmed feathermoss
	<i>Sphagnum</i> spp.	■■■■■	peat mosses
Lichen layer	<i>Cladina</i> spp.	■■■■	reindeer lichens
	<i>Cladonia</i> spp.	■■■	cladonia lichens

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%



BOLkp/B03-Sb44 (Black spruce /
Labrador tea / Cloudberry – Lowbush
cranberry / Peat moss)



BOLkp/B03-Sb44 (Black spruce /
Labrador tea / Cloudberry – Lowbush
cranberry / Peat moss)

BOLkp/B08 Palsa Bog

General description

The Palsa Bog ecosite develops on top of palsas. Palsas are ice cored mounds that are occasionally found in the centre of ponds or at the edges of lakes. Soils usually consist of greater than 40 cm of peat over an ice core.

The vegetation can be variable due to specific site conditions on different parts of a mound. Diagnostic species include white spruce (*Picea glauca*), blueberry (*Vaccinium uliginosum*), lowbush cranberry (*Vaccinium vitis-idaea*), Labrador tea (*Rhododendron groenlandicum*), step moss (*Hylocomium splendens*), glow moss (*Aulacomnium palustre*) and a sparse cover of cladonia lichens (*Cladonia* spp.).

Soils are classified as Organic Cryosols.

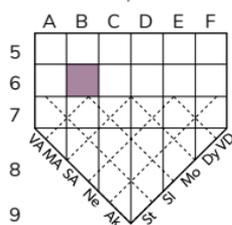
Comments

Ecosite B08 can be differentiated from other treed wetland ecosites as follows:

- Ecosite S08 is a swampy ecosite characterized by glow moss and golden fuzzy fen moss, with a no or low cover of peat mosses.
- Ecosite B03 is a level to hummocky ecosite dominated by black spruce and peat moss, not white spruce or brown mosses.
- Ecosite 31 occurs on moist, nutrient-poor sites that are not wetlands; the sites are not crests of palsas. Characteristic species of B08, such as brown mosses, are less abundant and are of lower cover in Ecosite 31.

With only two plots, the full species and community composition is uncertain. The Sw32 association is a placeholder: it fits the present data, but further data collection may reveal other vegetation associations.

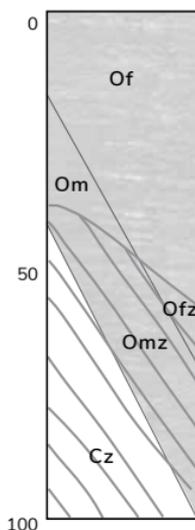
Edatopic Grid



BOLkp/B08-Sw32 (White spruce / Willow / Red bearberry / Brown moss)

Site and soil characteristics

Plots in unit	2
Moisture regime	hygic [6]
Nutrient regime	poor [B]
Meso slope position	crest
Aspect	all
Slope gradient	level, moderate to steep
Surficial material	organic
Soil texture	usually fibric
Soil classification	Organic Cryosols
Humus form	mor
Humus depth	≥35 cm
Soil drainage	imperfect to poor
Seepage/water table	absent
Permafrost	present

**Vegetation summary**

The following vegetation association characterizes the species composition for Ecosite B08.

Sw32 White spruce / Willow / Red bearberry / Brown moss

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/B08: Vegetation Table

Stratum	Vegetation Association No. of plots	Sw32 2	
Tree layer	<i>Picea glauca</i>	■	white spruce
Shrub layer	<i>Picea glauca</i>	■ ■ ■ ■	white spruce
	<i>Betula neoalaskana</i>	■	Alaska paper birch
	<i>Chamaedaphne calyculata</i>	■	leatherleaf
	<i>Dasiphora fruticosa</i>	■	shrubby cinquefoil
	<i>Rhododendron groenlandicum</i>	■ ■ ■	common Labrador tea
	<i>Salix</i> spp.	■ ■ ■	willows
	<i>Vaccinium uliginosum</i>	■ ■ ■ ■	blueberry
Ground shrub layer	<i>Arctous rubra</i>	■ ■ ■	red bearberry
	<i>Empetrum nigrum</i>	■ ■	crowberry
	<i>Vaccinium vitis-idaea</i>	■ ■ ■ ■	lowbush cranberry
Graminoid layer	<i>Arctagrostis latifolia</i>	■	polargrass
	<i>Calamagrostis canadensis</i>	■	bluejoint reedgrass
	<i>Carex</i> sp.	■	sedge
	<i>Eriophorum vaginatum</i>	■	tussock cottongrass
Forb layer	<i>Equisetum scirpoides</i>	■	dwarf scouring-rush
	<i>Equisetum sylvaticum</i>	■	wood horsetail
	<i>Geocaulon lividum</i>	■	bastard toad-flax
	<i>Petasites frigidus</i>	■	arctic sweet coltsfoot
	<i>Rubus chamaemorus</i>	■	cloudberry
Moss layer	<i>Aulacomnium palustre</i>	■ ■	glow moss
	<i>Aulacomnium turgidum</i>	■ ■ ■ ■	mountain groove-moss
	<i>Hylacomium splendens</i>	■ ■ ■ ■	step moss
	<i>Pleurozium schreberi</i>	■ ■ ■ ■	red-stemmed feathermoss
Lichen layer	<i>Cladina</i> spp.	■	reindeer lichens
	<i>Cladonia</i> spp.	■	cladonia lichens

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■ ■ ■ ■ ■ >25% ■ ■ ■ ■ 10–25% ■ ■ ■ 3–10% ■ ■ 1–3% ■ <1%



BOLkp/B08-Sw32 (White spruce /
Willow / Red bearberry / Brown moss)

BOLkp/F01 Water Sedge Fen**General description**

The Water Sedge Fen ecosite is a sedge-dominated fen that occurs on wet (hydric) sites. Standing water can be near, at or above the ground surface, depending upon the time of season and runoff. In the BOLkp, this ecosite often occurs as part of wetland complexes.

The F01 is dominated by large water sedges, either water sedge (*Carex aquatilis*) or beaked sedge (*C. utriculata*). In addition to the sedge cover, brown mosses including golden fuzzy fen moss (*Tomentypnum nitens*), glow moss (*Aulacomnium palustre*), hook-mosses (*Drepanocladus* spp.) or water moss (*Calliergon* sp.) are common.

Organic layers are generally deep: at least 50 cm. Soils are usually classified as Organic Cryosols, Fibrisols or Mesisols; permafrost is often present.

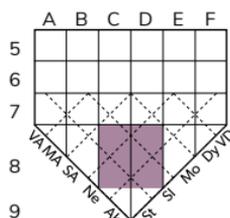
Two vegetation associations characterize the variation in sedge cover. The Caaq55 vegetation association occurs mostly on floodplains of large rivers and is dominated by water sedge (*Carex aquatilis*). The Caut55 association, dominated by beaked sedge (*C. utriculata*), occurs on slightly deeper water sites than Caaq55. It is more common in-filling old oxbows and along old disturbed vehicle tracks surrounded by peatland bogs and fens.

Comments

Ecosite F01 can be differentiated from most other graminoid wetland ecosites by the dominance of water sedge and/or beaked sedge.

- Ecosite M01 also has dominance of beaked sedge or water sedge, but it develops on mineral soils with little to no peat build-up, usually with a fluctuating water table.
- Ecosite F08 is usually dominated by slender sedge but may be co-dominated by beaked sedge.
- Other fen or marsh ecosites may have moderate to high cover of water sedge or beaked sedge but are dominated or characterized by different species of sedges, grasses or forbs.

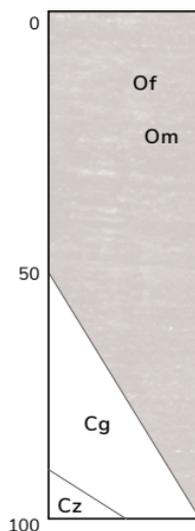
Edatopic Grid



BOLkp/F01-Caaq55
(Water sedge – Beaked sedge)

Site and soil characteristics

Plots in unit	17
Moisture regime	hydric to subhydric [7–8]
Nutrient regime	medium to rich [C–D]
Meso slope position	depression or level
Aspect	none
Slope gradient	level to very gently sloping
Surficial material	organic
Soil texture	mesic, fibric
Soil classification	Organic Cryosol, or Fibrisol or Mesisol
Humus form	mesimor or fibrimor
Humus depth	50 – 150 cm
Soil drainage	very poor to imperfect
Seepage/water table	water table within 50 cm
Permafrost	often present
Open water	usually present (up to 70%)

**Vegetation summary**

The following vegetation associations characterize the variation in species composition for Ecosite F01.

Caaq55 Water sedge – Beaked sedge

Caut55 Beaked sedge – Marsh cinquefoil

The frequency and abundance of species for these associations are shown in the following vegetation table.

BOLkp/F01: Vegetation Table

Stratum	Vegetation Association No. of plots	Caaq55 6	Caut55 11	key species for comparing units
Graminoid layer	<i>Calamagrostis canadensis</i>	□□	□□□	bluejoint reedgrass
	<i>Carex aquatilis</i>	■ ■ ■ ■ ■	■ ■ ■ ■ ■	water sedge
	<i>Carex diandra</i>	■ ■	■ ■ ■ ■ ■	lesser panicked sedge
	<i>Carex utriculata</i>	■ ■	■ ■ ■ ■ ■	beaked sedge
Forb layer	<i>Comarum palustre</i>	■ ■ ■	■ ■ ■	marsh cinquefoil
Moss layer	<i>Tomentypnum nitens</i>	■ ■ ■ ■ ■		golden fuzzy fen moss
	Bryophyta	■ ■ ■ ■ ■	□ □	mosses
	<i>Sphagnum</i> spp.		□ □	peat mosses

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■ ■ ■ ■ ■ >25% ■ ■ ■ ■ ■ 10–25% ■ ■ ■ 3–10% ■ ■ 1–3% ■ <1%



BOLkp/F01-Caaq55 (Water sedge –
Beaked sedge)



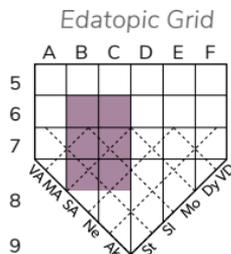
BOLkp/F01-Caut55 (Beaked sedge –
Marsh cinquefoil)

BOLkp/F05 Sb – Tussock Sedge Fen**General description**

The Sb – Tussock Sedge Fen ecosite is a treed fen that occurs primarily on level to gently sloping hygric to subhygric sites underlain by shallow permafrost. However, F05 sometimes occurs on moderate to steep slopes on cool aspects or in narrower draws with deep reworked loess sediments and subhygric to hygric moisture conditions.

The F05 ecosite mostly consists of an open canopy of stunted black spruce (*Picea mariana*) with tussock cottongrass (*Eriophorum vaginatum*) and/or spruce muskeg sedge (*Carex lugens*) dominating the herb layer. Both of these species are tussock sedges, giving the wetland a “tussocky” microtopography. The tussocks create microsites with varying moisture and nutrient conditions favourable for a wide variety of species. Sometimes stunted white spruce (*P. glauca*) replaces the black spruce or is co-dominant. Some stands are dominated by Alaska paper birch (*Betula neoalaskana*). The shrub layer is characterized by shrub birch (*Betula glandulosa*) and/or leatherleaf (*Chamaedaphne calyculata*). Other common shrubs are willows (*Salix* spp.), Labrador teas (*Rhododendron tomentosum*, *groenlandicum*) and blueberry (*Vaccinium uliginosum*), in varying amounts. Other sedges can be present with low to moderate cover. Lowbush cranberry (*Vaccinium vitis-idaea*) and cloudberry (*Rubus chamaemorus*) often occur with low cover. The moss layer is variable, comprised of peat mosses (*Sphagnum* spp.), feathermosses (mostly *Hylocomium splendens*), glow moss (*Aulacomnium palustre*), and golden fuzzy fen moss (*Tomentypnum nitens*).

Permafrost is present: soils are classified as Gleysolic Static Cryosols, Turbic Cryosols or Organic Cryosols. The soils often consist of a 20- to 35-cm organic surface horizon over reworked silty loess, although deeper peat is also found. The active layer is usually between about 25 and 35 cm, with seepage often present on top of the active layer, sometimes right to the surface.



BOLkp/F05-Sb52 (Black spruce / Leatherleaf / Spruce muskeg sedge)

Comments

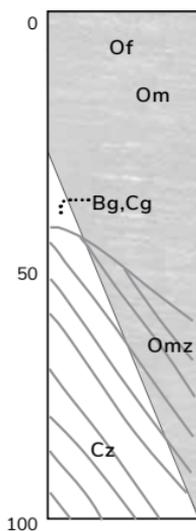
Ecosite F05 can be differentiated from other black spruce treed wetland ecosites as follows:

- Ecosite B03 includes peaty sites but with less water movement. It has greater peat moss cover and lacks the F05 indicators such as leatherleaf, spruce muskeg sedge or tussock cottongrass.
- Ecosite S07 can have similar vegetation to some sites in F05, but if spruce muskeg sedge or tussock cottongrass occur in S07, they are of low cover. Peat moss is more characteristic of S07; brown mosses are more characteristic of F05. S07 does not have more than 40 cm of peat; F05 may.
- Ecosite FS01 is a transitional fen/swamp ecosite characteristic of post-disturbance sites that are undergoing a shift in moisture regime. FS01 has high cover of leatherleaf, similar to some F05 sites, but is characterized by bluejoint reedgrass rather than spruce muskeg sedge or tussock cotton grass, although these species may be present.
- Ecosite S08 is a swampy ecosite and either lacks or has low cover of peat mosses. It is characterized by glow moss and golden fuzzy fen moss. S08 sites may have spruce muskeg sedge and/or shrub birch, but if so, they are of low cover. The S08 lacks leatherleaf and can have high bluejoint reedgrass cover.

Ecosite 31 and 32 occur on drier sites and lack F05 indicators.

Site and soil characteristics

Plots in unit	83
Moisture regime	hygic to subhydic, sometimes subhygic [6–7, 5]
Nutrient regime	medium to poor [B–C]
Meso slope position	usually level or lower to toe; mid slopes
Aspect	variable
Slope gradient	level to steep
Surficial material	organic and organic over reworked loess or fluvial
Soil texture	fibric, mesic
Soil classification	Turbic and Organic Cryosols
Humus form	mesimor or fibrimor
Humus depth	20–70 cm
Soil drainage	imperfect to poor, sometimes very poor
Seepage/water table	seepage within 50 cm, on top of permafrost
Permafrost	present

**Vegetation summary**

The following vegetation associations characterize the variation in species composition for Ecosite F05.

- Sb50** Black spruce / Spruce muskeg sedge
- Sb51** Black spruce / Shrub birch / Spruce muskeg sedge
- Sb52** Black spruce / Leatherleaf / Spruce muskeg sedge
- Sb55** Black spruce / Tussock cottongrass
- SbSw55** Black spruce – White spruce / Leatherleaf / Tussock cottongrass
- W54** Alaska birch / Leatherleaf / Spruce muskeg sedge
- W55** Alaska birch / Leatherleaf / Tussock cottongrass

The frequency and abundance of species for these associations are shown in the following vegetation table.



BOLkp/F05-Sb50 (Black spruce /
Spruce muskeg sedge)



BOLkp/F05-Sb52 (Black spruce /
Leatherleaf / Spruce muskeg sedge)

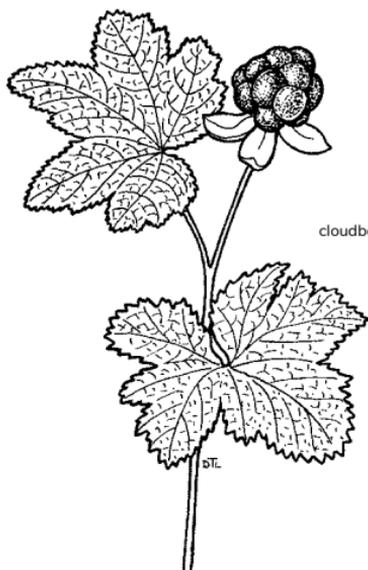


BOLkp/F05-Sb55 (Black spruce /
Tussock cottongrass)

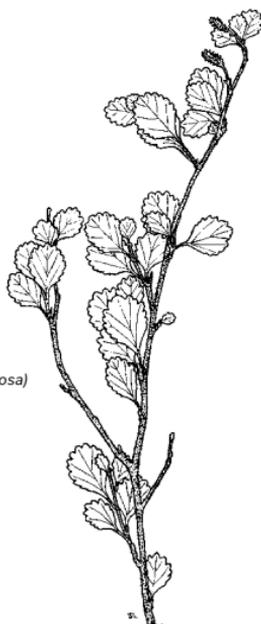


BOLkp/F05-SbSw55 (Black spruce –
White spruce / Leatherleaf / Tussock
cottongrass)

Note: Photos are not available for all vegetation associations pertaining to this ecosite.



cloudberry (*Rubus chamaemorus*)



shrub birch (*Betula glandulosa*)

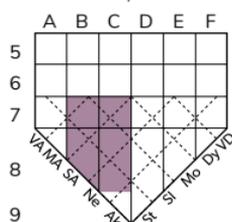
BOLkp/F06 Shrub Birch – Tussock Sedge Fen**General description**

The Shrub Birch – Tussock Sedge Fen ecosite is a shrub fen that occurs mostly on subhydric sites. The sites are level or gently to moderately sloped with imperfect to very poor drainage.

Shrub birch (*Betula glandulosa*) is generally the most conspicuous shrub of the F06 ecosite, although willows (*Salix* spp.) occasionally dominate. Tussock cottongrass (*Eriophorum vaginatum*) and/or spruce muskeg sedge (*Carex lugens*) dominate the herb layer. Both of these are tussock sedges, giving the wetland a “tussocky” microtopography. The tussocks create microsites with varying moisture and nutrient conditions favourable for a wide variety of species. Other common shrubs are Labrador teas (*Rhododendron tomentosum*, *groenlandicum*) and blueberry (*Vaccinium uliginosum*). Scattered spruce (*Picea mariana*, *P. glauca*) may be present. Lowbush cranberry (*Vaccinium vitis-idaea*) and cloudberry (*Rubus chamaemorus*) often occur. The moss layer is variable, comprised of peat mosses (*Sphagnum* spp.), feather-mosses (mostly *Hylocomium splendens*), glow moss (*Aulacomnium palustre*), golden fuzzy fen moss (*Tomentypnum nitens*) and/or hook-mosses (*Drepanocladus* spp.)

This ecosite may occupy the centre of a wetland surrounded by a F05 ecosite with a higher cover of spruce. Permafrost is always present, usually within 20 to 45 cm of the ground surface. Soils are Gleysolic Static or Turbic Cryosols or Organic Cryosols with shallow to moderate depths of peat (usually 20–60 cm, but sometimes more than one metre) overlying silty reworked loess or fluvial deposits. Seepage is often present on top of the permafrost table.

Edatopic Grid



BOLkp/F06-Beg152 (Shrub birch / Spruce muskeg sedge)

Comments

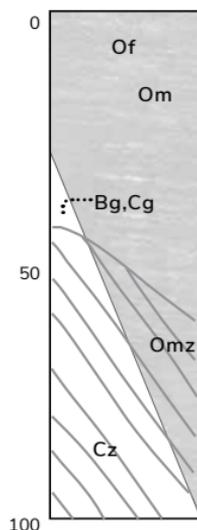
Ecosite F06 can be differentiated from other wetland, shrubby ecosites as follows:

- Ecosite F07 is dominated by leatherleaf instead of shrub birch or willows.
- Ecosite S01 is characterized by bluejoint reedgrass under a willow overstorey, rather than spruce muskeg sedge or tussock cottongrass of F06.
- Ecosite S02 occurs on swampy soils dominated by river alder.
- Ecosite S06 is a swampy ecosite dominated by willows with either sedge or peat moss dominating, rather than spruce muskeg sedge or tussock cottongrass of F06.

The F06 is similar to the F05 but has no or low (<5%) tree cover.

Site and soil characteristics

Plots in unit	44
Moisture regime	typically subhydic, occasionally hygric to subhygric [7, 6-5]
Nutrient regime	medium to rich, occasionally poor [C-D, B]
Meso slope position	level, toe, lower and mid slopes
Aspect	variable
Slope gradient	mostly level, occasionally gentle to moderate
Surficial material	organic over reworked loess or fluvial
Soil texture	often mesic peat over fine-textured mineral
Soil classification	Cryosols
Humus form	mor or moder
Humus depth	20–60 cm
Soil drainage	imperfect to very poor
Seepage/water table	seepage within 50 cm, on top of permafrost
Permafrost	present



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite F06.

- Begl51** Shrub birch / Tussock cottongrass / Peat moss
- Begl52** Shrub birch / Spruce muskeg sedge
- Begl54** Shrub birch / Spruce muskeg sedge – Bluejoint reedgrass
- Sasp57** Willow / Spruce muskeg sedge

The frequency and abundance of species for these associations are shown in the following vegetation table.

If sites are found with a high cover of leatherleaf, with shrub birch and spruce muskeg sedge, they can be assigned to this vegetation association:

- Begl53** Shrub birch – Leatherleaf / Spruce muskeg sedge

BOLkp/F06: Vegetation Table

Stratum	Vegetation Association No. of plots	BegJ51 21	BegJ52 13	BegJ54 6	Sasp57 4	key species for comparing units
Shrub layer	<i>Betula glandulosa</i>	■■■■■	■■■■■	■■■■■	□	shrub birch
	<i>Betula occidentalis</i>	■■■■■	■■■■■	■■■■■	■	water birch
	<i>Dasiphora fruticosa</i>	■	□	■	■■■	shrubby cinquefoil
	<i>Rhododendron groenlandicum</i>	■■■■■	■	■	■■■	common Labrador tea
	<i>Rhododendron tomentosum</i>	■■■■■	■	■	■■■	northern Labrador tea
Ground shrub layer	<i>Salix</i> spp.	■	■■■	■	■■■■■	willows
	<i>Salix myrtilifolia</i>	■	■	■	■■■■■	blueberry willow
	<i>Vaccinium uliginosum</i>	□□□	□□□	■	■	blueberry
	<i>Vaccinium vitis-idaea</i>	■	■	■	■	lowbush cranberry
Graminoid layer	<i>Calamagrostis canadensis</i>	□	■	■■■■■	■	bluejoint reedgrass
	<i>Carex lugens</i>	□□□	■■■■■	■■■■■	■■■■■	spruce muskeg sedge
	<i>Eriophorum vaginatum</i>	■■■■■	□□□	■	■	tussock cottongrass
Forb layer	<i>Pyrola</i> sp.	■	■	■	■	wintergreen
	<i>Rubus chamaemorus</i>	■	■	■	■	cloudberry
Moss layer	<i>Aulacomnium/Tomentypnum/Drepanocladus</i>	□□□	□□□	■	■■■	brown mosses
	<i>Bryophyta</i>	■	■	■	■	mosses
	<i>Hylocomium/Pleurozium</i>	■	■	■	■	feathermosses
Lichen layer	<i>Sphagnum</i> spp.	■■■■■	□□□	■	■	peat mosses
	<i>Peltigera</i> spp.	■	■	■	□	pelt lichens

Frequency (percent of plots) ■ 70–100% □ 25–50% | Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%



BOLkp/F06-BegI51 (Shrub birch /
Tussock cottongrass / Peat moss)



BOLkp/F06-BegI52 (Shrub birch /
Spruce muskeg sedge)



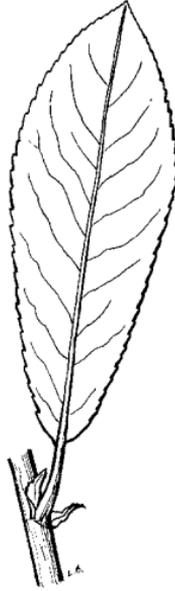
BOLkp/F06-BegI54 (Shrub birch /
Spruce muskeg sedge – Bluejoint
reedgrass)



BOLkp/F06-Sasp57 (Willow / Spruce
muskeg sedge)



blueberry willow
(*Salix myrtilifolia*)



little-tree willow
(*Salix arbusculooides*)



BOLkp/F07 Leatherleaf – Peat Moss Fen**General description**

The Leatherleaf – Peat Moss Fen ecosite is found in subhydic to hydric moisture regimes in deeper peat deposits of old meander channels of the Indian and Stewart rivers. These sites are very poorly drained, with water at or near the surface.

A moderate to high cover of leatherleaf (*Chamaedaphne calyculata*) is diagnostic of ecosite F07. Labrador tea (most commonly *Rhododendron tomentosum*), bog rosemary (*Andromeda polifolia*) or bog cranberry (*Vaccinium oxycoccus*) are often present with low to moderate cover. Shrub birch (*Betula glandulosa*) is sometimes present with a moderate cover. Various sedges (*Carex* spp. or *Eriophorum* spp.) occur, sometimes with high cover. Peat mosses (*Sphagnum* spp.) dominate the bryophytes; other mosses can include hook-mosses (*Drepanocladus* spp.) or golden fuzzy fen moss (*Tomentypnum nitens*).

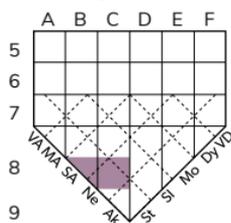
Depth to permafrost can vary from 55 to 170 cm. The depth of peat may be greater than 170 cm.

Comments

Ecosite F07 can be differentiated from other shrubby wetland ecosites by the high cover of leatherleaf.

This ecosite is also found in disturbed thermokarsting vehicle tracks along the Dempster highway and around Eagle Plains that generally have a lot of bog rosemary. These tracks often form channels that conduct nutrient medium water flow within a bog or fen.

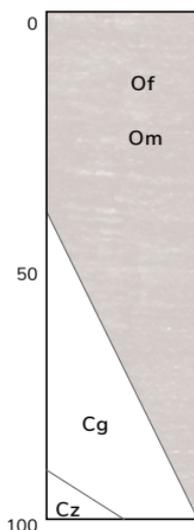
Edatopic Grid

**BOLkp/F07-Chca51**

(Leatherleaf / Bog rosemary / Peat moss)

Site and soil characteristics

Plots in unit	13
Moisture regime	subhydic to hydric [7–8]
Nutrient regime	medium [C]
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric, mesic
Soil classification	Fibrisol, Mesisol, Organic Cryosol
Humus form	fibrimor, mesimor
Humus depth	>40 cm
Soil drainage	very poor
Seepage/water table	water table at or near surface
Permafrost	sometimes present

**Vegetation summary**

The following vegetation association characterizes the species composition for Ecosite F07.

Chca51 Leatherleaf / Bog rosemary / Peat moss

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/F07: Vegetation Table

Stratum	Vegetation Association No. of plots	Chca51 13	
Shrub layer	<i>Chamaedaphne calyculata</i>	■■■■■	leatherleaf
	<i>Rhododendron</i> spp.	■■■■	Labrador teas
Ground shrub layer	<i>Andromeda polifolia</i>	■■	bog rosemary
	<i>Vaccinium oxycoccos</i>	■■	bog cranberry
Graminoid layer	<i>Carex</i> spp.	□□□□	sedges
	<i>Eriophorum</i> spp.	■■■■	cottongrasses
Moss layer	<i>Sphagnum</i> spp.	■■■■■	peat mosses

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%

BOLkp/F08 Slender Sedge – Beaked Sedge Fen**General description**

The Slender Sedge – Beaked Sedge Fen ecosite occupies hydric sites in the southern portion of the BOLkp. The ecosite is characterized by a significant cover of slender sedge (*Carex lasiocarpa*), although beaked sedge (*C. utriculata*) may be co-dominant on some sites.

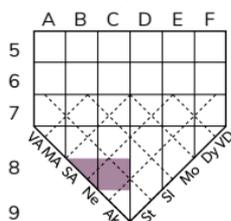
The ecosite occupies level, very poorly drained sites bordering small pools in a bog-fen complex. Limited soils data are available.

Comments

Ecosite F08 can be differentiated from most other graminoid wetlands by the dominance of slender sedge, sometimes in co-dominance with beaked sedge.

- Ecosites F01 and M01 can have high cover of beaked sedge, but do not have significant cover of slender sedge.
- Other graminoid fen or marsh ecosites are dominated by different species of sedges, grasses or forbs.

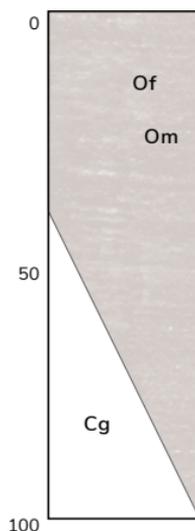
Edatopic Grid

**BOLkp/F08-Cala53**

(Slender sedge – Beaked sedge)

Site and soil characteristics

Plots in unit	3
Moisture regime	hydric [8]
Nutrient regime	medium [C]
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric, mesic
Soil classification	Fibrisol, Mesisol
Humus form	fibrimor, mesimor
Humus depth	>40 cm
Soil drainage	very poor
Seepage/water table	water table at or near surface
Permafrost	none
Open water	usually present (up to 35%)

**Vegetation summary**

The following vegetation association characterizes the species composition for Ecosite F08.

Cala53 Slender sedge – Beaked sedge

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/F08: Vegetation Table

Stratum	Vegetation Association No. of plots	Cala53 3	
Graminoid layer	<i>Carex lasiocarpa</i>	■■■■■	slender sedge
	<i>Carex limosa</i>	■	mud sedge
	<i>Carex utriculata</i>	■■■■	beaked sedge
Aquatic	<i>Utricularia</i> spp.	■	bladderworts

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%

BOLkp/F09 Creeping Sedge Fen**General description**

The Creeping Sedge Fen ecosite occurs on hydric sites and is associated with deeper peat in depressions found in old meander scars of medium and larger size rivers. Soils are very poorly drained, and the water table is at or near the surface.

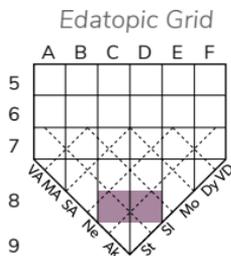
Creeping sedge (*Carex chordorrhiza*) is characteristic. Creeping sedge occurs with significant cover associated with other sedge species such as beaked sedge (*C. utriculata*), water sedge (*C. aquatilis*) and/or mud sedge (*C. limosa*). Marsh cinquefoil (*Comarum palustre*), narrow-leaved cottongrass (*Eriophorum angustifolium*) and varnished hook-moss (*Hamatocaulis vernicosus*) are common associates.

The soils are organic, consisting of fibric to mesic peat 70–130 cm deep. Soils are unfrozen to greater than 120 cm.

Comments

Ecosite F09 can be differentiated from other graminoid wetlands by the dominance of creeping sedge.

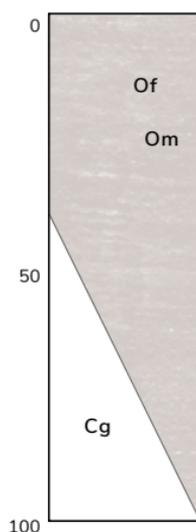
- Other graminoid fen or marsh ecosites are dominated by different species of sedges, grasses or forbs.
- This ecosite is similar to the Arctic association Wf03 – Cach52 *Carex chordorrhiza* – *Carex aquatilis* / *Sphagnum* spp.

**BOLkp/F09-Cach50**

(Creeping sedge – Water sedge – Beaked sedge)

Site and soil characteristics

Plots in unit	3
Moisture regime	hydric [8]
Nutrient regime	medium to rich [C-D]
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric, mesic
Soil classification	Fibrisol, Mesisol
Humus form	fibrimor, mesimor
Humus depth	70–130 cm
Soil drainage	very poor
Seepage/water table	water table at or near surface
Permafrost	usually unfrozen to greater than 1.2 m
Open water	usually present (up to 25%)

**Vegetation summary**

The following vegetation association characterizes the species composition for Ecosite F09.

Cach50 Creeping sedge – Water sedge – Beaked sedge

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/F09: Vegetation Table

Stratum	Vegetation Association No. of plots	Cach50 3	
Graminoid layer	<i>Carex chordorrhiza</i>	■■■■■	creeping sedge
	<i>Carex aquatilis/utriculata</i>	■■■■■	water sedges
	<i>Eriophorum angustifolium</i>	■■	narrow-leaved cottongrass
Forb layer	<i>Comarum palustre</i>	■■■	marsh cinquefoil
	<i>Equisetum fluviatile</i>	■■	water horsetail
Moss layer	<i>Hamatocaulis vernicosus</i>	■■■■■	varnished hook-moss

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%

BOLkp/F10 Livid Sedge – Mud Sedge Fen**General description**

The Livid Sedge – Mud Sedge Fen ecosite occurs on hydric, medium nutrient sites. F10 sites are very poorly drained; no additional soils information is available.

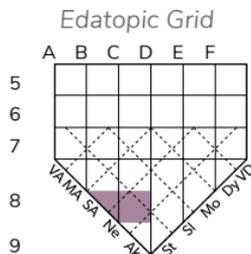
The F10 ecosite is dominated by livid sedge (*Carex livida*) and mud sedge (*C. limosa*), often with slender sedge (*C. lasiocarpa*). English sundew (*Drosera angelica*) and bog buckbean (*Menyanthes trifoliata*) typically occur as associates. Flat-leaved bladderwort (*Utricularia intermedia*) often occurs. Wetland hook-mosses such as *Drepanocladus* sp. and *Scorpidium scorpioides* are common.

All plots classified in F10 were found in a depressional wetland close to the southern boundary of the BOLkp, near Beaver Creek.

Comments

Ecosite F10 can be differentiated from other graminoid wetlands by the dominance of livid and mud sedges

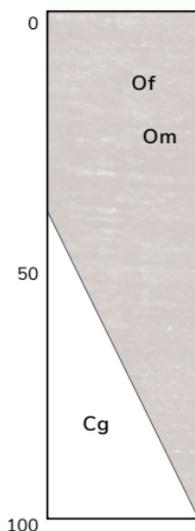
- Other graminoid fen or marsh ecosites may have livid sedge or mud sedge but are dominated by different species of sedges, grasses or forbs.



BOLkp/F10-Cali52 (Livid sedge – Mud sedge)

Site and soil characteristics

Plots in unit	6
Moisture regime	hydric [8]
Nutrient regime	medium [C]
Meso slope position	depression
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric, mesic
Soil classification	Fibrisol, Mesisol
Humus form	mor
Humus depth	>40 cm
Soil drainage	very poor
Seepage/water table	water table at or near surface
Permafrost	none
Open water	usually present (up to 85%)


Vegetation summary

The following vegetation association characterizes the species composition for Ecosite F10.

Cali52 Livid sedge – Mud sedge

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/F10: Vegetation Table

Stratum	Vegetation Association No. of plots	Cali52 6	
Graminoid layer	<i>Carex limosa</i>	■■■■■	mud sedge
	<i>Carex livida</i>	■■■■■	livid sedge
	<i>Carex lasiocarpa</i>	■■■■■	slender sedge
Forb layer	<i>Drosera anglica</i>	■■	English sundew
	<i>Menyanthes trifoliata</i>	■■	bog buckbean
Aquatic	<i>Utricularia intermedia</i>	■	flat-leaved bladderwort
Moss layer	<i>Drepanocladus</i> spp.	■■■■■	hook-mosses

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%

BOLkp/F11 Tufted Clubrush – Beaked Sedge Fen**General description**

The Tufted Clubrush – Beaked Sedge Fen ecosite is a hydric sedge fen characterized by tufted clubrush (*Trichophorum cespitosum*). This ecosite often develops on nitrogen poor peaty soils associated with deeper peat in larger wetlands. No soils information is available.

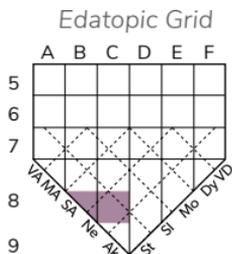
The clubrush is often associated with sedges, including beaked sedge (*Carex utriculata*), water sedge (*C. aquatilis*) and/or livid sedge (*C. livida*). Bryophytes are of low cover and can include peat mosses (*Sphagnum* spp.) or hook-mosses (*Drepanocladus* spp.).

In the Klondike Plateau, F11 was recorded close to the southern boundary of the BOLkp, near Beaver Creek.

Comments

Ecosite F11 can be differentiated from other graminoid wetlands by the dominance of tufted clubrush.

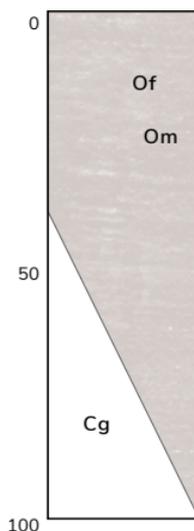
- Other graminoid fen or marsh ecosites are dominated by different species of sedges, grasses or forbs.



BOLkp/F11-Trce51 (Tufted clubrush – Beaked sedge)

Site and soil characteristics

Plots in unit	3
Moisture regime	hydric [8]
Nutrient regime	medium [C]
Meso slope position	depression
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	organic
Soil classification	Fibrisol, Mesisol
Humus form	fibrimor, mesimor
Humus depth	>40 cm
Soil drainage	very poor
Seepage/water table	water table at or near surface
Permafrost	none
Open water	usually present (up to 75%)

**Vegetation summary**

The following vegetation association characterizes the species composition for Ecosite F11.

Trce51 Tufted clubrush – Beaked sedge

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/F11: Vegetation Table

Stratum	Vegetation Association No. of plots	Trce51 3	
Shrub layer	<i>Chamaedaphne calyculata</i>	■	leatherleaf
Graminoid layer	<i>Carex aquatilis</i>	■ ■	water sedge
	<i>Carex livida</i>	■ ■	livid sedge
	<i>Carex utriculata</i>	■ ■ ■ ■	beaked sedge
	<i>Trichophorum cespitosum</i>	■ ■ ■ ■ ■ ■	tufted clubrush

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■ ■ ■ ■ ■ >25% ■ ■ ■ ■ ■ 10–25% ■ ■ ■ ■ 3–10% ■ ■ 1–3% ■ <1%

BOLkp/F12 Lesser Panicled Sedge Fen**General description**

The Lesser Panicled Sedge Fen ecosite is a hydric sedge fen occasionally found along river valleys of the Klondike Plateau. F12 is associated with deeper peat deposits (from 35–130 cm).

Lesser panicled sedge (*Carex diandra*) is diagnostic. Common associated species include water sedge (*Carex aquatilis*) and marsh cinquefoil (*Comarum palustre*). Cottongrasses (*Eriophorum angustifolium*, *vaginatium*), bluejoint reedgrass (*Calamagrostis canadensis*), and bog buckbean (*Menyanthes trifoliata*) may also occur.

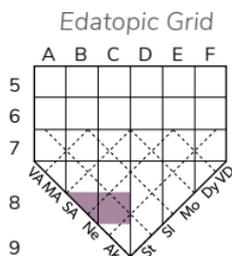
Soils are usually classified as Mesisols or Organic Cryosols. Permafrost may be present at 40–50 cm.

In the BOLkp, F12 is found along the Stewart and Klondike rivers.

Comments

Ecosite F12 can be differentiated from most other graminoid wetlands by the dominance of lesser panicled sedge.

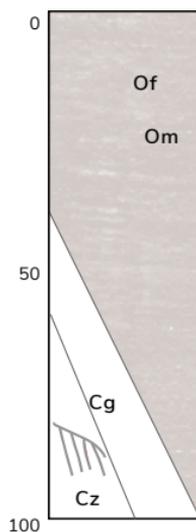
- W08 can have high cover of lesser panicled sedge, but is characterized by wild calla.
- Other graminoid fen or marsh ecosites are dominated by different species of sedges, grasses or forbs.



BOLkp/F12-Cadi50 (Lesser panicled sedge – Water sedge)

Site and soil characteristics

Plots in unit	6
Moisture regime	hydric [8]
Nutrient regime	medium to rich [C-D]
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric, mesic
Soil classification	Fibrisol, Mesisol
Humus form	fibrimor, mesimor
Humus depth	35–130 cm
Soil drainage	very poor
Seepage/water table	water table at or near surface
Permafrost	may be present
Open water	usually present (up to 25%)


Vegetation summary

The following vegetation association characterizes the species composition for Ecosite F12.

Cadi50 Lesser paniced sedge – Water sedge

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/F12: Vegetation Table

Stratum	Vegetation Association No. of plots	Cadi50 6	
Graminoid layer	<i>Calamagrostis canadensis</i>	■ ■	bluejoint reedgrass
	<i>Carex aquatilis</i>	■ ■ ■ ■	water sedge
	<i>Carex diandra</i>	■ ■ ■ ■ ■	lesser paniced sedge
	<i>Eriophorum</i> spp.	■ ■ ■	cottongrasses
Forb layer	<i>Comarum palustre</i>	■ ■ ■	marsh cinquefoil
	<i>Epilobium palustre</i>	■	marsh willowherb
	<i>Menyanthes trifoliata</i>	■ ■ ■	bog buckbean

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■ ■ ■ ■ ■ >25% ■ ■ ■ ■ 10–25% ■ ■ ■ 3–10% ■ ■ 1–3% ■ <1%

BOLkp/F13 Water Horsetail – Sedge Fen**General description**

The Water Horsetail – Sedge Fen ecosite occurs on hydric sites with organic soils dominated by water horsetail (*Equisetum fluviatile*).

Species associated with water horsetail may include sedges such as water sedge (*Carex aquatilis*), beaked sedge (*C. utriculata*), and/or cottongrass species (*Eriophorum* spp.)

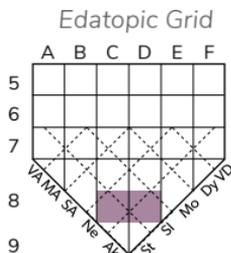
No soils information is available.

The ecosite is found near the southern boundary of the BOLkp.

Comments

Ecosite F13 can be differentiated from most other wetlands by the dominance of water horsetail.

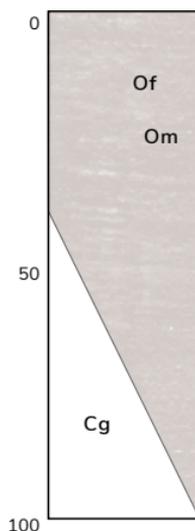
- M02 is also dominated by water horsetail, but occurs on mineral soils, whereas the F13 is on peaty (organic) soils.
- Other graminoid fen or marsh ecosites are dominated by different species of sedges, grasses or forbs.



BOLkp/F13-Eqfl155 (Water horsetail – Sedge)

Site and soil characteristics

Plots in unit	3
Moisture regime	hydric [8]
Nutrient regime	medium [C]
Meso slope position	depression
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	organic
Soil classification	Fibrisol, Mesisol
Humus form	fibrimor, mesimor
Humus depth	>40 cm
Soil drainage	very poor
Seepage/water table	water table at surface
Permafrost	none
Open water	usually present (up to 75%)

**Vegetation summary**

The following vegetation association characterizes the species composition for Ecosite F13.

Eqf155 Water horsetail - Sedge

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/F13: Vegetation Table

Stratum	Vegetation Association No. of plots	Eqf155 3	
Graminoid layer	<i>Carex aquatilis/utriculata</i>	■■■■	water sedges
	<i>Eriophorum</i> spp.	■■	cottongrasses
Forb layer	<i>Equisetum fluviatile</i>	■■■■■	water horsetail

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%

BOLkp/FS01 SbSw – Leatherleaf Fen/Swamp**General description**

The SbSw – Leatherleaf Fen/Swamp ecosite is a treed fen, with some swamp characteristics, occurring on hygric to subhydryc sites. Soils are imperfectly to poorly drained and associated with 30 cm or more of peat overlying frozen mineral soil.

The FS01 ecosite is characterized by an open spruce (white and/or black; *Picea glauca*, *P. mariana*) canopy and a shrub layer dominated by leatherleaf (*Chamaedaphne calyculata*). Other common shrubs include Labrador tea (*Rhododendron groenlandicum*) and willows (*Salix* spp.). Bluejoint reedgrass (*Calamagrostis canadensis*) can occur with moderate to high cover. Spruce muskeg sedge (*Carex lugens*) often occurs; sometimes water sedge (*C. aquatilis*) or cottongrasses (*Eriophorum* sp.) are present. Bryophyte cover varies considerably, from almost minimal to high cover of peat mosses (*Sphagnum* spp.) and feathermosses, particularly step moss (*Hylocomium splendens*). Brown mosses (mostly *Aulacomnium palustre* or *Tomentypnum nitens*) occur sporadically.

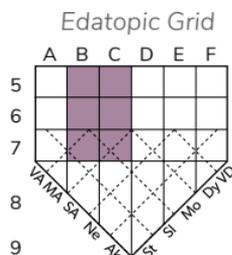
Soils are Turbic or Organic Cryosols. Permafrost is typically found at 30–55 cm.

The high cover of leatherleaf and bluejoint reedgrass likely indicates a past disturbance such as fire. Fire and other disturbances cause fluctuations in the depth to permafrost, the water table, moisture availability and drainage; this often results in more swampy conditions and changes in the species composition.

Comments

Ecosite FS01 can be differentiated from other black spruce treed wetland ecosites as follows:

- Ecosite F05 can also have high cover of leatherleaf, but key vegetation indicators are spruce muskeg sedge or tussock cottongrass. If these occur on FS01 sites, they are of low cover. In addition, FS01 sites usually have some bluejoint reedgrass.



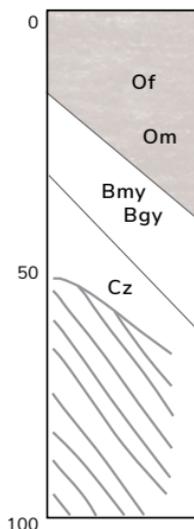
BOLkp/FS01-SbSw54
(Black spruce – White spruce / Leatherleaf / Bluejoint reedgrass)

- B03 sites lack leatherleaf and are bogs with a more stagnant water source than FS01 sites.
- Ecosites S07 and S08 are treed swamps but do not have high cover of leatherleaf.
- Ecosites 31 and 32 occur on drier sites and lack leatherleaf.

Ecosite FS01 can be differentiated from other white spruce treed ecosites by the high cover of leatherleaf.

Site and soil characteristics

Plots in unit	8
Moisture regime	subhygric to subhydryc [5–7]
Nutrient regime	poor to rich [B–D]
Meso slope position	mostly level, also toe and mid slopes
Aspect	none, or northerly
Slope gradient	level or moderate to steep
Surficial material	fluvial, organic, reworked loess
Soil texture	organic and loamy
Soil classification	Cryosol
Humus form	mor or moder
Humus depth	7–35 cm
Soil drainage	imperfect to poor
Seepage/water table	may be present on top of permafrost
Permafrost	present



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite FS01.

Sb53 Black spruce / Leatherleaf – Labrador tea / Peat moss

SbSw54 Black spruce – White spruce / Leatherleaf / Bluejoint reedgrass

The frequency and abundance of species for these associations are shown in the following vegetation table.

BOLkp/FS01: Vegetation Table

Stratum	Vegetation Association No. of plots	Sb53 3	Sb5w54 5	key species for comparing units
Tree layer	<i>Picea mariana</i>	■ ■ ■	□ □	black spruce
	<i>Picea glauca</i>		□ □ □ □	white spruce
Shrub layer	<i>Picea mariana</i>	■ ■ ■ ■ ■	■ ■	black spruce
	<i>Picea glauca</i>	□	■ ■ ■ ■ ■	white spruce
	<i>Alnus viridis</i>	■ ■ ■ ■ ■		green alder
	<i>Chamaedaphne calyculata</i>	■ ■ ■ ■ ■	■ ■ ■ ■ ■	leatherleaf
Rhododendron groenlandicum		■ ■ ■ ■ ■	□ □ □ □	common Labrador tea
	<i>Salix</i> spp.	■ ■ ■ ■ ■	■ ■	willows
Ground shrub layer	<i>Vaccinium oxycoccos</i>	■ ■	■ ■	bog cranberry
Graminoid layer	<i>Calamagrostis canadensis</i>	□	■ ■ ■ ■ ■	bluejoint reedgrass
	<i>Carex lugens</i>		■ ■	spruce muskag sedge
Forb layer	<i>Comarum palustre</i>	■ ■ ■ ■ ■	■ ■	marsh cinquefoil
	<i>Rubus chamaemorus</i>	■ ■ ■ ■ ■		cloudberry
Moss layer	<i>Hylocomium/Pleurozium</i>	■ ■ ■ ■ ■	□	feathermosses
	<i>Sphagnum</i> spp.	■ ■ ■ ■ ■	□ □	peat mosses
	<i>Aulacomnium/Tomentypnum</i>	□ □	□ □	brown mosses
Lichen layer	<i>Cladonia</i> spp.	■ ■ ■ ■ ■		cladonia lichens
	<i>Peltigera</i> spp.	■ ■ ■ ■ ■		peit lichens

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50% | Abundance (average percent cover) ■■■■■ >25% ■■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%



BOLkp/FS01-SbSw54 (Black spruce –
White spruce / Leatherleaf / Bluejoint
reedgrass)

Note: Photos are not available for all vegetation associations pertaining to this ecosite.

BOLkp/S01 Willow – Bluejoint Swamp**General description**

The Willow – Bluejoint Swamp ecosite is found along rivers, small creeks and ponds that flood less frequently or for a shorter period than other swamp ecosites.

Willows (*Salix glauca*, *planifolia*, *lasianдра*, and others) characterize these swamps, along with a moderate to high cover of bluejoint reedgrass (*Calamagrostis canadensis*). Horsetails (*Equisetum arvense*, *E. pratense*) are usually present. Moss cover is variable, often moderate to high, with a diversity of species. Dominant species can include brown mosses; e.g., glow moss (*Aulacomnium palustre*) or golden fuzzy fen moss (*Tomentypnum nitens*), peat mosses (*Sphagnum* spp.), leafy mosses (*Mnium* spp.) or tree moss (*Climacium dendroides*).

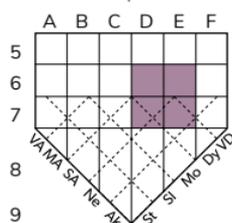
Soils are variable and are classified as Regosols, or Turbic or Organic Cryosols. Parent material is typically sandy, silty or loamy fluvial or reworked loess. Permafrost is often present.

Comments

Ecosite S01 can be differentiated from other shrubby wetland ecosites as follows:

- Ecosite F07 is dominated by leatherleaf instead of willows.
- Ecosite F06 is sometimes willow dominated, but in such cases, it has spruce muskeg sedge under the willow, not moderate to high cover of bluejoint reedgrass.
- Ecosite S02 is dominated by river alder.
- Ecosite S06 is dominated by willows with either sedge or peat moss dominating, rather than bluejoint reedgrass of S02.

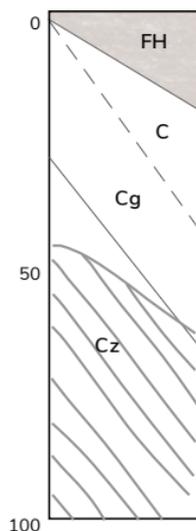
Edatopic Grid

**BOLkp/S01-Sasp50**

(Willow / Bluejoint reedgrass)

Site and soil characteristics

Plots in unit	7
Moisture regime	hygic to subhydic [6–7]
Nutrient regime	medium to very rich [C–E]
Meso slope position	level
Aspect	none or variable
Slope gradient	level to gentle slopes
Surficial material	fluvial, sometimes organic
Soil texture	loamy, sometimes mesic
Soil classification	Cryosol, Regosol
Humus form	mor, moder
Humus depth	usually shallow, occasionally >40 cm
Soil drainage	imperfect to poor
Seepage/water table	seepage within 50 cm
Permafrost	often present

**Vegetation summary**

The following vegetation association characterizes the species composition for Ecosite S01.

Sasp50 Willow / Bluejoint reedgrass

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/S01: Vegetation Table

Stratum	Vegetation Association No. of plots	Sasp50 7	
Shrub layer	<i>Salix</i> spp.	■■■■■	willow
	<i>Betula glandulosa</i>	■■■	shrub birch
	<i>Rhododendron groenlandicum</i>	■■■	common Labrador tea
Graminoid layer	<i>Calamagrostis canadensis</i>	■■■■■	bluejoint reedgrass
Forb layer	<i>Equisetum arvense</i>	□□	common horsetail
Moss layer	<i>Bryophyta</i>	■■■■■	mosses

Frequency (percent of plots) ■ 70–100% ■■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%

BOLkp/S02 River Alder Swamp**General description**

The River Alder Swamp ecosite occurs on hygric to subhydric sites on low bench floodplains of major rivers and along some smaller creeks.

River alder (*Alnus incana*) and willows (*Salix pseudomonticola*, *S. alaxensis*, *S. pulchra*, *S. lasiandra*, and others) characterize these swamps. Common understory species include bluejoint reedgrass (*Calamagrostis canadensis*) and common horsetail (*Equisetum arvense*). Other reedgrasses and horsetails can also occur. Mosses are generally present and include peat mosses (*Sphagnum* spp.), feathermosses (*Hylocomium splendens*, *Pleurozium schreberi*), and leafy mosses (*Mnium*, *Plagiomnium* spp.).

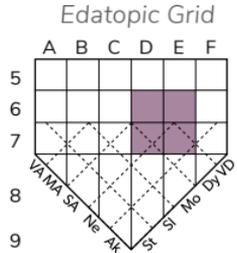
Parent material is typically sandy to loamy fluvial soils. Unfrozen soils are classified as Gleysol or Gleyed Cumulic Regosols, and when permafrost is present soils are classified as Static or Turbic Cryosols.

Moderate slopes are typical of the ecosite where it is found on smaller tributary creeks. Flooding and or winter auffs formation are common.

Comments

Ecosite S02 can be differentiated from other shrubby wetland ecosites by the high cover of river alder.

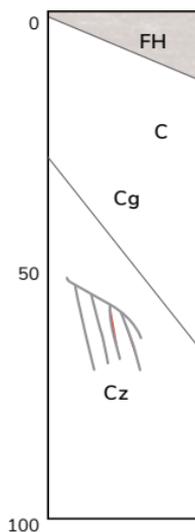
Ecosite 42 is also river alder dominated but differs from S02 in that sites have less prolonged subsurface seepage and generally have better drainage. Soils are usually Regosols or Gleyed Regosols. S02 soils are usually Gleysols, Cryosols or Gleyed Cumulic Regosols.



BOLkp/S02-Alin55 (River alder – Willow)

Site and soil characteristics

Plots in unit	13
Moisture regime	subhygric to hygric [5–6]
Nutrient regime	medium to very rich [C-E]
Meso slope position	mostly level, also toe and gully
Aspect	none or variable
Slope gradient	level, or gentle to moderate slopes
Surficial material	fluvial
Soil texture	sandy to loamy
Soil classification	Gleyed Cumulic Regosols, Gleysols and Cryosols
Humus form	usually mor, sometimes moder
Humus depth	usually negligible
Soil drainage	usually imperfect to poor
Seepage/water table	seepage within 40 cm
Permafrost	may be present

**Vegetation summary**

The following vegetation association characterizes the species composition for Ecosite S02.

Alin55 River alder – Willow

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/S02: Vegetation Table

Stratum	Vegetation Association No. of plots	Alin55 13	
Shrub layer	<i>Alnus incana</i>	■■■■■	river alder
	<i>Rosa acicularis</i>	■■■	prickly rose
	<i>Salix</i> spp.	■■■■■	willow
Graminoid layer	<i>Calamagrostis canadensis</i>	■■■	bluejoint reedgrass
Forb layer	<i>Equisetum arvense</i>	■■■■	common horsetail
Moss layer	<i>Hylocomium / Pleurozium</i>	■■■■	feathermosses
	<i>Bryophyta</i>	■■■■	mosses

Frequency (percent of plots) ■ 70–100% ■■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%

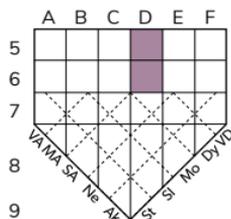
BOLkp/S06 Willow – Sedge – Peat Moss Swamp**General description**

The Willow – Sedge – Peat Moss Swamp ecosite is a willow swamp that occurs mostly on sub-hygric to subhydric sites with a medium to rich nutrient regime. The sites are level to moderately sloping and imperfectly to poorly drained.

S06 is characterized by various willows and either an understory dominated by sedges or a peat moss bryophyte layer. Multiple willow species are generally found on a site and can include tea-leaved willow (*Salix planifolia*), diamond-leaved willow (*S. pulchra*), Alaska willow (*S. alaxensis*), little-tree willow (*S. arbusculoides*), grey-leaved willow (*S. glauca*), blueberry willow (*S. myrtilifolia*), or others. Shrubby cinquefoil (*Dasiphora fruticosa*), blueberry (*Vaccinium uliginosum*), sedges (*Carex* spp.) and horsetails (*Equisetum arvense*, *E. pratense*) frequently occur, but vary considerably in cover. The moss layer is often dominated by peat mosses (*Sphagnum* spp.), but other wet mosses such as hook-mosses (*Drepanocladus* spp.), glow moss (*Aulacomnium palustre*), golden fuzzy fen moss (*Tomentypnum nitens*) and some leafy mosses (*Mnium*, *Rhizomnium*) are usually also present.

Parent materials are usually fluvial with an organic veneer that varies considerably in thickness. Although a surface organic mat may be present, it is usually less than 20 cm thick. Permafrost is often present, especially in narrower valleys along smaller creeks. Soils are usually Gleysols, Regosols or Cryosols. Flooding and/or winter aufeis formation are common.

Edatopic Grid



BOLkp/S06-Sasp55
(Willow / Sedge)

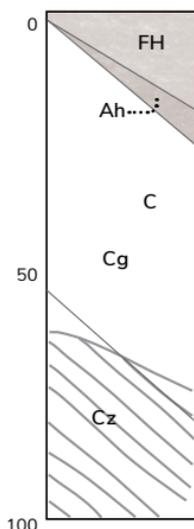
Comments

Ecosite S06 can be differentiated from other shrubby wetland ecosites as follows:

- Ecosite F07 is dominated by leatherleaf instead of willows.
- Ecosite F06 is sometimes willow dominated, but in such cases it has high cover of spruce muskeg sedge under the willow. It also occurs on peaty soils with less fluctuation in water table than S06.
- Ecosite S02 is dominated by river alder.
- Ecosite S01 is dominated by willows with bluejoint reedgrass higher cover than sedges.

Site and soil characteristics

Plots in unit	20
Moisture regime	subhygric to hygric, subhydic [5–6, 7]
Nutrient regime	medium to rich [C–D]
Meso slope position	mostly level to toe; also gully and mid slope
Aspect	none, cool, neutral
Slope gradient	level or gentle to moderate slopes
Surficial material	organic over fluvial
Soil texture	fibric and mesic over loam or sandy loam
Soil classification	Gleysols, Cumulic Regosols and Cryosols
Humus form	moder, mor
Humus depth	usually negligible
Soil drainage	usually imperfect to poor
Seepage/water table	usually seepage within 60 cm
Permafrost	usually present





BOLkp/S06-Sasp55 (Willow / Sedge)



BOLkp/S06-Sasp55 (Willow / Sedge)

Note: Photos are not available for all vegetation associations pertaining to this ecosite.

BOLkp/S07 Sb – Labrador Tea Swamp**General description**

The Sb – Labrador Tea Swamp ecosite is usually associated with gentle to steep slopes on cool to neutral aspects. S07 sites have a subhygic to hygic moisture regime, with peaty surface horizons 15–30 cm thick overlying medium-textured mineral soil.

Black spruce (*Picea glauca*) and Labrador teas (*Rhododendron groenlandicum*, *R. tomentosum*) characterize the ecosite, with a mixed groundcover that includes peat mosses (*Sphagnum* spp.). Associated species include willows (*Salix* spp.), shrub birch (*Betula glandulosa*), lowbush cranberry (*Vaccinium vitis-idaea*), spruce muskeg sedge (*Carex lugens*), cloudberry (*Rubus chamaemorus*), arctic sweet coltsfoot (*Petasites frigidus*), horsetails (*Equisetum arvense*, *E. sylvaticum*), feathermosses (*Hylocomium splendens*, *Pleurozium schreberi*) and brown mosses (*Aulacomnium splendens*, *Tomentypnum nitens*).

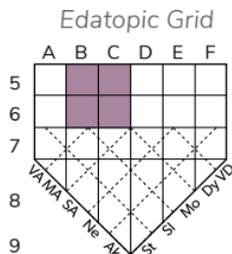
Soils have a shallow active layer (<70cm) over permafrost and are classified as Cryosols.

Following disturbance such as fire, a frequent occurrence in the subzone, the cover of Alaska paper birch (*Betula neoalaskana*) and green alder (*Alnus viridis*) may increase (see vegetation association SbW35).

Comments

Ecosite S07 can be differentiated from other black spruce treed wetland ecosites as follows:

- Ecosite B03 has similar vegetation to S07, but differs ecologically; sites have a more stagnant water source and soils are organic, with a lower pH in the rooting zone. B03 sites generally have a higher cover of peat moss.
- Ecosite F05 has similar vegetation to some sites in S07, but if spruce muskeg sedge or tussock cottongrass occur in S07, they are of low cover. Peat moss is more characteristic of S07, but may also occur in F05.

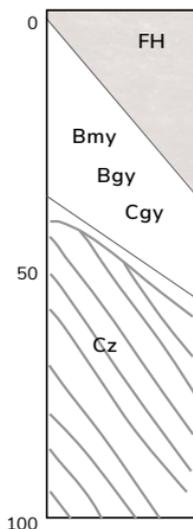


BOLkp/S07-Sb34 (Black spruce / Labrador tea / Lowbush cranberry / Feathermoss – Peat moss)

- Ecosite S08 has similar vegetation to S07, but either lacks or has low cover of peat mosses. It is characterized by glow moss and golden fuzzy fen moss. Labrador tea on S08 sites is of lower cover than S07. The S08 can have high bluejoint reedgrass cover.
- Ecosite FS01 is a transitional fen/swamp that may have Labrador tea, but is characterized by high cover of leatherleaf.
- Ecosite 31 occurs on drier sites; if brown mosses or peat mosses present, they are of low cover.
- Ecosite 32 occurs on slightly drier sites and generally lacks Labrador tea, peat mosses and brown mosses.

Site and soil characteristics

Plots in unit	27
Moisture regime	mostly subhygric to hygric [5–6, 7]
Nutrient regime	poor to medium [B–C]
Meso slope position	usually mid or lower slopes; sometimes toe or level
Aspect	cool, sometimes neutral or none
Slope gradient	gentle to steep slopes, or level
Surficial material	organic, fluvial or reworked loess
Soil texture	mesic, fibric, loam or silt
Soil classification	Turbic, Static and Organic Cryosols
Humus form	fibrimor, mor
Humus depth	5–30 cm
Soil drainage	imperfect to poor
Seepage/water table	seepage within 50 cm, over permafrost
Permafrost	present



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite S07.

- Sb34** Black spruce / Labrador tea / Lowbush cranberry / Feathermoss – Peat moss
- Sb36** Black spruce / Northern Labrador tea / Lowbush cranberry / Lichen – Peat moss
- SbW35** Black spruce – Alaska birch / Labrador tea / Sweet coltsfoot / Peat moss

The frequency and abundance of species for these associations are shown in the following vegetation table.

BOLkp/S07: Vegetation Table

Stratum	Vegetation Association No. of plots	Sb34 13	Sb36 3	SbW35 10	key species for comparing units
Tree layer	<i>Picea mariana</i>	■■■■■	□□□	■■■■■	black spruce
	<i>Betula neoalaskana</i>	■■■■■	□□□	■■■■■	Alaska paper birch
Shrub layer	<i>Picea mariana</i>	■■■■■	■■■■■	■■■■■	black spruce
	<i>Betula neoalaskana</i>	■■	□	■■■■■	Alaska paper birch
	<i>Alnus viridis</i>	□□	□□	■■■■■	green alder
	<i>Betula glandulosa</i>	■■■■■	■■■■■	■■■■■	shrub birch
	<i>Rhododendron groenlandicum</i>	■■■■■	■■■■■	■■■■■	common Labrador tea
	<i>Rhododendron tomentosum</i>	□□□	■■■■■	□□□	northern Labrador tea
	<i>Salix</i> spp.	■■■■■	■■■■■	■■■■■	willow
	<i>Vaccinium uliginosum</i>	□□	■■■■■	■■■■■	blueberry
	Ground shrub layer	■■■■■	■■■■■	■■■■■	lowbush cranberry
		<i>Vaccinium vitis-idaea</i>	■■■■■	■■■■■	bog cranberry
Graminoid layer	<i>Carex lugens</i>	■■	■■	□	spruce muskeg sedge
	<i>Eriophorum vaginatum</i>	■■	■■	■■■■■	tussock cottongrass
Forb layer	<i>Petasites frigidus</i>	■■	■	■■	arctic sweet coltsfoot
	<i>Rubus chamaemorus</i>	■■	■■	■■	cloudberry
Moss layer	<i>Equisetum arvense/pratense</i>	■■	■■	■■	horsetails
	<i>Aulacomnium/Tomentypnum</i>	■■■	■	■■■■■	brown mosses
Lichen layer	<i>Hylocomium / Pleurozium</i>	■■■■■	■■■■■	■■■■■	feathermosses
	<i>Polytrichum</i> spp.	■■■■■	■■■■■	■■■■■	haircap mosses
	<i>Sphagnum</i> spp.	■■■■■	■■■■■	■■■■■	peat mosses
Lichen layer	<i>Cetraria</i> spp.	□	■■	■■	icelandmoss lichens
	<i>Cladonia</i> spp.	□	□	■■■■■	cladonia lichens
	<i>Cladina</i> spp.	■■■	■■■■■	■■■■■	reindeer lichens
	<i>Peltigera</i> spp.	■■	■■	■■	pelt lichens

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50% | Abundance (average percent cover) ■■■■■ >25% ■■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%



BOLkp/S07-Sb34 (Black spruce / Labrador tea / Lowbush cranberry / Feathermoss – Peat moss)



BOLkp/S07-Sb34 (Black spruce / Labrador tea / Lowbush cranberry / Feathermoss – Peat moss)



BOLkp/S07-Sb36 (Black spruce / Northern Labrador tea / Lowbush cranberry / Lichen – Peat moss)



BOLkp/S07-SbW35 (Black spruce – Alaska birch / Labrador tea / Sweet coltsfoot / Peat moss)

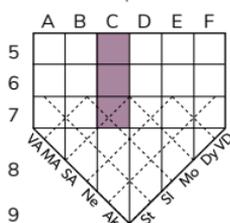
BOLkp/S08 SbSw – Red Bearberry – Brown Moss Swamp**General description**

The SbSw – Red Bearberry – Brown Moss Swamp ecosite occurs on moist to wet sites that are found on level terraces, and on cooler-aspect lower and toe slopes. S08 occurs on imperfectly to poorly drained sites and is characterized by shallow soils over permafrost.

S08 is comprised of relatively open stands of black spruce (*Picea mariana*) or white spruce (*Picea glauca*), or both. Red bearberry (*Arctous rubra*), glow moss (*Aulacomnium palustre*) and golden fuzzy fen moss (*Tomentypnum nitens*) are key indicator species. Common associated species are willows (*Salix* spp., *S. myrtilifolia*, *S. glauca*), Labrador tea (mostly *Rhododendron groenlandicum*), crowberry (*Empetrum nigrum*), blueberry (*Vaccinium uliginosum*), bluejoint reedgrass (*Calamagrostis canadensis*), spruce muskeg sedge (*Carex lugens*) and dwarf scouring-rush (*Equisetum scirpoides*).

Soils are usually classified as Turbic Cryosols. A peaty surface horizon (<30 cm) over loamy and silty mineral soil is typical.

Edatopic Grid

**BOLkp/S08-SbSw32**

(Black spruce (White spruce) / Labrador tea / Feathermoss – Brown moss)

Comments

Ecosite S08 can be differentiated from other black spruce treed wetland ecosites as follows:

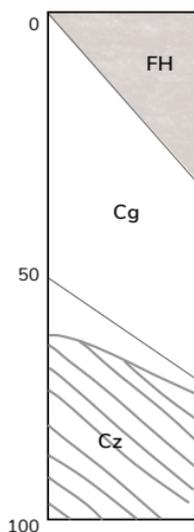
- Ecosite B03 occurs on peaty sites with organic soils and a more stagnant water source and a low pH in the rooting zone; it has a high cover of peat moss.
- Ecosite F05 has similar vegetation to some sites in S08, but if spruce muskeg sedge occurs on S08 sites, it is of lower cover than F05 or occurs with tussock cottongrass. Also, peat moss is of higher cover in F05.
- Ecosite S07 has similar vegetation but is characterized by peat mosses instead of glow moss and golden fuzzy fen moss. Labrador tea on S07 sites is of higher cover than S08 and S08 can have high cover of bluejoint reedgrass as well as a presence of red bearberry.

- Ecosite FS01 is a transitional fen/swamp that may also have Labrador tea, but sites are characterized by a high cover of leatherleaf.
- Ecosites 31 occurs on drier sites; if brown mosses or peat mosses present, they are of low cover.
- Ecosite 32 occurs on drier sites and generally lacks Labrador tea, peat mosses, and brown mosses.

Ecosite S08 sometimes is dominated by white spruce. It can be differentiated from other white spruce treed wetland ecosites by the high cover of glow moss and golden fuzzy fen moss. Ecosites 31 and 32 occur on drier sites and also lack the high cover of brown mosses.

Site and soil characteristics

Plots in unit	16
Moisture regime	mostly subhygic to subhydic [5–7]
Nutrient regime	usually medium [C]
Meso slope position	level and lower or mid slopes
Aspect	cool
Slope gradient	usually level, or gentle to moderate slopes
Surficial material	organic over loamy mineral soil
Soil texture	fibric and mesic over fine or coarse loam
Soil classification	Turbic or Organic Cryosols
Humus form	moder, mor
Humus depth	5–30 cm
Soil drainage	imperfect to poor
Seepage/water table	seepage within 37 cm
Permafrost	present



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite S08.

- SbSw32** Black spruce (White spruce) / Labrador tea / Feathermoss – Brown moss
- Sw32** White spruce / Willow / Red bearberry / Brown moss

The frequency and abundance of species for these associations are shown in the following vegetation table.

BOLkp/S08: Vegetation Table

Stratum	Vegetation Association No. of plots	SbSw32 14	Sw32 2	key species for comparing units
Tree layer	<i>Picea glauca</i>	□	■ ■ ■ ■	white spruce
	<i>Picea mariana</i>	■ ■ ■ ■		black spruce
Shrub layer	<i>Picea glauca</i>	□ □	■ ■ ■ ■	white spruce
	<i>Picea mariana</i>	■ ■ ■ ■		black spruce
	<i>Betula glandulosa</i>			shrub birch
	<i>Dasiphora fruticosa</i>	■	■ ■ ■ ■	shrubby cinquefoil
	<i>Rhododendron groenlandicum</i>	■ ■ ■ ■	■ ■ ■ ■	common Labrador tea
	<i>Salix myrtillofolia</i>	□ □	■ ■ ■ ■	blueberry willow
	<i>Salix</i> spp.	■ ■ ■ ■	■ ■ ■ ■	willows
	<i>Vaccinium uliginosum</i>	■ ■ ■ ■	■	blueberry
Ground shrub layer	<i>Empetrum nigrum</i>	■ ■ ■ ■		crowberry
	<i>Vaccinium vitis-idaea</i>	■ ■ ■ ■	■ ■	lowbush cranberry
Graminoid layer	<i>Calamagrostis canadensis</i>	■ ■	■ ■ ■ ■	bluejoint reedgrass
	<i>Carex lugens</i>	■ ■	■ ■	spruce muskeg sedge
Forb layer	<i>Arctous rubra</i>	■ ■ ■ ■	■ ■ ■ ■	red bearberry
	<i>Equisetum scirpoides</i>	■ ■	■ ■	dwarf scouring-rush
	<i>Mertensia paniculata</i>	■		tall bluebells
	<i>Petasites frigidus</i>	■	■ ■ ■ ■	arctic sweet coltsfoot
	<i>Rubus arcticus</i>		■	nagoonberry
Moss layer	<i>Aulacomnium / Tomentypnum</i>	■ ■ ■ ■ ■ ■ ■ ■ ■ ■		brown mosses
	<i>Hylocomium splendens</i>	■ ■ ■ ■ ■ ■	■ ■ ■ ■	step moss
	<i>Sphagnum</i> spp.	■ ■		peat mosses
Lichen layer	<i>Cladina</i> spp.	■ ■ ■ ■		reindeer lichens
	<i>Peltigera</i> spp.	■	■	pelt lichens

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■ ■ ■ ■ ■ >25% ■ ■ ■ ■ 10–25% ■ ■ ■ ■ 3–10% ■ ■ 1–3% ■ <1%



BOLkp/S08-SbSw32 (Black spruce
(White spruce) / Labrador tea /
Feathermoss – Brown moss)



BOLkp/S08-SbSw32 (Black spruce
(White spruce) / Labrador tea /
Feathermoss – Brown moss)

Note: Photos are not available for all vegetation associations pertaining to this ecosite.

BOLkp/S09 Sw – Shrub Birch – Bluejoint Swamp**General description**

The Sw – Shrub Birch – Bluejoint Swamp ecosite occurs on poorly drained, level to gently sloping sites on slopes and in draws.

An open white spruce (*Picea glauca*) overstorey, which may be less than 5 m tall, along with a high cover of shrub birch (*Betula glandulosa*) and moderate to high cover of bluejoint reedgrass (*Calamagrostis canadensis*) characterizes the site. Spruce muskeg sedge (*Carex lugens*) also occurs, but with lower cover than bluejoint reedgrass. Feathermosses (*Hylocomium splendens*, *Pleurozium schreberi*) dominate the moss layer. Golden fuzzy fen moss (*Tomentypnum nitens*) and haircap moss (*Polytrichum* sp.) sometimes occur.

S09 soils consist of shallow peaty horizons, 5–25 cm thick, over silty and loamy reworked loess and/or fluvial sediments. Depth to the permafrost ranges from 60 to more than 120 cm. Soils are most likely Turbic Cryosols. The water table is typically shallow, found from 5–40 cm from the surface, although water levels may fluctuate.

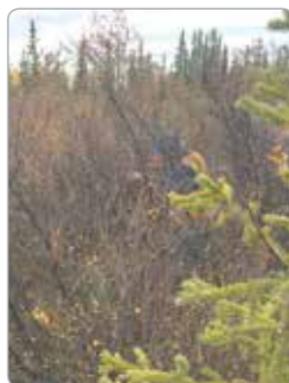
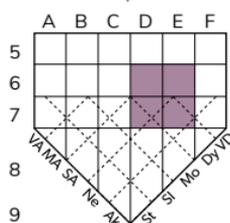
Comments

The S09 ecosite may represent a successional stage following a forest fire or other disturbance. It is distinguished from other treed swamps by a high cover of shrub birch and bluejoint reedgrass, which is of higher cover than sedges.

Ecosite S09 can be differentiated from other white spruce treed wetland ecosites as follows:

- Ecosite S10 can have river alder and a high cover of horsetails; it lacks the high cover of shrub birch that occurs on S09.
- B08 sites are white spruce dominated, although these occur on palsas and lack high cover of shrub birch. The B08 sites have blueberry and Labrador tea, which are two species absent from S09.

Edatopic Grid

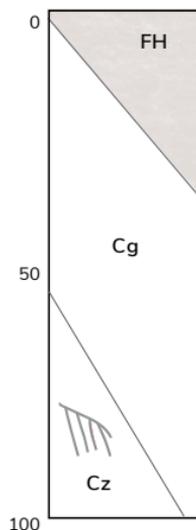


BOLkp/S09-Sw52 (White spruce / Shrub birch / Bluejoint reedgrass)

- Some S08 sites are white spruce dominated; however, they are characterized by Labrador tea, red bearberry, glow moss and golden fuzzy fen moss.
- Ecosite FS01 can be white-spruce dominated but is characterized by high cover of leatherleaf.
- Ecosite 40 occurs on higher benches of floodplains and does not have a high cover of shrub birch.
- Ecosites 31 and 32 occur on drier sites, with drier soils, lack high covers of shrub birch and golden fuzzy fen moss.

Site and soil characteristics

Plots in unit	4
Moisture regime	hygric to subhydric [6–7]
Nutrient regime	medium to very rich [C–E]
Meso slope position	level
Aspect	none, possibly cool
Slope gradient	level, possibly gentle
Surficial material	fluvial or reworked loess
Soil texture	silty to loamy
Soil classification	Gleysols, Static Cryosols
Humus form	usually mor sometimes moder
Humus depth	5–25 cm
Soil drainage	poor
Seepage/water table	seepage within 50 cm
Permafrost	may be present



Vegetation summary

The following vegetation association characterizes the species composition for Ecosite S09.

Sw52 White spruce / Shrub birch / Bluejoint reedgrass

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/S09: Vegetation Table

Stratum	Vegetation Association No. of plots	Sw52 4	
Tree layer	<i>Picea glauca</i>	■ ■ ■	white spruce
Shrub layer	<i>Picea glauca</i>	■ ■ ■ ■	white spruce
	<i>Betula neoalaskana</i>	■	Alaska paper birch
	<i>Betula glandulosa</i>	■ ■ ■ ■ ■	shrub birch
	<i>Salix</i> spp.	■ ■ ■ ■	willows
Ground shrub layer	<i>Vaccinium vitis-idaea</i>	■ ■ ■ ■	lowbush cranberry
Graminoid layer	<i>Calamagrostis canadensis</i>	■ ■ ■ ■	bluejoint reedgrass
	<i>Carex lugens</i>	■ ■	spruce muskeg sedge
Forb layer	<i>Pyrola</i> sp.	■ ■ ■ ■	wintergreen
Moss layer	<i>Hylocomium splendens</i>	■ ■ ■ ■ ■	step moss
	<i>Pleurozium schreberi</i>	■ ■ ■ ■	red-stemmed feathermoss
	<i>Polytrichum</i> spp.	■ ■ ■ ■	haircap mosses
	<i>Tomentypnum nitens</i>	■ ■ ■ ■	golden fuzzy fen moss
Lichen layer	<i>Peltigera</i> spp.	■ ■ ■	pelt lichens

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■ ■ ■ ■ ■ >25% ■ ■ ■ ■ 10–25% ■ ■ ■ 3–10% ■ ■ 1–3% ■ <1%



BOLkp/S09-Sw52 (White spruce /
Shrub birch / Bluejoint reedgrass)



BOLkp/S09-Sw52 (White spruce /
Shrub birch / Bluejoint reedgrass)

BOLkp/S10 Sw – Horsetail – Brown Moss Swamp**General description**

The Sw – Horsetail – Brown Moss Swamp ecosite occurs on imperfect to poorly drained, mid-bench fluvial terraces subject to flooding and possibly influenced by shallow permafrost.

White spruce (*Picea glauca*) with an understorey of common horsetail (*Equisetum arvense*, or sometimes *E. pratense*) characterizes the vegetation of the ecosite. River alder (*Alnus incana*), Alaska paper birch (*Betula neoalaskensis*) and willows (*Salix* spp.) are common taller shrubs. Other shrubs may include common Labrador tea (*Rhododendron groenlandicum*) or blueberry (*Vaccinium uliginosum*). Mosses vary and can include feathermosses (*Hylocomium splendens*, *Pleurozium schreberi*), hook-mosses (*Drepanocladus* spp.), peat mosses (*Sphagnum* spp.), glow moss (*Aulacomnium palustre*), water mosses (*Calliergon* spp.) and leafy mosses (*Mnium* spp.).

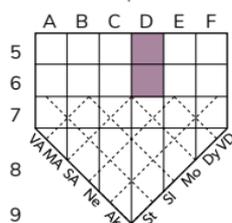
Soils are imperfectly to poorly drained, sandy and loamy fluvial deposits and are classified as Gleyed Brunisols, Regosols or Static Cryosols. Developing permafrost may impede the drainage and cause restriction or saturation in the rooting zone, limiting the growth of trees and tall shrubs.

Comments

Ecosite S10 can be differentiated from other white spruce treed wetland ecosites as follows:

- Ecosite S09 is characterized by high cover of shrub birch.
- B08 sites are white spruce dominated; however, these occur on palsas and lack the high cover of horsetails of S10. They also have moderate to high cover of lowbush cranberry.
- Some S08 sites are white spruce dominated, but they are characterized by red bearberry, glow moss and golden fuzzy fen moss and they lack the high cover of horsetails.
- Ecosite FS01 can be white spruce dominated, but is characterized by high cover of leatherleaf.

Edatopic Grid

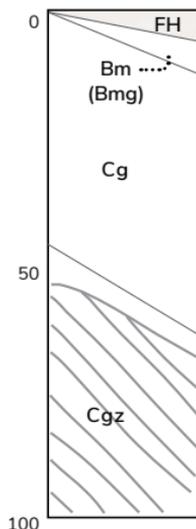


BOLkp/S10-Sw53 (White spruce / Labrador tea / Horsetail)

- Ecosite 40 occurs on higher benches of floodplains where soil drainage is better; they lack the wetter mosses that occur on S10 sites.
- Ecosites 31 and 32 occur on drier sites, with a lower cover of peat and/or brown mosses.

Site and soil characteristics

Plots in unit	4
Moisture regime	subhygric to hygric [5–6]
Nutrient regime	rich [D]
Meso slope position	level or toe slope
Aspect	variable
Slope gradient	level to moderate
Surficial material	fluvial
Soil texture	coarse loamy
Soil classification	Cryosols, Brunisols
Humus form	moder
Humus depth	1–5 cm
Soil drainage	imperfect to poor
Seepage/water table	mottles or seepage within 50 cm or so
Permafrost	present



Vegetation summary

The following vegetation association characterizes the species composition for Ecosite S10.

Sw53 White spruce / Labrador tea / Horsetail

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/S10: Vegetation Table

Stratum	Vegetation Association No. of plots	Sw53 4	
Tree layer	<i>Picea glauca</i>	■■■■■	white spruce
Shrub layer	<i>Picea glauca</i>	■■■■	white spruce
	<i>Alnus incana</i>	■■■	river alder
	<i>Betula neoalaskana</i>	■■	Alaska paper birch
	<i>Dasiphora fruticosa</i>	■■■	shrubby cinquefoil
	<i>Rhododendron groenlandicum</i>	■■■	common Labrador tea
	<i>Rosa acicularis</i>	■■	prickly rose
	<i>Salix</i> spp.	■■■■■	willows
	<i>Vaccinium uliginosum</i>	■■■	blueberry
Ground shrub layer	<i>Vaccinium vitis-idaea</i>	■	lowbush cranberry
Graminoid layer	<i>Calamagrostis canadensis</i>	■■■	bluejoint reedgrass
Forb layer	<i>Chamaenerion angustifolium</i>	■■	fireweed
	<i>Equisetum arvense</i>	■■■■■	common horsetail
	<i>Equisetum scirpoides</i>	■■	dwarf scouring-rush
	<i>Mertensia paniculata</i>	■	tall bluebells
	<i>Orthilia secunda</i>	■■	one-sided wintergreen
	<i>Petasites frigidus</i>	■■	arctic sweet coltsfoot
Moss layer	<i>Dicranum</i> spp.	■■■■	heron's-bill mosses
	<i>Drepanocladus</i> spp.	■■■■	hook-mosses
	<i>Hylocomium splendens</i>	■■■■■	step moss
	<i>Pleurozium schreberi</i>	■■■	red-stemmed feathermoss
	<i>Sphagnum</i> spp.	■■	peat mosses

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%



BOLkp/S10-Sw53 (White spruce /
Labrador tea / Horsetail)



BOLkp/S10-Sw53 (White spruce /
Labrador tea / Horsetail)

BOLkp/M01 Beaked – Water Sedge Marsh**General description**

The Beaked – Water Sedge Marsh ecosite occurs on hydric to subhydric sites dominated by either beaked sedge (*Carex utriculata*) or water sedge (*Carex aquatilis*).

In addition to beaked and water sedges, a low cover of other sedges may occur, including silvery sedge (*Carex canescens*), hair-like sedge (*Carex capillaris*), lesser paniced sedge (*Carex diandra*), two-seeded sedge (*Carex disperma*), or mud sedge (*Carex limosa*). Marsh cinquefoil (*Comarum palustre*) is often present.

Soils are mineral, fluvial and occasionally lacustrine deposits and are not peaty, although a shallow organic layer may occur. Water levels are prone to fluctuating during the growing season.

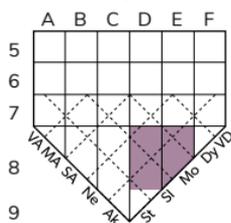
Comments

Ecosite M01 can be differentiated from most other graminoid wetlands by the dominance of water sedge and/or beaked sedge.

- Ecosite F01 also has dominance of beaked sedge or water sedge, but develops on organic soils deeper than 40 cm, with a more stable water table.
- Ecosite F08 is usually dominated by slender sedge, but may be co-dominated by beaked sedge; it also occurs on peaty soils.
- Other fen or marsh ecosites may have moderate to high cover of water sedge or beaked sedge but are dominated or characterized by other species: sedges, grasses or forbs.

M01 is equivalent to Wm01 in British Columbia (MacKenzie and Moran 2004).

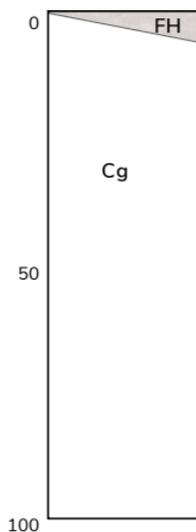
Edatopic Grid



BOLkp/M01-Caut56
(Beaked sedge – Water sedge)

Site and soil characteristics

Plots in unit	16
Moisture regime	subhydic to hydic [7–8]
Nutrient regime	rich to very rich [D–E]
Meso slope position	depression or level
Aspect	none
Slope gradient	level
Surficial material	fluvial
Soil texture	coarse to fine loamy
Soil classification	Gleysols, Cryosols
Humus form	variable
Humus depth	0–5 cm
Soil drainage	very poor to poor
Seepage/water table	fluctuating water table within 50 cm
Permafrost	may be present
Open water	present (20–90%)

**Vegetation summary**

The following vegetation associations characterize the variation in species composition for Ecosite M01.

Caut56 Beaked sedge – Water sedge

Caut57 Beaked sedge

The frequency and abundance of species for these associations are shown in the following vegetation table.

BOLkp/M01: Vegetation Table

Stratum	Vegetation Association No. of plots	Caut56		Caut57	
		6		10	
Shrub layer	<i>Salix</i> spp.	■	■	■	willows
Graminoid layer	<i>Calamagrostis canadensis</i>	□	■	■	bluejoint reedgrass
	<i>Carex aquatilis</i>	■	■	■	water sedge
	<i>Carex utriculata</i>	■	■	■	beaked sedge
Forb layer	<i>Comarum palustre</i>	■	■	□	marsh cinquefoil
	<i>Equisetum fluviatile</i>			■	water horsetail
Moss layer	<i>Platydictya jungermannioides</i>			■	thread-like willow-moss

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%



BOLkp/M01-Caut56 (Beaked sedge –
Water sedge)



BOLkp/M01-Caut57 (Beaked sedge)

BOLkp/M02 Water Horsetail Marsh**General description**

The Water Horsetail Marsh ecosite occurs on river floodplains or on shores of ponds or lakes.

The vegetation is dominated by water horsetail (*Equisetum fluviatile*) or variegated scouring-rush (*E. variegatum*), commonly with a significant cover of beaked sedge (*Carex utriculata*) or water sedge (*C. aquatilis*). Trace amounts of other wetland species — such as marsh cinquefoil (*Comarum palustre*), marsh willowherb (*Epilobium palustre*), common mare's-tail (*Hippurus vulgaris*) and others — often occur.

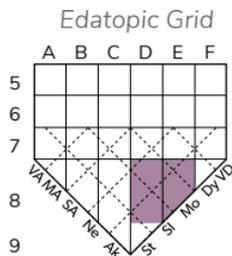
Soils are poor to very poorly drained Gleysols on fluvial or lacustrine deposits. The fluctuating water table may range from above the surface to about 50 cm.

M02 may occur as part of a larger marsh in conjunction with marshes dominated by other species. It is often found between a water sedge marsh (M01) and open water.

Comments

Ecosite M02 can be differentiated from most other wetlands by the dominance of water horsetail.

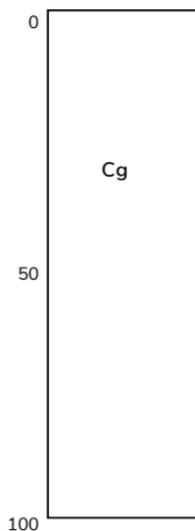
- F13 is also dominated by water horsetail, but occurs on organic soils greater than 40 cm deep.
- Other graminoid fen or marsh ecosites are dominated by different species of sedges, grasses or forbs.



BOLkp/M02-Eqf155 (Water horsetail – Water sedge)

Site and soil characteristics

Plots in unit	6
Moisture regime	subhydic to hydric, hygric [7–8, 6]
Nutrient regime	medium to rich [C–D]
Meso slope position	level or depression
Aspect	none
Slope gradient	level
Surficial material	often fluvial
Soil texture	fine to coarse loamy
Soil classification	Gleysols
Humus form	mor
Humus depth	0–1 cm
Soil drainage	very poor to poor
Seepage/water table	fluctuating water table within 50 cm
Permafrost	none
Open water	present (5–10%)

**Vegetation summary**

The following vegetation association characterizes the species composition for Ecosite M02.

Eqf155 Water horsetail – Water sedge

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/M02: Vegetation Table

Stratum	Vegetation Association No. of plots	Eqfl55 6	
Forb layer	<i>Equisetum fluviatile</i>	■ ■ ■ ■	water horsetail
	<i>Equisetum variegatum</i>	■ ■ ■ ■	variegated scouring-rush
Graminoid layer	<i>Calamagrostis canadensis</i>	■ ■	bluejoint reedgrass
	<i>Carex aquatilis</i>	■ ■ ■	water sedge
	<i>Carex utriculata</i>	■ ■ ■ ■	beaked sedge

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■ ■ ■ ■ ■ >25% ■ ■ ■ ■ 10–25% ■ ■ ■ 3–10% ■ ■ 1–3% ■ <1%



BOLkp/M02-Eqfl55 (Water horsetail –
Water sedge)



BOLkp/M02-Eqfl55 (Water horsetail –
Water sedge)

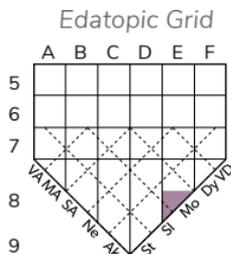
BOLkp/M06 Mannagrass Marsh**General description**

The Mannagrass Marsh ecosite occurs on hydric marsh or shallow water sites.

M06 is characterized by a high cover of mannagrass. In the single known site in the BOLkp, boreal mannagrass (*Glyceria borealis*) dominates; in other areas, tall mannagrass (*G. grandis*) may dominate. Other species that may be moderately abundant include bluejoint reedgrass (*Calamagrostis canadensis*), spikerushes (*Eleocharis* spp.) and marsh cinquefoil (*Comarum palustre*).

Comments

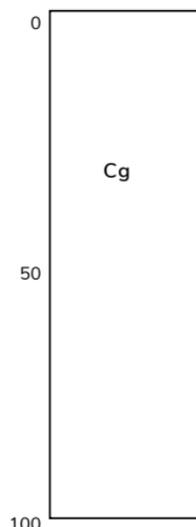
Ecosite M06 can be differentiated from other wetlands by the dominance of mannagrass. Other graminoid fen or marsh ecosites are dominated by other species: sedges, grasses or forbs.



BOLkp/M06-Glsp76
(Mannagrass)

Site and soil characteristics

Plots in unit	1
Moisture regime	hydric [B]
Nutrient regime	rich [D–E]
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	not applicable
Soil texture	not applicable
Soil classification	Gleysols
Humus form	not applicable
Humus depth	<40 cm
Soil drainage	very poor
Seepage/water table	water table at surface
Permafrost	none
Open water	present (up to 30%)


Vegetation summary

The following vegetation association characterizes the species composition for Ecosite M06.

Gisp76 Mannagrass

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/M06: Vegetation Table

Stratum	Vegetation Association No. of plots	Gisp76 1	
Graminoid layer	<i>Glyceria borealis</i>	■■■■■	boreal mannagrass
	<i>Calamagrostis canadensis</i>	■■■■	bluejoint reedgrass

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%

BOLkp/M10 Bluejoint Marsh**General description**

The Bluejoint Marsh ecosite develops on poorly drained loamy and sandy fluvial deposits.

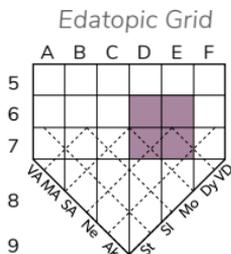
Bluejoint reedgrass (*Calamagrostis canadensis*) dominates the ecosite, although a significant cover of water sedge (*Carex aquatilis*) may also occur, as well as a minor cover of other sedges and herbs.

Soils are classified as Gleysols. These wetlands typically have a fluctuating water table, but are slightly drier on average than most other marshes.

Comments

Ecosite M10 can be differentiated from other graminoid wetlands by the dominance of bluejoint reedgrass.

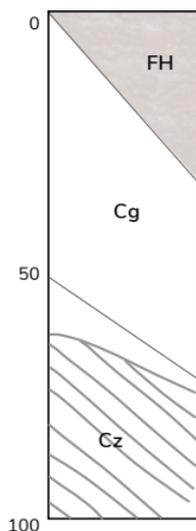
- The M06 ecosite may have high cover of bluejoint reedgrass, but mannagrass dominates.
- Other graminoid fen or marsh ecosites are dominated by other species: sedges, grasses or forbs.



BOLkp/M10-Caca54
(Bluejoint reedgrass)

Site and soil characteristics

Plots in unit	5
Moisture regime	subhygic to subhydic [5–7]
Nutrient regime	rich to very rich [D–E]
Meso slope position	level to depression
Aspect	none
Slope gradient	level to very gently sloping
Surficial material	fluvial
Soil texture	loamy
Soil classification	Gleysols
Humus form	thin organic layer
Humus depth	<40 cm
Soil drainage	poor
Seepage/water table	fluctuating water table within 50 cm of surface
Permafrost	could be present
Open water	sometimes present

**Vegetation summary**

The following vegetation association characterizes the species composition for Ecosite M10.

Caca54 Bluejoint reedgrass

The frequency and abundance of species for this association are shown in the following vegetation table.

BOLkp/M10: Vegetation Table

Stratum	Vegetation Association No. of plots	Caca54 5	
Graminoid layer	<i>Calamagrostis canadensis</i>	■■■■■	bluejoint reedgrass
	<i>Carex aquatilis</i>	■■■■	water sedge
	<i>Carex utriculata</i>	□□	beaked sedge
Forb layer	<i>Comarum palustre</i>	■■	marsh cinquefoil
	<i>Equisetum arvense</i>	□□	common horsetail
	<i>Geum macrophyllum</i>	□□	large-leaved avens

Frequency (percent of plots) ■ 70–100% ■ 50–70% □ 25–50%

Abundance (average percent cover) ■■■■■ >25% ■■■■ 10–25% ■■■ 3–10% ■■ 1–3% ■ <1%

BOLkp/W07–W10 Shallow Water Ecosites**General description**

These aquatic ecosystems occupy shallow waters (usually less than 2 m in depth) of ponds, margins of lakes and slow-moving rivers. Four ecosites are characterized in this subzone.

BOLkp/W07 Hornwort Shallow Water

This ecosite is dominated by common hornwort (*Ceratophyllum demersum*). Northern pondweed (*Potamogeton alpinus*) may be a significant associate.

BOLkp/W08 Wild Calla Shallow Water

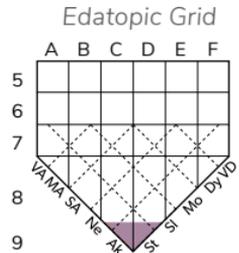
This ecosite is dominated by wild calla (*Calla palustris*). Associated species include lesser panicled sedge (*Carex diandra*), marsh cinquefoil (*Comarum palustre*), bog buckbean (*Menyanthes trifoliata*) and whorled water-milfoil (*Myriophyllum verticillatum*).

BOLkp/W09 Pond-lily Shallow Water

This ecosite is characterized by a significant cover of Rocky Mountain pond-lily (*Nuphar polysepala*) which is typically found in shallow muddy ponds. Associated species may include Fries' pondweed (*Potamogeton friesii*), whorled water-milfoil (*Myriophyllum verticillatum*), or water horsetail (*Equisetum fluviatile*).

BOLkp/W10 Water-milfoil – Bladderwort Shallow Water

This ecosite is found in muddy shallow ponds and sluggish streams. In the Indian River valley, it was recorded in a couple of small old mined test pits. It is characterized by mostly aquatic submergent species: water milfoil (*Myriophyllum* sp.); bladderwort (*Utricularia* sp.); and duckweed (*Lemna* sp.). Willow (*Salix* sp.), water sedge (*Carex aquatilis*) and marsh cinquefoil (*Comarum palustre*) may be found around the pond margins. Note: in the single plot, the cover of the different species was not recorded.



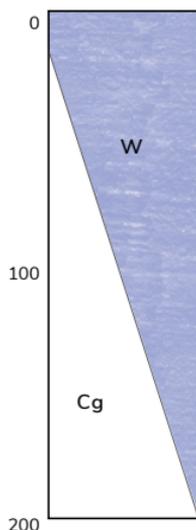
BOLkp/W09-Nupo70
(Rocky Mountain Pond-lily)

Comments

Shallow water ecosystems have not been targeted for sampling in the BOLkp, so only limited data are available for inclusion in this classification. It is assumed that more ecosites will be identified as additional fieldwork is completed within the subzone. Shallow water ecosites documented in other subzones may also be found in the BOLkp.

Site and soil characteristics

Plots in units	7
Moisture regime	aquatic [9]
Nutrient regime	rich [D]
Meso slope position	level, depression
Aspect	none
Slope gradient	level
Surficial material	lacustrine
Soil texture	loamy
Soil classification	not applicable
Humus form	not applicable
Humus depth	not applicable
Soil drainage	aquatic
Seepage/water table	standing water
Permafrost	none
Open water	present (15–70%)



Vegetation summary

The following vegetation associations characterize the variation in species composition on shallow water ecosites (W07–W10).

Ecosite Code	Vegetation Code	Vegetation Association
W07	Cede70	Hornwort
W08	Capa70	Wild calla
W09	Nupo70	Rocky Mountain pond-lily
W10	Mysp70	Water-milfoil – Bladderwort

The frequency and abundance of species for these associations are shown in the following vegetation table.

BOLkp/W07-W10: Vegetation Table

Stratum	Vegetation association	W07 Cede70 2	W08 Capa70 1	W09 Nupo70 3	W10 Mysp70 1	key species for comparing units
Aquatic layer	<i>Calla palustris</i>	■■■■■	■■■■■			wild calla
	<i>Ceratophyllum demersum</i>	■■■■■				common hornwort
	<i>Hippuris vulgaris</i>		■	□		common mare's-tail
	<i>Lemna</i> sp.				■■	duckweed
	<i>Myriophyllum</i> sp.				■■■■■	water-milfoil
	<i>Myriophyllum verticillatum</i>		■■■■■	□□□	■■■■■	whorled water-milfoil
	<i>Nuphar</i> spp.			■■■■■		pond-lily
	<i>Potamogeton alpinus</i>	■■■■■				northern pondweed
	<i>Potamogeton friesii</i>	■		□□□□		Fries' pondweed
	<i>Potamogeton pusillus</i>	■				small pondweed
Graminoid layer	<i>Utricularia</i> sp.		■■■■■		■■	bladderwort
	<i>Carex aquatilis</i>				■■	water sedge
Forb layer	<i>Carex diandra</i>		■■■■■			lesser panicled sedge
	<i>Comarum palustre</i>		■■■■■		■■	marsh cinquefoil
	<i>Equisetum fluviatile</i>			■■		water horsetail
	<i>Menyanthes trifoliata</i>		■■■■■	□□		bog buckbean
Moss layer	<i>Lophozia</i> sp.		■■■■■			notchwort

Frequency (percent of plots) ■ 70-100% ■ 50-70% □ 25-50% □ 10-25% ■■■■■ >25% ■■■■■ 3-10% ■■■ 1-3% ■ <1%



BOLkp/W08-Capa70 (Wild calla)



BOLkp/W09-Nupo70 (Rocky Mountain pond-lily)

Note: Photos are not available for all vegetation associations pertaining to this ecosite.

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Table A-1: Terms used in the guide

Term	Definition
Ridge crest	Comprises the meso-scale height of land and the strongly, water-shedding convex slopes immediately adjacent.
Upper slope	The uppermost portion of a meso-scale slope; slope profile generally convex; soil water mostly shedding but some water receiving from crest.
Middle slope	The portion of a slope between the upper and lower slopes; soil water is shedding and receiving more or less equally.
Lower slope	The moisture-receiving area towards the base of a slope; the slope profile is usually somewhat concave. Sites located near the base of a slope that are not moisture-receiving are treated as middle slope positions in the keys.
Toe slope	Gently-sloped areas directly below the lower slope, transitioning to the level area or depression at the base of the slope.
Level	Any broad level area; the surface profile is generally more-or-less horizontal, with no distinct aspect and minimal slope (<5%).
Depression	Profile concave in all directions; usually in flat or subdued topography or at the base of a slope.
Alluvium/fluvial landforms	Post-glacial, active floodplain deposits along rivers and streams in valley bottoms; usually a series of low benches and channels.
Southerly aspect	SW, S and SE aspects inclusive for slopes greater than 5%.
Level slope	Gradient $\leq 2\%$
Gentle slope	Gradient $> 2-10\%$
Moderate slope	Gradient $> 10-30\%$
Strong slope	Gradient $> 30-45\%$
Steep slope	Gradient $> 45\%$
Average soil texture	Soil texture class occupying majority of the upper 50 cm of the mineral soil or to bedrock contact. Where contrasting textures are both present in equal amounts, a texture of the materials combined. Where rooting is restricted to the organic horizons, use the organic material codes. Use soil texture keys to determine soil texture.
Coarse fragment content	The coarse fragment content (% by volume) of the upper 50 cm of mineral soil profile, or rooting zone where it extends deeper, or to bedrock contact.
Soil coarse	Soil contains $> 70\%$ coarse fragments; or soil texture is sandy (LS, S); or loamy (SL, L) with $> 50\%$ volume of coarse fragments.
Soil fine	Soil is silty (SiL, Si) or clayey (SiCL, CL, SC, SiC, C) with $< 20\%$ volume of coarse fragments.
Soil medium	Includes the remaining soils i.e., SL, L with $\leq 50\%$ volume of coarse fragments; or fine-textured soils with $\geq 20\%$ coarse fragments.
Gleyed, gleying	Soils that have orange-coloured mottles indicative of periodic oxidation and reduction due to a fluctuating water table (this includes faint, distinct and prominent mottles); or, soils that are dull yellowish, blue, or olive in colour indicative of permanent saturation.
Prominent mottles	Mottles that differ by 3 or more hues from the matrix, or by ≥ 2 units of value or chroma when hue varies by 2 pages (using Munsell soil colour charts), by ≥ 3 units of value or chroma or both chroma and value differ by 2 when hue differs by 1, or by 4 units of value or chroma if hue is the same.

Table A-1: Terms used in the guide (continued)

Term	Definition
Distinct mottles	Mottles that differ by 2 or more hues from the matrix or by 2 units of chroma and/or value when hue is the same or differs by one page (using Munsell soil colour charts).
Faint mottles	Mottles that do not meet the above criteria.
Organic soils	Soils of Organic Order, specifically those that are water saturated — have greater than 40 cm of organic material on surface if mesic or humic peat, or greater than 60 cm if fibric peat. Fibric peat consists of well-preserved fibre (40%), identified after rubbing; mesic peat is intermediate composition between fibric and humic; and humic peat consists of decomposed organic material (10%), identified after rubbing. See Canadian System of Soil Classification for details.
Mor Humus Form	Soil characterized by matted Fm horizon and abundant fungal mycelia. Insect droppings absent. For keying purposes, includes soil where no F or organic accumulation is present.
Moder Humus Form	Soil characterized by Fa or Fz horizon with loosely arranged, often granular structure reflecting insect activity; insect droppings present; fungal mycelia may also be present but not dominating; or soil characterized by having both F and Ah horizons greater than 2 cm.
Mull Humus Form	Soil characterized by well-developed Ah (dark coloured, organically enriched) mineral horizon reflecting active mixing of mineral and organic horizons.
Restricting layer	Layer that restricts the downward movement of soil water; includes bedrock, cemented or very compacted horizon, permafrost.
Soil depth	Depth from the ground (forest floor) surface to bedrock, or other impermeable layer, but not including permafrost.
Near-surface permafrost	Soil layer that is “permanently” frozen; this can be difficult to distinguish from “seasonal frost,” but date of observation and features of the ecosystem can provide clues as to whether ice is permafrost or seasonal.
Calcareous	Soils that fizz/effervesce when dilute hydrochloric acid is applied. For these purposes, soils that are calcareous in the rooting zone have an impact on soil nutrition.
High salinity	Saline sites are recognizable by the white salts on the soil surface, or in the rooting zone when the soils are dry. Salinity can also be measured: saline soils have an electrical conductivity >4 dS/m.
Water table	The surface of groundwater saturated materials in a soil.
Depth to water table	Depth to water table can be determined by the depth below the soil surface to the level of standing water in a soil pit. However, the water table is dynamic and may not be present when observing the soil.
Depth to gleying	Depth from the surface to mottles or gley colours. These mottles are an indication of a fluctuating water table resulting in alternating reducing and oxidizing conditions. Gley colour, with no mottles, indicates permanent saturation.
Seepage	Seepage is subsurface flowing water, which may be observed on sloping sites receiving soil water. It may not form a stable water table, particularly in coarse-textured materials.
Soil shallow	Soils where soil depth limits available moisture; generally less than 25 cm.

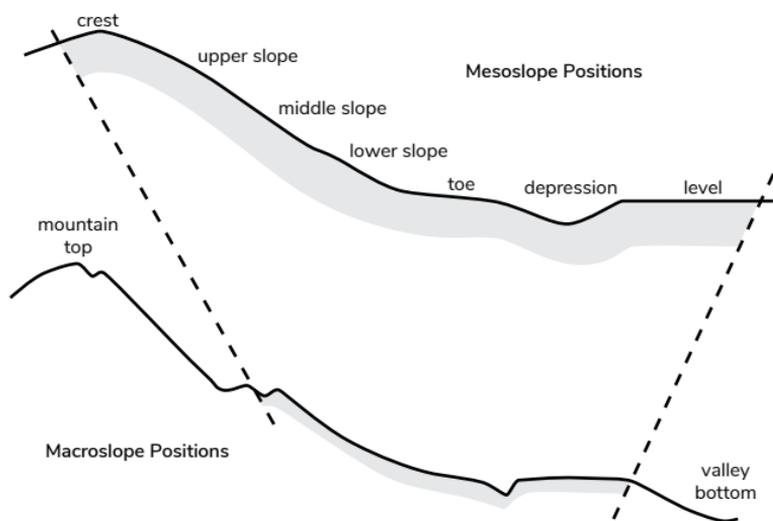


Figure A-1: Mesoslope position

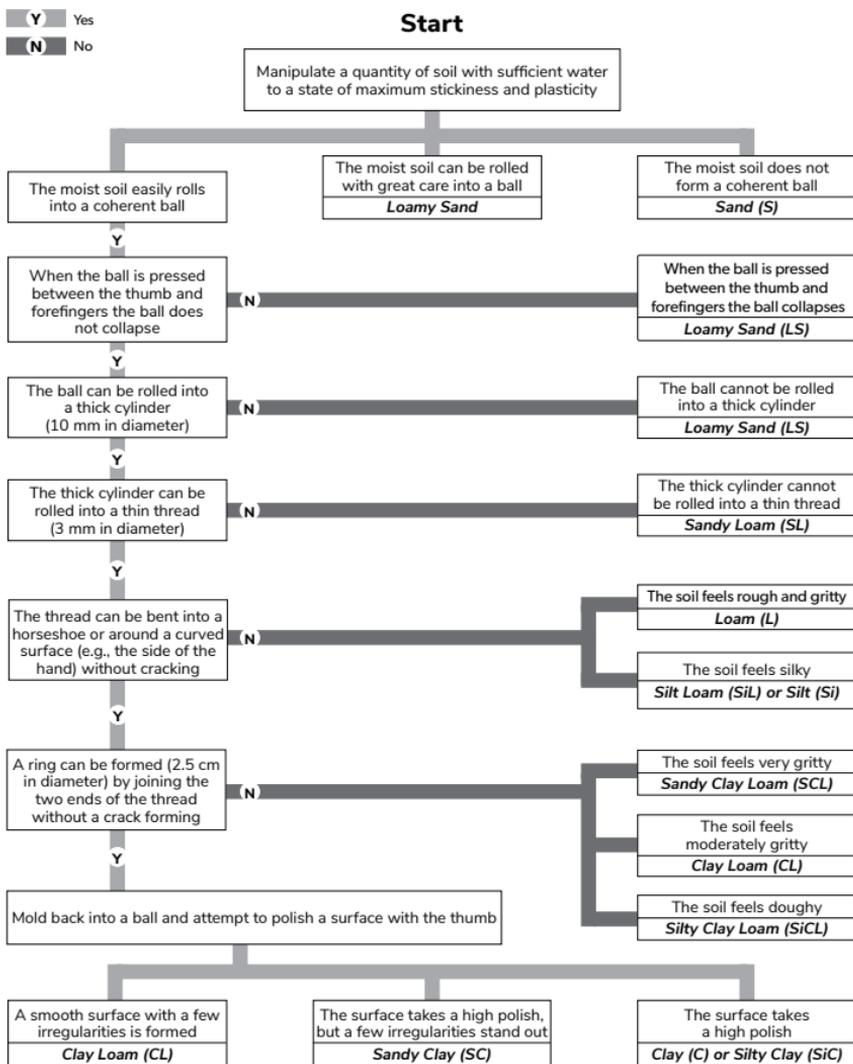
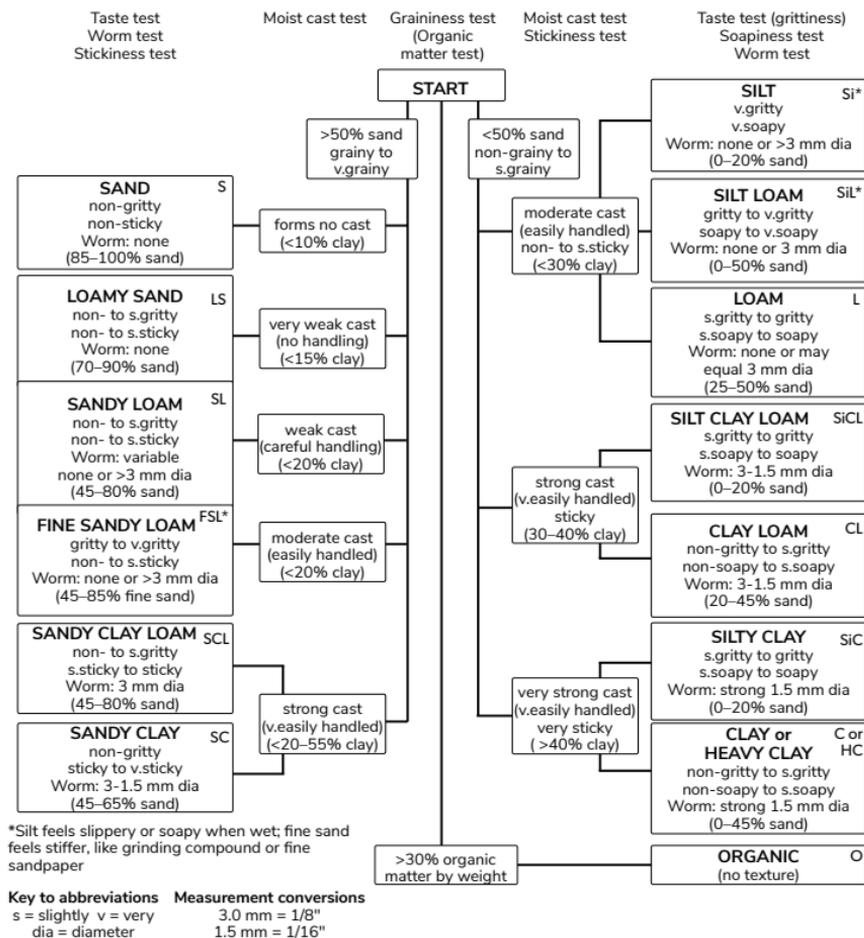
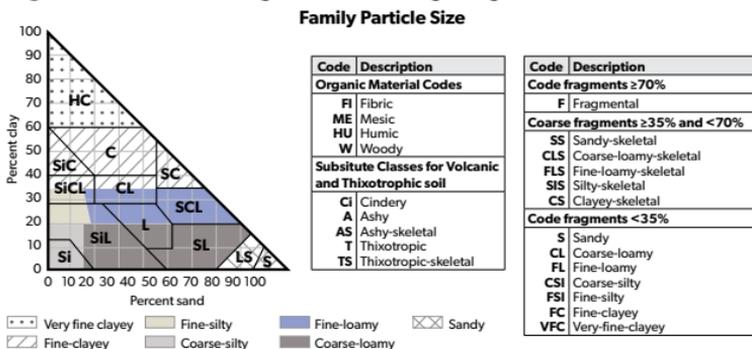


Figure A-2: Soil texturing flow chart using the ball test


Figure A-3: Soil texturing flow chart using the graininess test

Figure A-4: Soil texture classes

Note: Triangle shows soil texture classes and rooting zone particle size when coarse fragments are <35%. Percentages of clay and sand determine the textural classes of soil; the remaining proportion of each class is silt.

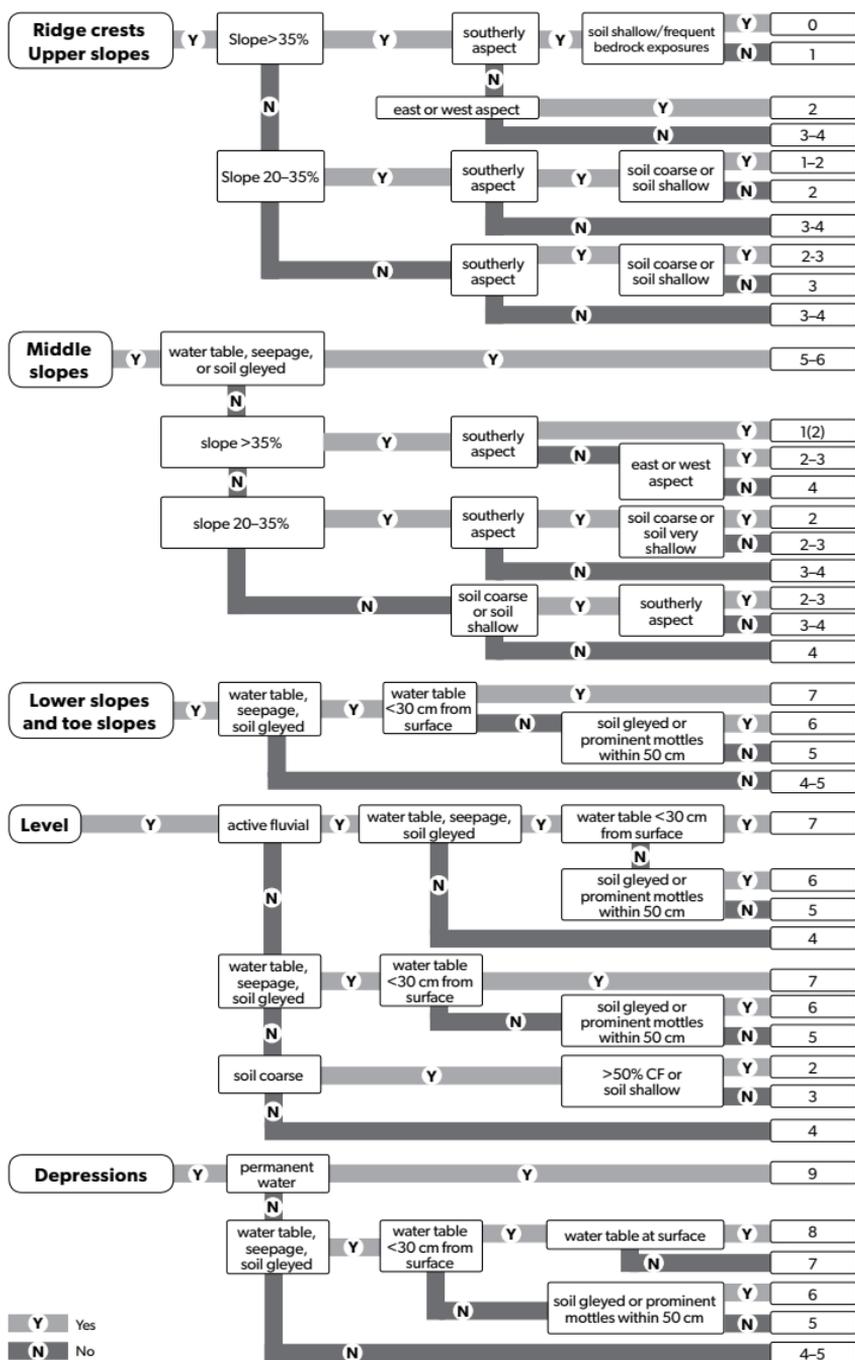
Table A-2: Key to humus form

Note: If no humus is present, treat as MOR in SNR key.

- 1a.** Rapid to imperfectly drained sites; humus form not saturated for prolonged periods. Soil is mineral or upland Folisol.
 - 2a.** Ah horizon <2 cm and combined thickness of F and H horizons if present \geq Ah.
 - 3a.** >50% thickness of F horizon(s) is Fm.....MORS (R)
 - 4a.** Decaying wood >35% of organic matter volume in humus form profile Lignomor (LR)
 - 4b.** Decaying wood \leq 35% of organic matter volume in humus form profile.
 - 5a.** F horizon >50% of thickness of F and H horizonHemimor (HR)
 - 5b.** Hh horizon >50% of thickness of F and H horizons.....Humimor (UR)
 - 5c.** Hr horizon >50% of thickness of F and H horizons.....Resimor (RR)
 - 3b.** F horizon(s) includes Fz and/or Fa..... MODERS (D)
 - 6a.** Decaying wood >35% of organic matter volume in humus form profile. Lignomoder (LD)
 - 6b.** Decaying wood \leq 35% of organic matter volume in humus form profile.
 - 7a.** Fa horizon >50% of thickness of F horizons; or Fm horizon present.Mormoder (RD)
 - 7b.** Fz (or Hz) horizon >50% of thickness of F horizons Leptomoder (TD)
 - 2b.** Ah horizon \geq 2cm and combined thickness of F and H horizons \geq 2 MODERS (D)
 - 8a.** Ah horizon formed by infiltration or accumulation of organic materials by mechanical intermixing (gravity, wind, flooding, ice churning or root churning) Paramoder (PD)
 - 8b.** Ah formed by soil fauna activity or root decomposition; Fa and/or Fz horizons present.
 - 9a.** F and H horizons greater than or equal to thickness of Ah horizon; . Leptomoder (TD)
 - 9b.** Ah >combined F and H horizons;..... Mullmoder (MD)
 - 2c.** Combined thickness of F and H horizons <2cm and Ah horizon \geq 2cmMULLS (L)
 - 10a.** Rhizogenous Ah horizon formed from decomposition of dense fine roots...Rhizomull (ZL)
 - 10b.** Zoogenous Ah horizon formed through actions of abundant earthworms .. Vermimull (VL)
 - 10c.** Ah formed by infiltration or accumulation of organic materials by mechanical intermixing (gravity, wind, flooding, ice-frost churning or root-churning).....Paramull (PL)
- 1b.** Poor to very poorly drained sites; Humus is saturated for prolonged periods. Soils are Gleysols, Fibrisols, Mesisols, Humisols, Organic Cryosols, or Gleysolic or Histic subgroups of Turbic or Static Cryosols
 - 11a.** Combined thickness of F, H, and O horizons <2 cm and Ah horizon >2cm.....Hydromull (YL)
 - 11b.** Combined thickness of F, H, and O horizons \geq 2 cm.
 - 12a.** Thickness of F and H horizons \geq O horizons.
 - 13a.** F horizon(s) is Fm. Hydromor (YR)
 - 13b.** F horizon(s) includes Fz and/or Fa, F is not present or Ah \geq 2..... Hydromoder (YD)
 - 12b.** Combined thickness of O horizons greater than F and H horizons.
 - 14a.** O horizons \leq 40cm and Ah horizon >2cm.....Moder (D)
 - 14b.** Of horizon >50% of thickness of O horizons Fibrimor (FR)
 - 14c.** Om horizon >50% of thickness of O horizons.....Mesimor (MR)
 - 14d.** Oh horizon >50% of thickness of O horizons..... Saprimoder (SD)

Table A-3: Relative soil moisture regime (SMR) — codes and classes

Code	Class	Description	Water source
0	Very xeric	Water removed extremely rapidly in relation to supply; soil is moist for a negligible time after precipitation.	Precipitation
1	Xeric	Water removed very rapidly in relation to supply; soil is moist for brief periods following precipitation.	Precipitation
2	Subxeric	Water removed rapidly in relation to supply; soil is moist for short periods following precipitation.	Precipitation
3	Submesic	Water removed readily in relation to supply; water available for moderately short periods following precipitation.	Precipitation
4	Mesic	Water removed somewhat slowly in relation to supply; soil may remain moist for a significant, but sometimes short period of the year. Available soil moisture reflects climatic inputs.	Precipitation in moderate- to fine-textured soils; limited seepage in coarse-textured soils
5	Subhygric	Water removed slowly enough to keep soil wet for a significant part of growing season; some temporary seepage and possibly mottling below 20 cm.	Precipitation and seepage
6	Hygric	Water removed slowly enough to keep soil wet for most of growing season; permanent seepage and mottling; gleyed colours common.	Seepage
7	Subhydic	Water removed slowly enough to keep water table at or near surface for most of year; gleyed mineral or organic soils; permanent seepage <30 cm below surface.	Seepage or permanent water table
8	Hydic	Water removed so slowly that water table is at or above soil surface all year; gleyed mineral or organic soils.	Permanent water table
9	Aquatic	Water is well above the sediment bed all year.	Water body


Figure A-5: Soil Moisture Regime (SMR) flow chart

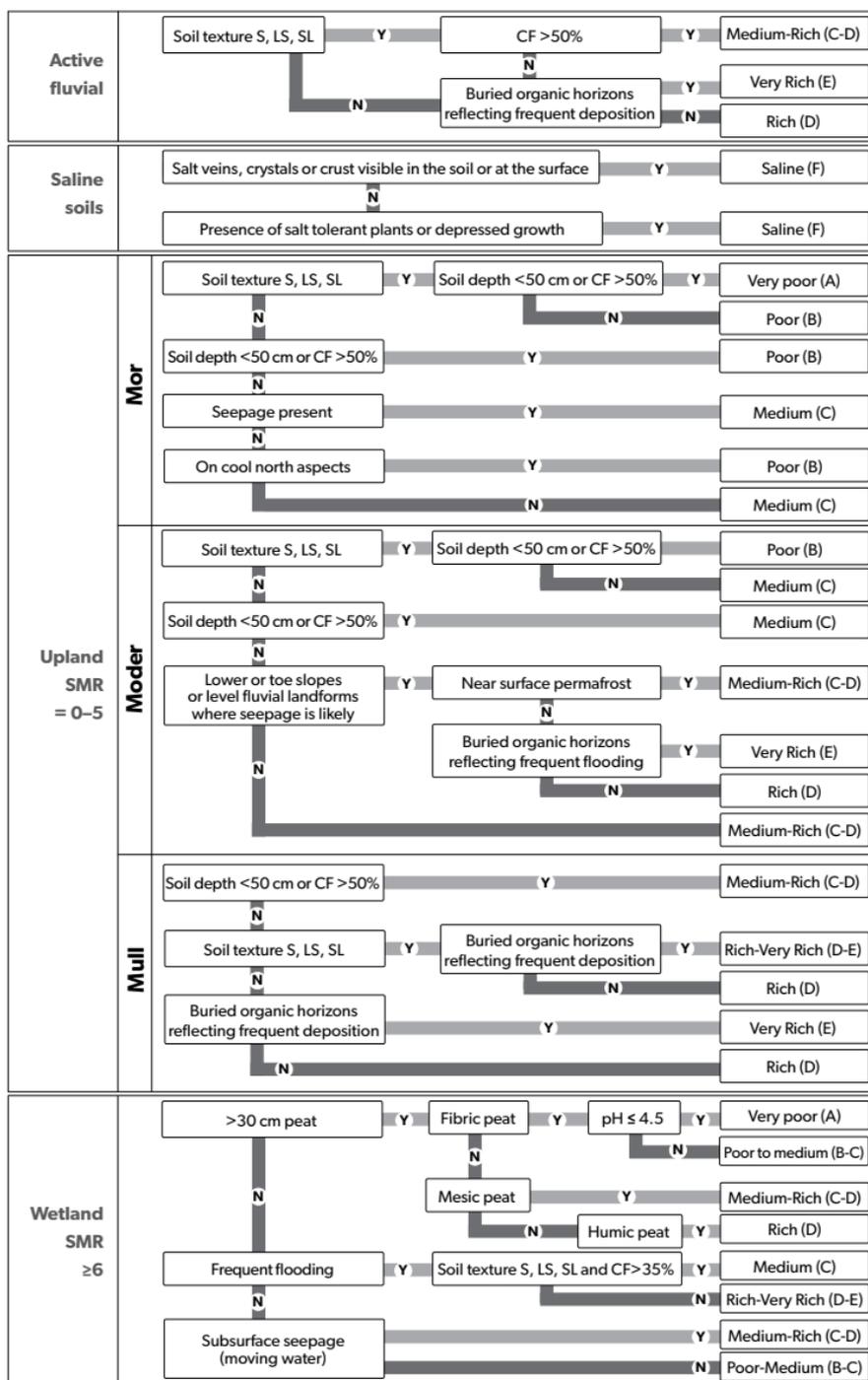
Site factors	Factors that reduce available moisture	Intermediate moisture	Factors that increase available moisture
Site position	Crest -15 Upper -8 >60% -4 35-60% -2	Middle or Level 0 5-35% 0	Lower +3 0-5% +2 Toe +5 Depression +10
Slope gradient	SE W -1 S SW SE -2 SW SE W -1 S -3 SW SE W -2 S -5	ENW 0 NWE 0 NWE 0 NWE 0	NNE +1 NNE +2 NNE +5
Aspect – Gentle slopes ≤ 20%			
Aspect – Moderate slopes 20-35%			
Aspect – Steep slopes > 35%			
SELECT ONE			
Soil texture	S -10 LS, fs -6 >90% -10 0-25 -18	SIL, L 0 35-50% -3 >100 0	Si, SCL, CL, SiCL +1 10-35% -1 Organic >30cm +3 SC, SiC, C +2
Coarse fragment content	70-90% -6 50-70% -4		0-10% +2
Soil depth/brx (cm)	25-50 -8 50-100 -4		
SELECT ONE			
Depth to water table		Absent 0	100-150 +5 75-100 +25 50-75 +40 30-50 +55 <30 +85 at surface water >50 cm +130
Depth to prominent mottles (cm)		Absent 0	100-150 +5 50-100 +15 <50 +15
Depth to faint or distinct mottles (cm)		>100 0	50-100 +5 <50 +15
Soil moisture regime classes and codes	Very Xeric 0 Xeric 1 Subxeric 2 Mesic 4 Submesic 3	Subxeric 2 Mesic 4 Submesic 3	Subhygric 5 Hygric 6 Subhygric 7 Hydric 8 Aquatic 9
Class ranges	<<32 -32 to <21 -20 to -11 -4 to +4 -10 to -5	-4 to +4 -10 to -5	+40 to +70 +5 to +39 +40 to +70 70-99 99-119 +120

Adapted from Lloyd et al. 1990

Figure A-6: Soil Moisture Regime (SMR) additive chart

Table A-4: Soil nutrient regime (SNR) factors and relationship of factors

	Oligotrophic	Submeso-trophic	Mesotrophic	Permeso-trophic	Eutrophic	Hypereutrophic
	A very poor	B poorer than average	C medium	D richer than average	E very rich	F saline
Available nutrients	very low	low	average	plentiful	abundant	excess salt accumulations
Humus form	Mor			Moder		Mull
A horizon	Ae horizon present		A horizon present or absent		Ah horizon present	
Organic matter content	low (light coloured)		medium (intermediate in colour)		high (dark coloured)	
Soil depth	extremely shallow		very shallow to deep			
Soil texture	coarse textured		medium to fine textured			
% coarse fragments	high		moderate to low			
Parent material mineralogy	base-low		base-medium		base-high	
Soil pH	extremely-moderately acid		moderately acid-neutral		slightly acid-mildly alkaline	
					mildly alkaline to alkaline	
Water pH (wetlands)	<4-5	4.5-5.5	5.5-6.5	6.5-7.4	7.4+	
Seepage			temporary ≥ permanent			


Figure A-7: Soil Nutrient Regime (SNR) flow chart

Site factors	Factors that reduce available nutrients -	Intermediate nutrients 0	Factors that increase available nutrients +
Soil Texture	LS, S -2	SL, L, Si 0	SCL, CL, SCL +1
Organic materials	Fibric -2	Mesic 0	Humic +3
Depth to mineral soil	>100 cm -3	10-29cm 0	<2 cm +3
Humus form	Mbr -2	Moder 0	Mull +2
Depth water table	>30 cm -3	Intermediate 0	At surface +3
Water source	Precipitation/ permafrost -3		Rare-occasional flooding; stream subirrigation +5
Water pH	≤ 4.5 -3	5.5-6.4 0	Frequent flooding; stream subirrigation +8
Permafrost at <1 m	Present -2	Absent +2	Saline +35
<i>Check for salinity</i>			
SNR classes	Very Poor A	Poor B	Rich D
SNR codes		Medium C	Very Rich E
Class ranges	≤ -13	-12 to -6	+6 to +12
		-5 to +5	+13 to +29
			> +30
			Saline F

Figure A-9: Soil nutrient regime (SNR) for wetland soils additive chart

Table A-5: Drainage class — codes and descriptions

Code	Drainage class	Description
VR	Very rapidly drained	Water is removed from the soil very rapidly in relation to supply. Water source is precipitation and available water storage capacity following precipitation is essentially nil. Soils are typically fragmental or skeletal, shallow, or both.
R	Rapidly drained	Water is removed from the soil rapidly in relation to supply. Excess water flows downward if underlying material is pervious. Subsurface flow may occur on steep gradients during heavy rainfall. Water source is precipitation. Soils are generally coarse textured or shallow.
W	Well drained	Water is removed from the soil readily, but not rapidly. Excess water flows downward readily into underlying pervious material or laterally as subsurface flow. Water source is precipitation. On slopes, subsurface flow may occur for short durations, but additions are equaled by losses. Soils are generally intermediate in texture and lack restricting layers.
MW	Moderately well drained	Water is removed from the soil somewhat slowly in relation to supply because of imperviousness or lack of gradient. Precipitation is the dominant water source in medium-to-fine-textured soils; precipitation and significant additions by subsurface flow are necessary in coarse-textured soils.
I	Imperfectly drained	Water is removed from the soil sufficiently slowly in relation to supply to keep the soil wet for a significant part of the growing season. Excess water moves slowly downward if precipitation is the major source. If subsurface water or groundwater (or both) is the main source, the flow rate may vary but the soil remains wet for a significant part of the growing season. Precipitation is the main source if available water storage capacity is high; contribution by subsurface or groundwater flow (or both) increases as available water storage capacity decreases. Soils generally have a wide range of texture, and some mottling is common.
P	Poorly drained	Water is removed so slowly in relation to supply that the soil remains wet for much of the time that it is not frozen. Excess water is evident in the soil for a large part of the time. Subsurface or groundwater flow (or both), in addition to precipitation, are the main water sources. A perched water table may be present. Soils are generally mottled and/or gleyed or organic and are often associated with wetlands.
VP	Very poorly drained	Water is removed from the soil so slowly that the water table remains at or near the surface for most of the time the soil is not frozen. Groundwater flow and subsurface flow are the major water sources. Precipitation is less important, except where there is a perched water table with precipitation exceeding evapotranspiration. Typically associated with wetlands. Soils are gleyed or organic.

Source of descriptions: Expert Committee on Soil Survey 1982

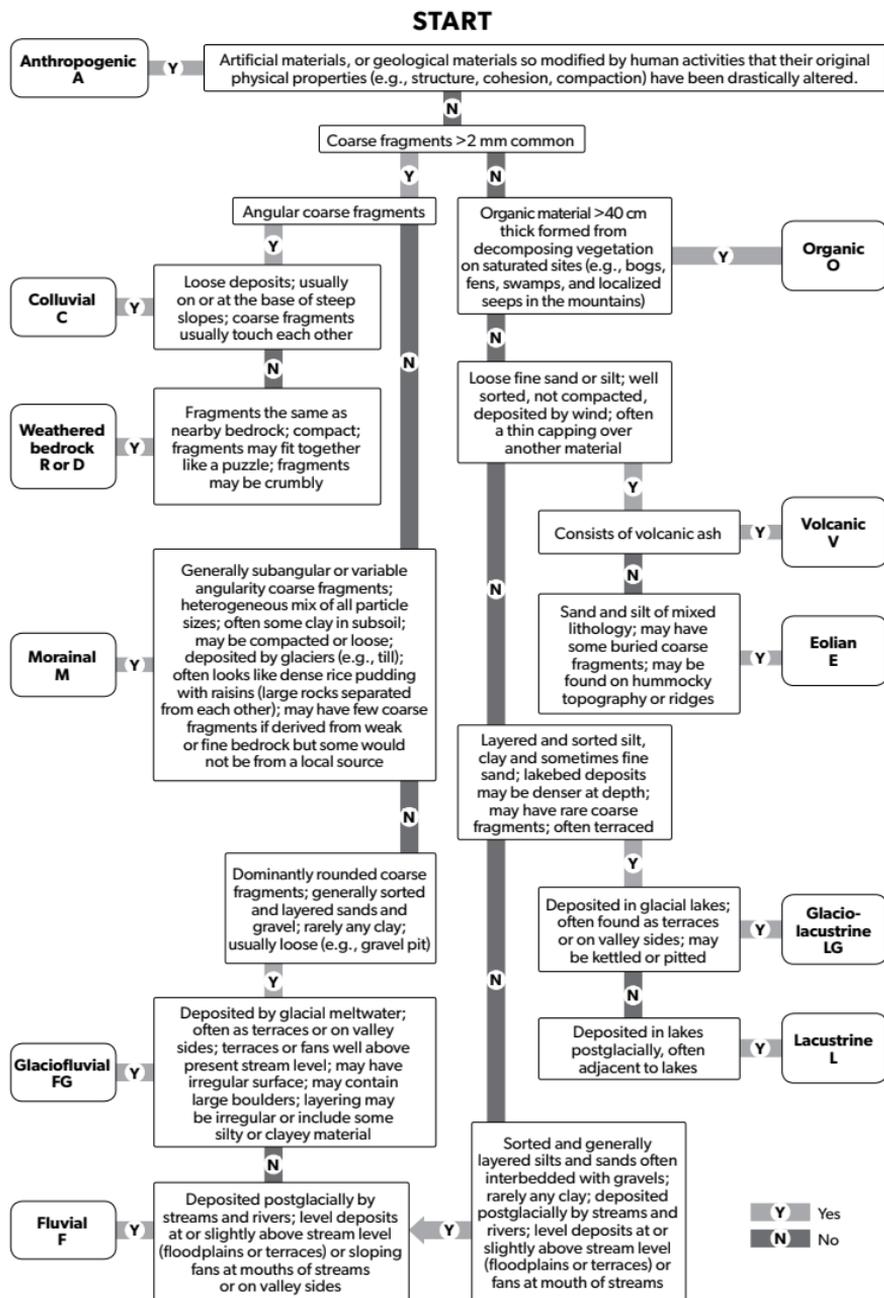


Figure A-10: Guide to parent material

Source: Adapted from B.C. Ministry of Environment and B.C. Ministry of Forests and Range (2010)

Table A-6: Community Structure

Structure is used to describe the appearance of a stand or community using the characteristic life form (stratum) and certain physical attributes. "Structure" can depict stand development features along a trajectory that is characteristic for the vegetation (e.g., development of a forest type), or refer to a certain type of vegetation (e.g., herb community). Choose one of the following codes.

1. Non-vegetated

recent disturbance, e.g., fire, flood, and no vegetation, or less than 5% cover of vegetation has established.

2. Sparse/cryptogam

either the initial stages of primary succession or a cryptogam community maintained by environmental conditions (e.g., bedrock, talus). Sparse tree, shrub and herb cover. Either sparsely vegetated overall (low cover of vascular plants and cryptogams, if present), or dominated by cryptogams.

2a Sparse – 5 to 10% vegetation cover

2b Bryoid – bryophyte-dominated

2c Lichen – lichen-dominated

3. Herb

early successional stage (e.g., post-fire forest succession) or a herb community maintained by environmental conditions or disturbance. Vegetation dominated by herbs (forbs, graminoids, ferns), although herb cover can be low if sparsely vegetated overall as long as herbs characterize the vegetation. Trees and shrubs are usually absent or sparse; however, shrub cover and stature as compared to herb cover and stature determines whether the site is considered herbaceous.

3a Forb-dominated – includes non-graminoid herbs and ferns

3b Graminoid-dominated – includes grasses, sedges, reeds and rushes

3c Aquatic – floating or submerged plants dominate

3d Ground shrub-dominated – dominated by dwarf woody species such as kinnikinnick or dwarf willows

Table A-6: Community Structure (continued)**4. Shrub**

early successional stage of a forest or a shrub community maintained by environmental conditions or disturbance. Either dominated by shrubby vegetation, including tree seedlings/saplings, or if sparsely vegetated overall, the dominance of shrubs characterizes the community as a shrubland.

4a Tall shrub – dominated by woody plants $>2\text{m}$ and $\leq 7\text{ cm dbh}$

4b Low shrub – dominated by woody plants $<2\text{m}$

5. Treed: pole/sapling

trees $>5\text{ m}$ tall and $>7\text{ cm dbh}$, typically densely stocked. Self-thinning and vertical structure are not yet evident in the canopy. Younger stands are vigorous (usually $>15\text{--}20$ years old); older stagnated stands (up to 100 years old) are also included; time since disturbance usually <40 years; up to 100+ years for dense (5,000–15,000+ stems per ha) stagnant stands.

6. Treed: young forest

self-thinning has become evident and the forest canopy has begun to differentiate into distinct layers. A more open stand than the pole/sapling stage.

7. Treed: mature forest

trees established after the last stand-replacing disturbance have matured; a second cycle of shade tolerant trees may have become established; shrub and herb understories become well developed as the canopy opens up.

8. Treed: old forest

stands of old age with complex structure; patchy shrub and herb understories are typical; regeneration is usually of shade-tolerant species, with composition similar to the overstorey.

9. Treed: very old forest

very old stands having complex structure with abundant large-sized trees, snags and coarse woody debris (CWD); snags and CWD occurring in all stages of decomposition; stands are comprised entirely of shade-tolerant overstorey species with well-established canopy gaps.

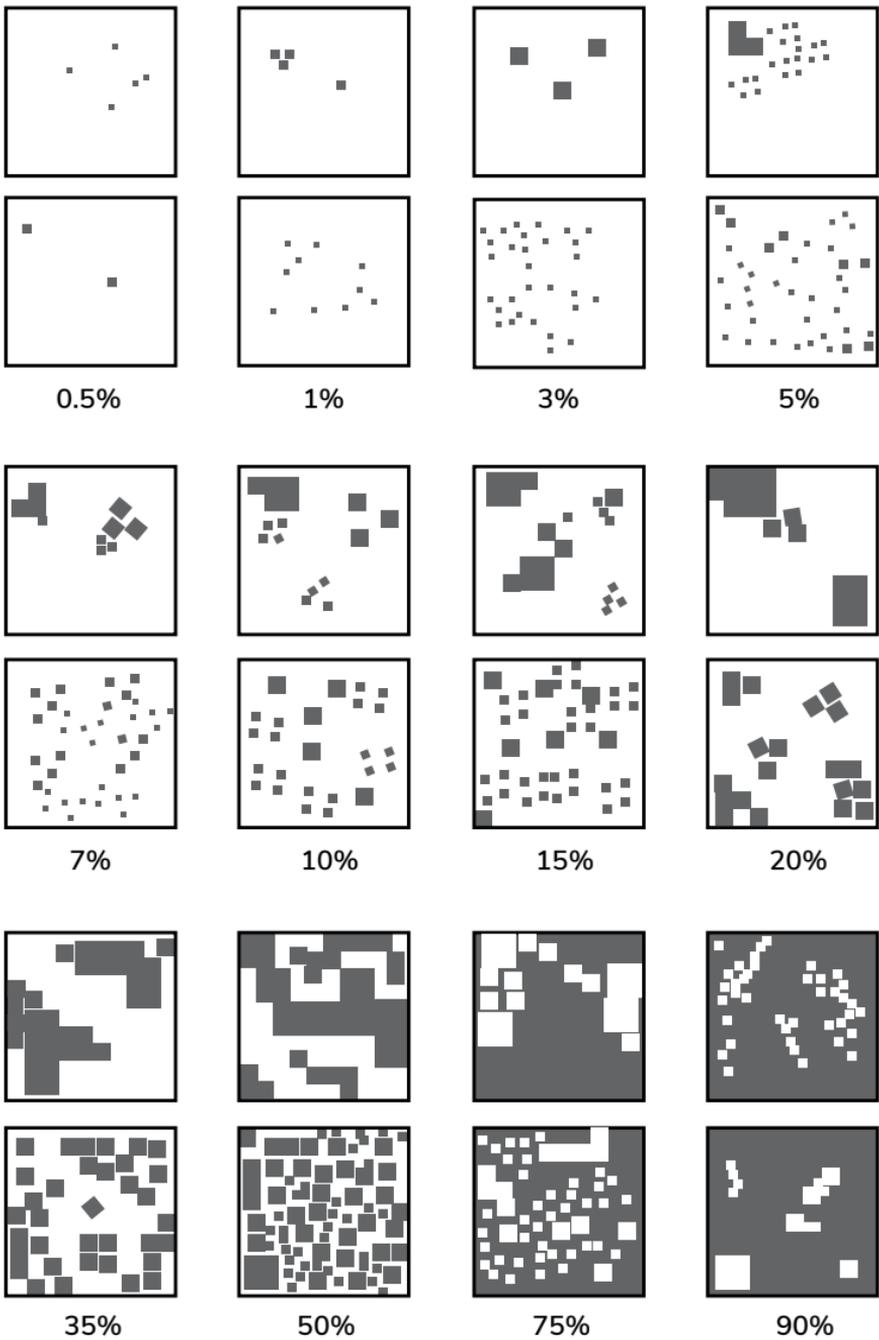


Figure A-11: Visual aid for determining percent cover of plant species

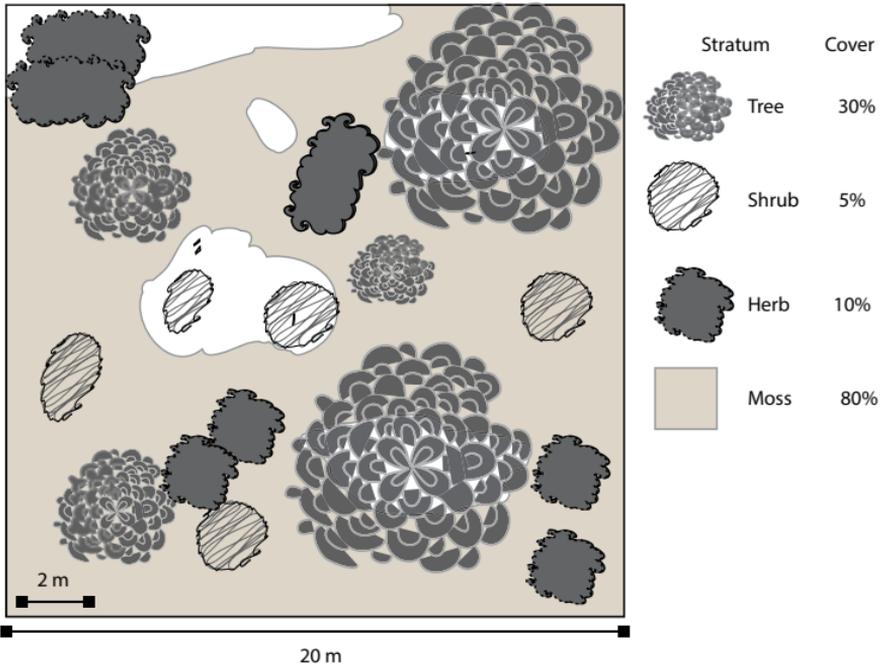


Figure A-12: Determining percent cover of plant species (example)

Table A-7: List of BOLkp ecosites and vegetation units

VegAssocCode	Vegetation Association Name
Dry to Mesic	
01 ASW – Lowbush Cranberry Forest	
A28	Aspen / Labrador tea
A29	Aspen / Prickly rose / Fireweed
ASw26	Aspen – White spruce / Fireweed – Kinnikinnick
ASw27	Aspen – White spruce (Black spruce) / Labrador tea / Bastard toad-flax
Sb22	Black spruce / Lowbush cranberry / Feathermoss
Sb23	Black spruce / Labrador tea / Feathermoss
Sb26	Black spruce / Shrub birch / Lowbush cranberry / Feathermoss
SbSw22	Black spruce – White spruce / Lowbush cranberry – Feathermoss
SbSw30	Black spruce – White spruce / Labrador tea / Feathermoss
SbSwW21	Spruce – Alaska birch / Willow – Labrador tea / Lowbush cranberry / Feathermoss – Lichen
SbSwW25	Spruce – Alaska birch / Prickly rose / Twinflower – Tall bluebells / Feathermoss
SbW22	Black spruce – Alaska birch / Lowbush cranberry / Feathermoss
Sw27	White spruce / Feathermoss
Sw29	White spruce / Labrador tea / Crowberry / Feathermoss
Sw30	White spruce / Shrub birch / Crowberry / Feathermoss
SwW24	White spruce – Alaska birch / Prickly rose / Lowbush cranberry / Feathermoss
SwW28	White spruce – Alaska birch / Alder / Step moss
SwW29	White spruce – Alaska birch / Alder – Labrador tea
SwW30	White spruce – Alaska birch / Labrador tea
W25	Alaska birch / Alder – Prickly rose
W27	Alaska birch / Prickly rose / Bluejoint reedgrass
W28	Alaska paper birch / Labrador tea / Lowbush cranberry / Step moss
10 Lichen – Rock Moss Talus	
Clad01	Reindeer lichen – Rock moss
11 Prickly Saxifrage – Lichen Rock Outcrop	
Clad02	Prickly saxifrage – Reindeer lichen
12 AS – Lichen Woodland	
ASb05	Aspen – Black spruce / Kinnikinnick
ASw05	Aspen – White spruce / Kinnikinnick
ASw27	Aspen – White spruce (Black spruce) / Labrador tea / Bastard toad-flax
Sb10	Black spruce / Labrador tea / Lichen Woodland
Sw28	White spruce / Shrub birch / Crowberry / Reindeer lichen

Table A-7: List of BOLkp ecosites and vegetation units (continued)

VegAssocCode	Vegetation Association Name
20 Pasture Sage Grassland	
Arfr02	Pasture sage – Purple reedgrass
Aruv02	Kinnikinnick
Eltr03	Slender wheatgrass – Sticky goldenrod
Juco03	Common juniper / Pasture sage
Roac02	Prickly rose / Purple reedgrass
21 A – Kinnikinnick Woodland	
A02	Aspen / Juniper
A03	Aspen / Kinnikinnick
A04	Aspen / Prickly rose / Grass – Kinnikinnick
ASw05	Aspen – White spruce / Kinnikinnick
ASw06	Aspen – White spruce / Soapberry / Fireweed
ASw07	Aspen – White spruce / Purple reedgrass – Kinnikinnick
ASwW03	Aspen – White spruce – Alaska paper birch / Juniper
Mesic to Moist	
31 SbSw – Red Bearberry Forest	
Sb32	Black spruce / Blueberry willow / Scouring-rush / Step moss
SbSw31	Black spruce – White spruce / Blueberry willow / Feathermoss
Sw31	White spruce / Willow / Red bearberry / Feathermoss
32 SbSwW – Horsetail Forest	
Sb31	Black spruce / Horsetail / Step moss
SbSwW34	Spruce – Alaska birch / Alder – Highbush cranberry / Horsetail
SwB35	White spruce – Balsam poplar / Soapberry / Horsetail
SwW34	White spruce – Alaska paper birch / Red osier dogwood – Highbush cranberry / Horsetail
W30	Alaska paper birch / Current / Horsetail
Floodplain	
40 Sw – Riparian Forest	
Sw36	White spruce / Highbush cranberry / Horsetail
SwB22	White spruce – Balsam poplar / Highbush cranberry / Tall bluebells
SwB28	White spruce – Balsam poplar / Step moss
SwB29	White spruce – Balsam poplar / Highbush cranberry / Horsetail
SwW34	White spruce – Alaska paper birch / Red osier dogwood – Highbush cranberry / Horsetail
41 B – Riparian Forest	
B23	Balsam poplar / Highbush cranberry / Horsetail
W29	Alaska birch / Prickly rose / Horsetail
42 River Alder Riparian	
Alin30	River Alder / Tilesius' wormwood – Horsetail

Table A-7: List of BOLkp ecosites and vegetation units (continued)

VegAssocCode	Vegetation Association Name
Wetland: Bog and Fen	
B03 Sb – Labrador Tea Bog	
Sb44	Black spruce / Labrador tea/ Cloudberry – Lowbush cranberry / Peat moss
B08 Palsa Bog	
Sw32	White spruce / Willow / Red bearberry / Brown moss
F01 Water Sedge Fen	
Caaq55	Water sedge – Beaked sedge
Caut55	Beaked sedge – Marsh cinquefoil
F05 Sb – Tussock Sedge Fen	
Sb50	Black spruce / Spruce muskeg sedge
Sb51	Black spruce / Shrub birch / Spruce muskeg sedge
Sb52	Black spruce / Leatherleaf / Spruce muskeg sedge
Sb55	Black spruce / Tussock cottongrass
SbSw55	Black spruce – White spruce / Leatherleaf / Tussock cottongrass
W54	Alaska birch / Leatherleaf / Spruce muskeg sedge
W55	Alaska birch / Leatherleaf / Tussock cottongrass
F06 Shrub birch – Tussock Sedge Fen	
Begl51	Shrub birch / Tussock cottongrass / Peat moss
Begl52	Shrub birch / Spruce muskeg sedge
Begl54	Shrub birch / Spruce muskeg sedge – Bluejoint reedgrass
Sasp57	Willow / Spruce muskeg sedge
F07 Leatherleaf – Peat Moss Fen	
Chca51	Leatherleaf / Bog rosemary / Peat moss
F08 Slender Sedge – Beaked Sedge Fen	
Cala53	Slender sedge – Beaked sedge
F09 Creeping Sedge Fen	
Cach50	Creeping sedge – Water sedge – Beaked sedge
F10 Livid Sedge – Mud Sedge Fen	
Cali52	Livid sedge – Mud sedge
F11 Tufted Club-rush – Beaked Sedge Fen	
Trce51	Tufted clubrush – Beaked sedge
F12 Lesser Paniced Sedge Fen	
Cadi50	Lesser paniced sedge – Water sedge
F13 Water Horsetail – Sedge Fen	
Eqfl55	Water horsetail – Sedge
Wetland: Swamp	
FS01 SbSw – Leatherleaf Fen/Swamp	
Sb53	Black spruce / Leatherleaf – Labrador tea / Peat moss
SbSw54	Black spruce – White spruce / Leatherleaf / Bluejoint reedgrass

Table A-7: List of BOLkp ecosites and vegetation units (continued)

VegAssocCode	Vegetation Association Name
S01 Willow – Bluejoint Swamp	
Sasp50	Willow / Bluejoint reedgrass
S02 River Alder Swamp	
Alin55	River alder – Willow
S06 Willow – Sedge – Peat Moss Swamp	
Sasp55	Willow / Sedge
Sasp57	Willow / Blueberry / Peat moss
S07 Sb – Labrador Tea Swamp	
Sb34	Black spruce / Labrador tea/ Lowbush cranberry / Feathermoss – Peat moss
Sb36	Black spruce / Northern Labrador tea/ Lowbush cranberry / Lichen – Peat moss
SbW35	Black spruce – Alaska birch / Labrador tea / Sweet coltsfoot / Peat moss
S08 SbSw – Red Bearberry – Brown Moss Swamp	
SbSw32	Black spruce (White spruce) / Labrador tea / Feathermoss – Brown moss
Sw32	White spruce / Willow / Red bearberry / Brown moss
S09 Sw – Shrub Birch – Bluejoint Swamp	
Sw52	White spruce / Shrub birch / Bluejoint reedgrass
S10 Sw – Horsetail – Brown Moss Swamp	
Sw53	White spruce / Labrador tea / Horsetail
Wetland: Marsh	
M01 Beaked – Water Sedge Marsh	
Caut56	Beaked sedge – Water sedge
Caut57	Beaked sedge
M02 Water Horsetail Marsh	
Eqfl55	Water horsetail – Water sedge
M06 Mannagrass Marsh	
Gisp76	Mannagrass
M10 Bluejoint Marsh	
Caca54	Bluejoint reedgrass
Wetland: Shallow Water	
W07 Hornwort Shallow Water	
Cede70	Hornwort
W08 Wild Calla Shallow Water	
Capa70	Wild calla
W09 Pond-lily Shallow Water	
Nupo70	Rocky Mountain pond-lily
W10 Water-milfoil – Bladderwort Shallow Water	
Mysp70	Water-milfoil – Bladderwort

Table A-8: Species list for ecosites of the BOLkp

Scientific Name	Common Name	Cody synonym
<i>Achillea millefolium</i>	common yarrow	
<i>Alnus incana</i>	river alder	
<i>Alnus</i> spp.	alders	
<i>Alnus viridis</i>	green alder	<i>Alnus crispa</i> spp. <i>crispa</i>
<i>Andromeda polifolia</i>	bog rosemary	
<i>Androsace septentrionalis</i>	northern fairy candelabra	
<i>Anemone multifida</i>	cut-leaved anemone	
<i>Anemone patens</i>	prairie crocus	<i>Pulsatilla ludoviciana</i>
<i>Antennaria</i> spp.	pussytoes	
<i>Anthoxanthum monticola</i>	alpine sweetgrass	<i>Hierochloe alpina</i>
<i>Anticlea elegans</i>	mountain death-camas	<i>Zygadenus elegans</i>
<i>Arctagrostis latifolia</i>	polargrass	
<i>Arctostaphylos uva-ursi</i>	kinnikinnick	
<i>Arctous rubra</i>	red bearberry	<i>Arctostaphylos rubra</i>
<i>Artemisia frigida</i>	pasture sage	
<i>Artemisia tilesii</i>	Tilesius' wormwood	
<i>Astragalus</i> spp.	milk-vetches	
<i>Aulacomnium palustre</i>	glow moss	
<i>Aulacomnium turgidum</i>	mountain groove-moss	
<i>Betula glandulosa</i>	shrub birch	
<i>Betula nealaskana</i>	Alaska paper birch	
<i>Betula occidentalis</i>	water birch	
<i>Boechera</i> spp.	rock cresses	<i>Arabis</i> spp.
<i>Brachythecium</i> spp.	ragged-mosses	
<i>Bromus pumpellianus</i>	Pumpelly brome	
<i>Bryophyta</i>	mosses and liverworts	
<i>Calamagrostis canadensis</i>	bluejoint reedgrass	
<i>Calamagrostis purpurascens</i>	purple reedgrass	
<i>Calla palustris</i>	wild calla	
<i>Calliergon</i> sp.	water moss	
<i>Carex aquatilis</i>	water sedge	
<i>Carex canescens</i>	silvery sedge	
<i>Carex capillaris</i>	hair-like sedge	
<i>Carex chordorrhiza</i>	creeping sedge	
<i>Carex diandra</i>	lesser paniced sedge	
<i>Carex disperma</i>	two-seeded sedge	
<i>Carex lasiocarpa</i>	slender sedge	

Table A-8: Species list for ecosites of BOLkp (continued)

Scientific Name	Common Name	Cody synonym
<i>Carex limosa</i>	mud sedge	
<i>Carex livida</i>	livid sedge	
<i>Carex lugens</i>	spruce muskeg sedge	
<i>Carex</i> spp.	sedges	
<i>Carex utriculata</i>	beaked sedge	
<i>Ceratodon purpureus</i>	fire-moss	
<i>Ceratophyllum demersum</i>	common hornwort	
<i>Cetraria</i> spp.	cetraria lichens	
<i>Chamaedaphne calyculata</i>	leatherleaf	
<i>Chamaenerion angustifolium</i>	fireweed	<i>Epilobium angustifolium</i>
<i>Cladina mitis</i>	green reindeer lichen	
<i>Cladina rangiferina</i>	grey reindeer lichen	
<i>Cladina</i> spp.	reindeer lichens	
<i>Cladina stellaris</i>	star-tipped reindeer lichen	
<i>Cladonia</i> spp.	cladonia lichens	
<i>Comarum palustre</i>	marsh cinquefoil	<i>Potentilla palustris</i>
<i>Cornus canadensis</i>	bunchberry	
<i>Cornus stolonifera</i>	red osier dogwood	
<i>Dasiphora fruticosa</i>	shrubby cinquefoil	<i>Potentilla fruticosa</i> spp. <i>floribunda</i>
<i>Delphinium</i> sp.	larkspurs	
<i>Dicranum scoparium</i>	broom-moss	
<i>Dicranum</i> spp.	heron's-bill mosses	
<i>Diphasiastrum complanatum</i>	ground-cedar	<i>Lycopodium complanatum</i>
<i>Drepanocladus</i> spp.	hook-mosses	
<i>Drosera anglica</i>	English sundew	
<i>Dryas integrifolia</i>	entire-leaved mountain avens	
<i>Dryas</i> sp.	mountain avens	
<i>Dryopteris fragrans</i>	fragrant wood fern	
<i>Elymus trachycaulus</i>	slender wheatgrass	
<i>Empetrum nigrum</i>	crowberry	
<i>Epilobium palustre</i>	marsh willowherb	
<i>Equisetum arvense</i>	common horsetail	
<i>Equisetum fluviatile</i>	water horsetail	
<i>Equisetum pratense</i>	meadow horsetail	
<i>Equisetum scirpoides</i>	dwarf scouring-rush	

Table A-8: Species list for ecosites of BOLkp (continued)

Scientific Name	Common Name	Cody synonym
<i>Equisetum</i> spp.	horsetails	
<i>Equisetum sylvaticum</i>	wood horsetail	
<i>Equisetum variegatum</i>	variegated scouring-rush	
<i>Eriophorum angustifolium</i>	narrow-leaved cottongrass	
<i>Eriophorum</i> spp.	cotton-grasses	
<i>Eriophorum vaginatum</i>	tussock cottongrass	
<i>Eurybia sibirica</i>	Siberian aster	<i>Aster sibiricus</i>
<i>Festuca altaica</i>	Altai fescue	
<i>Festuca</i> spp.	fescues	
<i>Flavocetraria cucullata</i>	curled snow lichen	
<i>Fragaria virginiana</i>	wild strawberry	
<i>Galium boreale</i>	northern bedstraw	
<i>Geocaulon lividum</i>	bastard toad-flax	
<i>Geum macrophyllum</i>	large-leaved avens	
<i>Glyceria grandis</i>	tall mannagrass	
<i>Glyceria borealis</i>	boreal mannagrass	
<i>Goodyera repens</i>	dwarf rattlesnake orchid	
<i>Hamatocaulis vernicosus</i>	varnished hook-moss	
<i>Hedysarum alpinum</i>	alpine hedysarum	
<i>Hippuris vulgaris</i>	common mare's-tail	
<i>Huperzia selago</i>	fir clubmoss	<i>Lycopodium selago</i>
<i>Hylocomium splendens</i>	step moss	
<i>Juniperus communis</i>	common juniper	
<i>Lemna</i> sp.	duckweed	
<i>Linnaea borealis</i>	twinflower	
<i>Lophozia</i> sp.	notchworts	
<i>Lupinus arcticus</i>	arctic lupine	
<i>Lycopodium annotinum</i>	stiff club-moss	
<i>Masonhalea richardsonii</i>	arctic tumbleweed	
<i>Menyanthes trifoliata</i>	bog buckbean	
<i>Mertensia paniculata</i>	tall bluebells	
<i>Micranthes reflexa</i>	Yukon saxifrage	<i>Saxifraga reflexa</i>
<i>Minuartia</i> spp.	stitchworts	
<i>Mnium</i> spp.	leafy mosses	
<i>Myriophyllum</i> spp.	water-milfoils	
<i>Myriophyllum verticillatum</i>	whorled water-milfoil	
<i>Nephroma arcticum</i>	green light	

Table A-8: Species list for ecosites of BOLkp (continued)

Scientific Name	Common Name	Cody synonym
<i>Nuphar</i> spp.	pond-lilies	
<i>Orthilia secunda</i>	one-sided wintergreen	
<i>Parnassia palustris</i>	northern grass-of-Parnassus	
<i>Pedicularis</i> sp.	lousewort	
<i>Peltigera</i> spp.	pelt lichens	
<i>Petasites frigidus</i>	arctic sweet coltsfoot	
<i>Picea glauca</i>	white spruce	
<i>Picea mariana</i>	black spruce	
<i>Plagiomnium</i> sp.	leafy moss	
<i>Platydictya jungermannioides</i>	thread-like willow-moss	
<i>Pleurozium schreberi</i>	red-stemmed feathermoss	
<i>Poa glauca</i>	glaucous bluegrass	
Poaceae	grasses	
<i>Polemonium pulcherrimum</i>	showy Jacob's-ladder	
<i>Polytrichum</i> spp.	haircap mosses	
<i>Populus balsamifera</i>	balsam poplar	
<i>Populus tremuloides</i>	trembling aspen	
<i>Potamogeton alpinus</i>	northern pondweed	
<i>Potamogeton friesii</i>	Fries' pondweed	
<i>Potamogeton pusillus</i>	small pondweed	
<i>Potentilla</i> spp.	cinquefoils	
<i>Potentilla pensylvanica</i>	Pennsylvania cinquefoil	
<i>Ptilium crista-castrensis</i>	knight's plume	
<i>Pyrola asarifolia</i>	pink wintergreen	
<i>Pyrola</i> sp.	wintergreen	
<i>Racomitrium</i> spp.	rock-mosses	
<i>Rhizomnium</i> spp.	leafy mosses	
<i>Rhododendron groenlandicum</i>	common Labrador tea	<i>Ledum groenlandicum</i>
<i>Rhododendron</i> spp.	Labrador teas	<i>Ledum</i> spp.
<i>Rhododendron tomentosum</i>	northern Labrador tea	<i>Ledum decumbens</i>
<i>Rhytidium rugosum</i>	crumpled-leaf moss	
<i>Ribes triste</i>	wild red currant	
<i>Rosa acicularis</i>	prickly rose	
<i>Rubus arcticus</i>	nagoonberry	
<i>Rubus chamaemorus</i>	cloudberry	
<i>Rubus idaeus</i>	red raspberry	
<i>Salix myrtilifolia</i>	blueberry willow	

Table A-8: Species list for ecosites of BOLkp (continued)

Scientific Name	Common Name	Cody synonym
<i>Salix</i> spp.	willows	
<i>Salix glauca</i>	grey-leaved willow	
<i>Salix planifolia</i>	tea-leaved willow	
<i>Salix lasiandra</i>	Pacific willow	
<i>Salix pseudomonticola</i>	false mountain willow	
<i>Salix alaxensis</i>	Alaska willow	
<i>Salix pulchra</i>	diamond-leaved willow	
<i>Saussurea angustifolia</i>	northern sawwort	
<i>Saxifraga tricuspidata</i>	prickly saxifrage	
<i>Shepherdia canadensis</i>	soapberry	
<i>Silene repens</i>	pink catchfly	
<i>Solidago simplex</i>	sticky goldenrod	
<i>Sphagnum</i> spp.	peat mosses	
<i>Sphagnum anjustifolium</i>	poor-fen peat moss	
<i>Sphagnum fuscum</i>	brown peat moss	
<i>Sphagnum capillaceum</i>	common red peat moss	
<i>Stereocaulon</i> spp.	foam lichens	
<i>Thalictrum sparsiflorum</i>	few-flowered meadowrue	
<i>Tomentypnum nitens</i>	golden fuzzy fen moss	
<i>Trichophorum cespitosum</i>	tufted clubrush	<i>Scirpus caespitosus</i>
<i>Umbilicaria</i> spp.	rocktripe lichens	
<i>Utricularia intermedia</i>	flat-leaved bladderwort	
<i>Utricularia</i> spp.	bladderworts	
<i>Vaccinium oxycoccus</i>	bog cranberry	<i>Oxycoccus microcarpus</i>
<i>Vaccinium uliginosum</i>	blueberry	
<i>Vaccinium vitis-idaea</i>	lowbush cranberry	
<i>Viburnum edule</i>	highbush cranberry	

Plant species combinations

In most vegetation tables in this guide, some species were combined for presentation purposes; these are presented in the following table. Combining species was necessary due to the resolution of the data; some plots had plant identifications to the species level, others only to the genus or family level. The combining was also done to help the users focus on the important differences; i.e., sometimes it is not as critical from an ecological perspective to know the species as it is to know the genus or family. The following combined species groups were generally used in the guide. Not all species would be present in any one ecosystem, but generally two or more species could be present. There are also some cases where in order to help with understanding and identification species in this table were not combined.

Table A-9: Combined plant names for the BOLkp

Combined name	Component species	Common name
<i>Aulacomnium/</i> <i>Tomentypnum</i>	<i>Aulacomnium palustre</i>	glow moss
	<i>Aulacomnium</i> sp.	groove moss
	<i>Tomentypnum nitens</i>	golden fuzzy fen moss
	<i>Tomentypnum</i> sp.	fen moss
<i>Betula neoalaskana</i>	<i>Betula neoalaskana</i>	Alaska paper birch
	<i>Betula papyrifera</i>	paper birch
<i>Salix</i> spp.	<i>Salix alaxensis</i>	Alaska willow
	<i>Salix arbusculoides</i>	little-tree willow
	<i>Salix barclayi</i>	Barclay's willow
	<i>Salix bebbiana</i>	Bebb's willow
	<i>Salix candida</i>	sage willow
	<i>Salix exigua</i>	narrow-leaf willow
	<i>Salix glauca</i>	grey-leaved willow
	<i>Salix interior</i>	sandbar willow
	<i>Salix lasiandra</i>	Pacific willow
	<i>Salix planifolia</i>	plane-leaved willow
	<i>Salix pseudomonticola</i>	serviceberry willow
	<i>Salix pulchra</i>	diamond-leaved willow
	<i>Salix scouleriana</i>	Scouler's willow
<i>Salix</i> sp.	willow	

Table A-9: List of species included in combined plant names for the BOLkp (con'd)

Combined name	Component species	Common name
Poaceae	<i>Agrostis scabra</i>	hair bentgrass
	<i>Arctagrostis latifolia</i>	polargrass
	<i>Bromus pumpellianus</i>	Pumpelly brome
	<i>Calamagrostis canadensis</i>	bluejoint reedgrass
	<i>Calamagrostis lapponica</i>	Lapland reedgrass
	<i>Calamagrostis purpurascens</i>	purple reedgrass
	<i>Calamagrostis</i> sp.	reedgrass
	<i>Calamagrostis stricta</i>	slimstem reedgrass
	<i>Deschampsia</i> sp.	hairgrass
	<i>Elymus</i> sp.	wildrye
	<i>Elymus trachycaulus</i>	slender wheatgrass
	<i>Elymus violaceus</i>	arctic wheatgrass
	<i>Festuca altaica</i>	Altai fescue
	<i>Festuca</i> sp.	fescue
	<i>Poa alpina</i>	alpine bluegrass
	<i>Poa arctica</i>	arctic bluegrass
	<i>Poa glauca</i>	glaucous bluegrass
	<i>Poa interior</i>	interior bluegrass
	<i>Poa palustris</i>	fowl bluegrass
	<i>Poa pratensis</i>	Kentucky bluegrass
<i>Poa</i> sp.	bluegrass	
<i>Trisetum spicatum</i>	spike trisetum	
Cetraria spp.	<i>Cetraria ericetorum</i>	Iceland moss
	<i>Cetraria islandica</i>	Iceland lichen
	<i>Flavocetraria cucullata</i>	curled snow lichen
	<i>Flavocetraria nivalis</i>	ragged paperdoll
	<i>Cetraria</i> / <i>Flavocetraria</i> sp.	Iceland lichen
Cladina spp.	<i>Cladina mitis</i>	green reindeer lichen
	<i>Cladina rangiferina</i>	grey reindeer lichen
	<i>Cladina</i> sp.	reindeer lichens
	<i>Cladina stellaris</i>	star reindeer lichen

Table A-9: List of species included in combined plant names for the BOLkp (con'd)

Combined name	Component species	Common name
Cladonia spp.	<i>Cladonia albonigra</i>	sordid pixie-cup
	<i>Cladonia amaurocraea</i>	quill clad
	<i>Cladonia borealis</i>	boreal pixie-cup
	<i>Cladonia botrytes</i>	stump soldiers
	<i>Cladonia cervicornis</i>	laddered pixie-cup
	<i>Cladonia chlorophaea</i>	mealy pixie-cup
	<i>Cladonia cornuta</i>	bighorn pixie-cup
	<i>Cladonia crispata</i>	organpipe lichen
	<i>Cladonia deformis</i>	lesser sulphur-cup
	<i>Cladonia ecmocyna</i>	orange-footed pixie-cup
	<i>Cladonia gracilis</i>	smooth clad
	<i>Cladonia phyllophora</i>	greater felt-soldiers
	<i>Cladonia pyxidata</i>	pebbled pixie-cup
	<i>Cladonia</i> sp.	clad lichens
	<i>Cladonia uncialis</i>	thorn clad
Dicranum spp.	<i>Dicranum fuscescens</i>	curly heron's-bill moss
	<i>Dicranum polysetum</i>	wavy-leaved moss
	<i>Dicranum scoparium</i>	broom-moss
	<i>Dicranum</i> sp.	heron's-bill moss
Peltigera spp.	<i>Peltigera aphthosa</i>	freckle pelt lichen
	<i>Peltigera canina</i>	dog lichen
	<i>Peltigera leucophlebia</i>	freckle pelt
	<i>Peltigera malacea</i>	apple pelt
	<i>Peltigera neopolydactyla</i>	greater frog pelt
	<i>Peltigera rufescens</i>	felt peltigera
	<i>Peltigera scabrosa</i>	toad pelt
	<i>Peltigera</i> sp.	pelt lichens
Polytrichum spp.	<i>Polytrichum commune</i>	common haircap moss
	<i>Polytrichum juniperinum</i>	juniper haircap moss
	<i>Polytrichum piliferum</i>	awned haircap moss
	<i>Polytrichum</i> sp.	haircap moss
	<i>Polytrichum strictum</i>	bog haircap moss

Table A-9: List of species included in combined plant names for the BOLkp (con'd)

Combined name	Component species	Common name
<i>Sphagnum</i> spp.	<i>Sphagnum angustifolium</i>	poor-fen peat-moss
	<i>Sphagnum capillifolium</i>	common red peat-moss
	<i>Sphagnum fuscum</i>	brown peat moss
	<i>Sphagnum girgensohnii</i>	common green peat-moss
	<i>Sphagnum magellanicum</i>	Magellanic peat-moss
	<i>Sphagnum rubellum</i>	red peat-moss
	<i>Sphagnum squarrosum</i>	shaggy peat
	<i>Sphagnum warnstorffii</i>	Warnstorf's peat-moss
	<i>Sphagnum</i> sp.	peat-moss
<i>Stereocaulon</i> spp.	<i>Stereocaulon</i> spp.	foam lichens
	<i>Stereocaulon tomentosum</i>	woolly foam lichen

Table A-10: Codes for soil orders, great groups and subgroups

Codes for soil orders, great groups and subgroups likely found in the Boreal Low Zone and which may be mentioned in this guide are listed here. The list is compiled from Soil Classification Working Group (SCWG 1998).

Brunisolic Order (B)**Melanic Brunisol MB**

Orthic O.MB
Eluviated E.MB
Gleyed GL.MB
Gleyed Eluviated GLE.MB

Eutric Brunisol EB

Orthic O.EB
Eluviated E.EB
Gleyed GL.EB
Gleyed Eluviated GLE.EB

Sombric Brunisol SB

Orthic O.SB
Eluviated E.SB
Duric DU.SB
Gleyed GL.SB
Gleyed Eluviated GLE.SB

Dystric Brunisol DYB

Orthic O.DYB
Eluviated E.DYB
Duric DU.DYB
Gleyed GL.DYB
Gleyed Eluviated GLE.DYB

Chernozemic Order (CH)**Brown Chernozem BC**

Orthic O.BC
Rego R.BC
Calcareous CA.BC

Dark Brown Chernozem DBC

Eluviated E.DBC
Gleyed GL.DBC
Gleyed Rego GLR.DBC
Gleyed Calcareous GLCA.DBC
Gleyed Eluviated GLE.DBC

Black Chernozem BLC

Orthic O.BLC
Rego R.BLC
Calcareous CA.BLC
Eluviated E.BLC
Gleyed GL.BLC
Gleyed Rego GLR.BLC
Gleyed Calcareous GLCA.BLC
Gleyed Eluviated GLE.BLC

Cryosolic Order (CY)**Turbic Cryosol TC**

Orthic Eutric OE.TC
Orthic Dystric OD.TC
Brunisolic Eutric BRE.TC
Brunisolic Dystric BRD.TC
Histic Eutric HE.TC
Histic Dystric HD.TC
Histic Regosolic HR.TC
Regosolic R.TC
Gleysolic GL.TC

Static Cryosol SC

Orthic Eutric OE.SC
Orthic Dystric OD.SC
Brunisolic Eutric BRE.SC
Brunisolic Dystric BRD.SC
Histic Eutric HE.SC
Histic Dystric HD.SC
Histic Regosolic HR.SC
Gleysolic Static Cryosol GL.SC
Regosolic Static Cryosol R.SC

Organic Cryosol OC

Fibric FI.OC
Mesic ME.OC
Humic HU.OC
Terric Fibric TFI.OC
Terric Mesic TME.OC
Terric Humic THU.OC
Glacic GC.OC

Table A-10: Codes for soil orders, great groups and subgroups (continued)

Gleysolic Order (G)

Luvic Gleysol LG

Humic HU.LG
Fera FE.LG
Orthic O.LG

Humic Gleysol HG

Fera Humic FE.HG
Orthic Humic O.HG
Rego Humic R.HG

Gleysol G

Fera FE.G
Orthic O.G
Rego R.G

Luvisol Order (L)

Gray Luvisol GL

Orthic O.GL
Brunisol BR.GL
Gleyed GL.GL
Gleyed Brunisol GLBR.GL

Organic Order (O)

Humisol H

Typic TY.H
Fibric FI.H
Mesic ME.H
Limnic LM.H
Cumulic CU.H
Terric T.H
Terric Fibric TFI.H
Terric Mesic TME.H
Hydric HY.H

Folisol FO

Hemic HE.FO
Humic HU.FO
Lignic LI.FO
Histic HI.FO

Fibrisol F

Typic TY.F
Mesic ME.F
Humic HU.F
Limnic LM.F
Cumulic CU.F
Terric T.F
Terric Mesic TME.F
Terric Humic THU.F
Hydric HY.F

Mesisol M

Typic TY.M
Fibric FI.M
Humic HU.M
Limnic LM.M
Cumulic CU.M
Terric T.M.
Terric Fibric TFI.M
Terric Humic THU.M
Hydric HY.M

Podzolic Order (P)

Humo-Ferric Podzol HFP

Orthic O.HFP
Sombric SM.HFP
Luvisol L.HFP
Gleyed GL.HFP
Gleyed Sombric GLSM.HFP

Regosolic Order (R)

Regosol R

Orthic O.R
Cumulic CU.R
Gleyed GL.R
Gleyed Cumulic GLCU.R

Humic Regosol HR

Orthic O.HR
Cumulic CU.HR
Gleyed GL.HR
Gleyed Cumulic GLCU.HR

Table A-11: Soil horizon codes and modifiers

Codes	Major soil horizons and modifiers
L	An upland horizon consisting of relatively fresh organic residues that are readily identifiable as to origin.
F	<p>An upland horizon comprised of partly decomposed plant residues in which fragmented plant structures are generally recognizable as to origin.</p> <p>Fm–(mycogenous): an F horizon in which plant residues are aggregated in a matted structure, with a tenacious consistence. The matted tenacious fabric typically features a felty character due to abundant fungal mycelia. Roots may be abundant contributing to the formation of the matted fabric.</p> <p>Fz–(zoogenous): an F horizon in which plant residues are weakly aggregated with a loose or friable consistency. The friable fabric reflects the presence of active populations of soil meso- and microfauna. Faunal droppings are typically numerous and easily observed under magnification with a hand lens or binocular microscope. Fungal mycelia may be present, but rarely in large amounts. Root residues comprise a moderate proportion of plant residues and are typically less abundant than in Fm horizons (Babel 1975).</p> <p>Fa–(amph*): an F horizon in which plant residues are aggregated in a weak to moderate, noncompact matted structure. This is an intergrade between the Fm and Fz horizons, and as such, reflects properties of both.</p>
H	<p>An upland horizon comprised of well-decomposed plant residues in which plant structures are generally not recognizable.</p> <p>Hh–H horizon dominated by fine substances with few, if any, recognizable plant residues.</p> <p>Hr–H horizon dominated by fine substances but that also contains recognizable fine roots, wood or bark or other plant residues.</p> <p>Hz–H horizon dominated by fine substances with very few, if any, recognizable plant residues; faunal droppings constitute most of the fabric.</p>
O	<p>A wetland organic horizon comprised of materials in varying degrees of decomposition.</p> <p>Of–O horizon that consists largely of fibric material that are readily identifiable as to botanical origin. Contains more than or equal to 40% rubbed fibre by volume. Von Post scale of decomposition (VP) =1-4.</p> <p>Om–O horizon that consists of mesic material, intermediate in composition between fibric and humic materials. Rubbed fibre content ranges from 10-40%. VP=5-6.</p> <p>Oh–O horizon that consists of humic material at an advanced stage of decomposition. Rubbed fibre content is <10%. VP= 7-10.</p>
A	Mineral horizon, containing <17% organic C by mass, that has formed at or near the soil surface in the zone of leaching or eluviation of organic materials in solution or suspension (Ae), or of maximum in situ accumulation of organic matter (Ah), or both.
B	Mineral horizon characterized by enrichment in organic matter, sesquioxides, or clay; or by the development of soil structure; or by a change of colour denoting hydrolysis, reduction, or oxidation.
C	Mineral horizon comparatively unaffected by the pedogenic processes operative in the A and B horizons, except the process of gleying (Cg), and the accumulation of calcium and magnesium carbonates (Cca) and more soluble salts (Cs, Csa).

Table A-11: Soil horizon codes and modifiers (continued)

Codes	Mineral Horizon Modifiers
b	Buried soil horizon ¹
e	Horizon characterized by the eluviation of clay, Fe, Al, or organic matter alone or in combination.
g	Horizon characterized by grey colours, or prominent mottling, or both, which indicates of permanent or periodic intense reduction. Chromas of the matrix are generally one or less. It is used with the Aeg, Bg, Bfg, Bgf, Bhfg, Btg, Cg, Ckg codes and others. When used with the Ae, Bf, Bhf, and Bt codes, the limits set for the other modifiers must be met. The Bgf horizons are usually prominently mottled; more than half of the soil material occurs as mottles of high chroma. The Bgf horizons occur in Fera Gleysols and Fera Humic Gleysols and possibly below the Bfg of gleyed Podzols.
h	Horizon enriched with organic matter. It is used with the Ah, Ahe, Bh, and Bhf codes. Ah - An A horizon enriched with humified organic matter; at least one colour value unit lower than the underlying horizon, or 0.5% more organic C than the C horizon or both.
j	Used with e, f, g, n, and t to denote an expression of, but failure to meet, the specified limits of the letter code it modifies. It is placed to the right of the letter it modifies.
k	Denotes the presence of carbonate as indicated by visible effervescence when a dilute HCl solution is added.
m	Horizon slightly altered by hydrolysis, oxidation, or solution, or all three to give a change in colour or structure, or both. It is used with the Bm, Bmgj, Bmk, and Bms codes. It has: <ol style="list-style-type: none"> Evidence of one of or more of the following: <ul style="list-style-type: none"> • higher chromas and redder hues than the underlying horizons; • enrichment or complete removal of carbonates either as Bmk or Bm; and/or • change in structure from that of the original material. Illuviation too slight to meet requirements of a Bt or podzolic B. No cementation or induration and lacks a brittle consistence when moist.
s	Horizon with salts, including gypsum, which may be detected as crystal or veins, or as surface crusts of salt crystals. It is used with any combination of horizon codes.
sa	Horizon >10 cm thick with secondary enrichment of salts more soluble than Ca and Mg carbonates; the concentration of salts exceeds that in the unenriched parent material.
y	Horizon affected by cryoturbation. It is used with any combination of horizon codes. ¹
z	A frozen layer, it may be used with any horizon or layer code. ¹

1. This may also be used with organic horizons.

These are soil codes and modifiers used in this guide and in the keys. A complete list of soil horizons is available in the *Field Manual for Describing Yukon Ecosystems* (2017) and Soil Classification Working Group (1998).

The von Post scale of decomposition (for wetland O horizons)

Peats are classified on the basis of their degree of decomposition (or aging). This indicates the layer they came from: a young peat is taken from nearer the surface, rather than from farther down. The von Post scale classifies peat decomposition from 1 (completely undecomposed, with all plant tissues identifiable) to 10 (completely humified with little or no plant tissue identifiable).

Squeeze a sample of the O horizon between your fingers and observe the colour of the solution that is squeezed out, the nature of the fibre, and the proportion of the original sample that remains in your hand. Record the class on the form, using Table A-12 for reference.

Table A-12: von Post scale of decomposition

Code/Class	Description
1	Undecomposed; plant structure unaltered; yields only clear water that is coloured light yellow-brown
2	Almost undecomposed; plant structure distinct; yields only clear water that is coloured light yellow-brown
3	Very weakly decomposed; plant structure distinct; yields distinctly turbid brown water, no peat substance passes between the fingers, residue not mushy
4	Weakly decomposed; plant structure distinct; yields strongly turbid water, no peat substance escapes between the fingers, residue rather mushy
5	Moderately decomposed; plant structure evident, but becoming indistinct; yields much turbid brown water, some peat escapes between the fingers, residue very mushy
6	Strongly decomposed; plant structure somewhat indistinct, but more evident in the squeezed residue than in the undisturbed peat; about one-third of the peat escapes between the fingers, residue strongly mushy
7	Strongly decomposed; plant structure indistinct, but recognizable; about one-half of the peat escapes between the fingers
8	Very strongly decomposed; plant structure very indistinct; about two-thirds of the peat escapes between the fingers, residue almost entirely resistant remnants such as root fibres and wood
9	Almost completely decomposed; plant structure almost unrecognizable; nearly all the peat escapes between the fingers
10	Completely decomposed; plant structure unrecognizable; all the peat escapes between the fingers

