Yukon

Liard hyland subzone (BOLlh): A field guide to ecosite identification

BOREAL LOW ZONE OF YUKON

Part 4: Liard hyland subzone (BOLlh)

A Field Guide to Ecosite Identification

Yukon

Liard Hyland Boreal Low Subzone (BOLlh): A Field Guide to Ecosite Identification

Part 4: Liard Hyland Boreal Low Subzone (BOLlh)

Karen McKenna

Del Meidinger

ISBN: 978-1-55362-931-3

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. Parts 2 and 3 contain ecosite description chapters for the Southern Lakes and Klondike Plateau Boreal Low Subzones as well as appendices.

Citation

Government of Yukon. 2026. Liard Hyland Boreal Low Subzone (BOLlh): A Field Guide to Ecosite Identification. Part 4 Boreal Low Zone Series. Department of Environment, Government of Yukon.

Authors' Affiliation

Karen McKenna, Cryogeographic Consulting
Whitehorse, Yukon

Del Meidinger, Meidinger Ecological Consultants Ltd.
Victoria, B.C.

Copies of this report, including a digital version, are available:
Ecological and Landscape Classification (ELC) Program
Fish and Wildlife Branch, Department of Environment, Government of Yukon
Box 2703 (V-5),
Whitehorse, Yukon Y1A 2C6
elc@yukon.ca

For more information on the ELC program and other publications, visit www.yukon.ca/elc.

Contents

List of figures

List of tables

Acknowledgments

This guide is the result of the efforts of many individuals — those who had a vision of an ecological framework for use in the Yukon; those who collected the data on which the guide is based; and those who helped with various aspects of the guide conceptualization, ecological analysis and production. The authors greatly appreciate the contributions of all these individuals.

Ecological field sampling in the ecoregions of the Liard-Hyland 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 1978 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 Yukon Renewable Resources in the Yukon Southern Lakes (1980) and Coal River Springs (1983).

Many individuals collected data that greatly contributed to developing the guide for this region including: Catherine Kennedy, Charlotte Mougeot, Chris Zoladeski, Jennifer Staniforth, John Grods, John Meikle, Karen McKenna, Rhonda Rosie, Scott Smith, Sherri Elwell, Val Loewen and others.

Identification and verification of vascular plants was conducted by W.J. (Bill) Cody, Bruce Bennett, Jennifer Line, Lori Schroeder and Rhonda Rosie; non-vascular plants were identified by Trevor Goward (lichens) and Terry McIntosh (mosses).

The classification published in this guide is based on analyses of data collected at more than 1000 sites in the Liard-Hyland region by a variety of sources. This classification dataset was harmonized with the Yukon Biophysical Inventory System (YBIS) as well as additional data from numerous sources; Russell Klassen contributed to the database development. This guide benefited from the Government of Yukon's forest management branch and Cory Chouinard for their insight and input on the forested ecosystems. NRCan colleagues Ken Baldwin and Kim Chapman, as well as Del Meidinger, and Karen McKenna assisted in the development of Yukon vegetation associations compatible with the Canadian National Vegetation Classification (CNVC), which are incorporated into this guide. Stuart Alexander and Richard Legner contributed to the development and maintenance of YBIS. Data was exported from YBIS to British Columbia Ministry of Forests' VPRO 64 (Mckenzie and Klassen 2009) for analysis.

Copy editing and guide layout and design were completed by Anthony Francis. Project management by Nadele Flynn and Mitch Heynen. We thank Denise Gordon and Carrie McClelland for their thorough review of

the guide.

We would like to acknowledge the Departments of Environment and Energy, Mines and Resources and Government of Yukon for core funding to produce this ecosite field guide. We thank current and past members of the ELC Supervisory Committee (Kirstie Simpson, Karen Clyde and Jeff Bond) for their guidance and support.

1.0 LIARD HYLAND BOREAL LOW SUBZONE (BOLlh)

1.1 Description

The Liard Hyland Boreal Low (BOLlh) bioclimate subzone is located in the southeast Yukon (Figure 1-1), along the border with British Columbia, east of the BOLsl subzone.

The climate is continental with hot summer temperatures and cold winters. Rainfall and snow depth are moderate for the Yukon. The Boreal High bioclimate zone (BOH), which lies above the BOLlh, is currently mapped at greater than 1000 metres asl in the Liard plain lowering to 950 metres asl in the more northern valleys. Individual sites below those elevations may be better described by boreal high ecosites.

The BOLlh occupies the Liard Basin ecoregion of southeast Yukon, the southern and lower elevations of the Hyland Plateau Ecoregion and the valleys of the Nisutlin and Wolf rivers in the Southern Lakes Ecoregion. The Liard Basin is a broad upland plain that drains south and east to the Liard River which then flows north to the Beaufort Sea via the Liard and MacKenzie rivers. The Hyland Plateau area consists of similar rolling to dissected terrain, slightly higher in elevation than the Liard Basin and is the headwaters for several rivers of the BOLlh. The rolling glaciated terrain consists of morainal deposits interspersed with small streams, wetlands and dissected by a few larger rivers (Hyland, Coal and Beaver). The Nisutlin River and Wolf River watersheds, nestled between the Pelly and Cassiar mountains, are moist and therefore more similar to the BOLlh than the adjacent BOL Southern Lakes (BOLsl) to the west.

Forests of the BOLlh are characterized by mixed-wood stands of black spruce (*Picea mariana*), white spruce (*Picea glauca*), lodgepole pine (*Pinus contorta*), trembling aspen (*Populus tremuloides*), balsam poplar (*Populus balsamifera*), Alaska paper birch (*Betula neoalaskana*) and paper birch (*Betula papyrifera*). These species are present throughout the area, although paper birch is more frequent in the eastern portion and balsam poplar is more frequent on river floodplains and disturbed sites. Subalpine

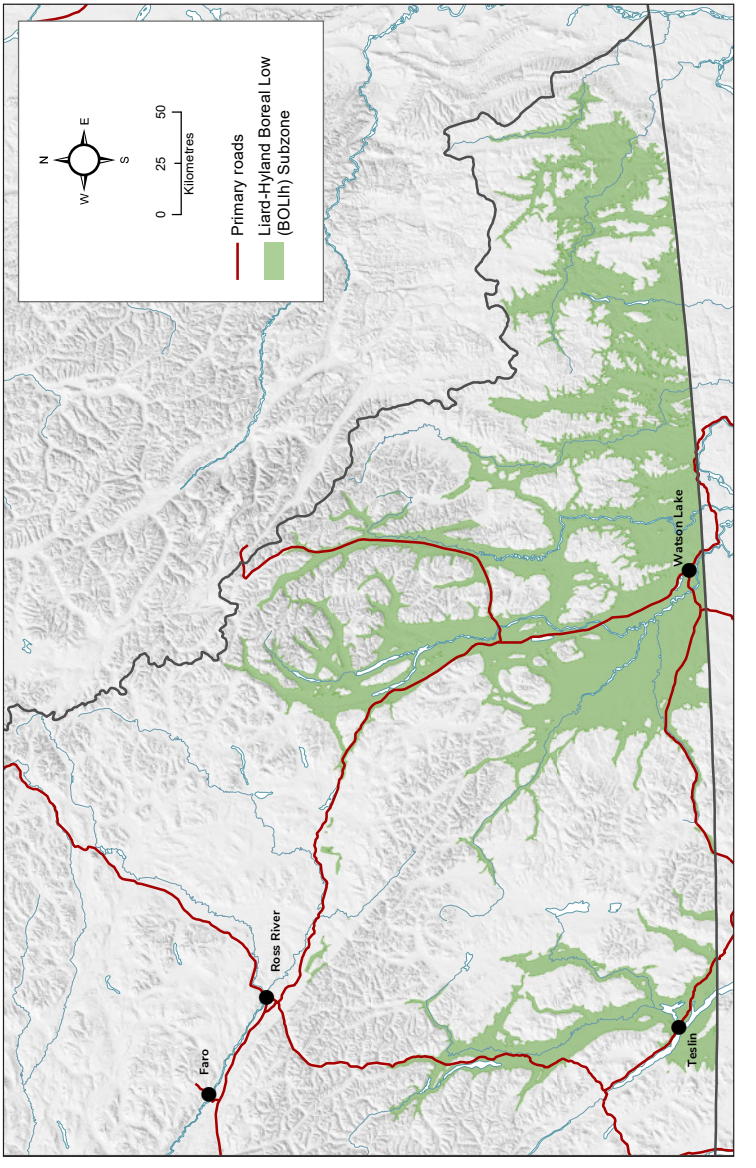


Figure 1-1. Distribution of the Liard Hyland Boreal Low Subzone (BOLlh)

fir (*Abies lasiocarpa*) can occur with moderate abundance in stands over 800 metres but also occurs occasionally with a low to sparse cover at lower elevations. It is more common on moister sites and may also be a late successional species on sites that have not been completely burned recently. Larch (*Larix laricina*) occurs in some wetlands and occasionally on moist sites.

Deciduous shrubs common on upland sites include green alder (*Alnus alnobetula*), prickly rose (*Rosa acicularis*), highbush cranberry (*Viburnum edule*), soapberry (*Shepherdia canadensis*), common Labrador tea (*Rhododendron groenlandicum*), blueberry (*Vaccinium uliginosum*) and willows, particularly Scouler's willow (*Salix scouleriana*). River alder (*Alnus incana*) and red osier dogwood (*Cornus sericea*) are more common on floodplains, along with prickly rose and highbush cranberry. Common wetland shrubs include common Labrador tea, shrub birch (*Betula glandulosa*) and various willows. Tea-leaved willow (*Salix planifolia*) is common in wetlands in the western part of the subzone but is not found in plots east of Hyland River.

Understorey herbs vary considerably but a few that characterize this subzone when compared to subzones to the west and north are naked mitrewort (*Mitella nuda*), dwarf raspberry (*Rubus pubescens*), and a greater predominance of wild strawberry (*Fragaria virginiana*) and bunchberry (*Cornus canadensis*) than further west. These species are also common in BOL Liard River (BOLlr), a small subzone in extreme southeast Yukon. Although bunchberry occurs in other subzones, it is particularly abundant here. Other common upland herbs are bastard toadflax (*Geocaulon lividum*), pink wintergreen (*Pyrola asarifolia*), and tall bluebells (*Mertensia paniculata*). Horsetails (*Equisetum arvense*, *E. pratense*, and *E. variegatum*) characterize fluvial sites.

Due to higher rainfall in southeast Yukon than in the BOL Southern Lakes (BOLsl), BOL Klondike Plateau (BOLkp) and BOL Yukon Central (BOLyc), grasslands are not typical of steep south facing slopes.

Wetlands include many fens, bogs and swamps, occupying depressions between rolling till ridges and on margins of small lakes. Swamps, marshes and shallow water ecosites are common on floodplains of the larger rivers. Peat accumulation is significantly higher than in the drier Southern Lakes subzone to the west, due to the higher rainfall.

Upland soils are commonly acidic Dystric Brunisols, or Eluviated Eutric Brunisols, which are characteristic of areas with higher rainfall. Soils also include some Luvisols and Podzols, more frequently than in other parts of the BOL due to the relatively warm moist climate. Sporadic permafrost can be found in this subzone, generally associated with cold peaty and organic soils. Studies have shown that the permafrost in this region is very

close to zero degrees and some areas are showing degrading permafrost and thermokarst subsidence associated with higher mean annual temperatures (Bellehumeur-Genier, Olivier 2016; James et al. 2013).

1.2 Distinguishing BOLlh from adjacent zones/ subzones

Boreal Low Southern Lakes (BOLsl) Subzone

- West of the BOLlh.
- Less precipitation, both rainfall and snow depth are lower, being in the rain shadow of the Coast Mountains.
- Very little subalpine fir.
- Larch is rare and black spruce is much less frequent.
- Circum-mesic sites with less green alder, Labrador tea and bunchberry; more frequent soapberry and kinnikinnick.
- Upland soils are dominated by Orthic Eutric Brunisols with few Eluviated subgroups or Dystric great groups.
- Wetlands have much less peat accumulate; salt affected wetlands present.

Boreal Low Liard River (BOLlr) Subzone

- East of the BOLlh.
- Occupies the extreme, southeast corner of the Yukon.
- Higher precipitation.
- Greater presence of wild sarsaparilla (*Aralia nudicaulis*), and other south-east species such as red osier dogwood (*Cornus sericea*), naked miterwort (*Mitella nuda*), and dwarf raspberry (*Rubus pubescens*).
- Subzone is characterized by presence of oak fern (*Gymnocarpium dryopteris*) and devil's club (*Oplopanax horridus*), although they are not common on landscape.

Boreal High (BOH) Zone

- Generally higher rainfall and snowfall than in the lower elevation BOL.
- Significantly more fir in the forest canopy. Dense fir may be found on all aspects at greater than about 980 m. This may start as low as 850 m in some places.
- Significantly less black spruce in BOH.

- Shrub birch increases in abundance on upland sites and is a common dominant species on non-treed sites.

1.3 Ecological classification in the Southern Lakes area

Over 1000 plots were determined to be in BOLlh. Upon analysis, 976 plots were assigned to ecosites and associations; 15 plots were deemed to be in BOH; the other 67 plots were considered to be of poor quality, had strongly conflicting described characteristics, or were from recent logging. Plots were analysed from the following projects.

Project*	Year	# of plots
331 Southern Lakes Resource Inventory (YBI)	1980	19
343 Coal River springs Biophysical Inventory (YBI)	1983	26
389 Blind Lake (CWS)	2003	6
391 Watson Lake biophysical Inventory (YGS)	2004	127
392 Watson Lake regional biophysical Inventory (YBI)	2004	1
396 Ecological Landscape Classification Training(YBI)	2012	8
398 Ecological Landscape Classification (YBI)	2012	6
409 Oswald and Senyk (1976)	1976	59
410 Oswald and Senyk (1977)	1977	75
411 Oswald and Senyk (1978)	1978	8
432 Muskwa Plateau (CWS)	1998	5
435 Coal River Watershed Wildlands (CPAWS and YBI)	1995	14
502 Beaver River Ecosystems (CPAWS)	2000	5
503 Beaver River Ecosystems (CWS)	1997	4
519 Nisutlin Delta (CWS)	1983	40
528 Oswald and Senyk	1980	36
529 Oswald and Senyk	1981	25
534 Southeast Yukon Ecosystem classification (YFM)	1994, 1995	213
535 South Central Yukon Broad Ecosystem Classification (YFM)	1998	21
549 BOL YC Field Guide (YBI)	2015	12
562 Larsen Lake and Upper Whitefish River (YBI)	1999	7
591 Nisutlin Delta (CWS)	1998	34
599 Boreal Low Liard-Hyland (YBI)	2018	20
603 Nisutlin River Delta National Wildlife area (CWS)	2018	94
604 Frances Lake (Rhonda Rosie)	1982-1998	49
605 Wetland RCA (YBI)	2018	61

*Yukon Biophysical Inventory
*Canadian Wildlife Service
*Canadian Parks and Wilderness Society
*Yukon Forest Management

There are a significant number of plots in the Liard Basin, many of these are close to the town of Watson Lake. There are numerous plots on the Nisutlin River delta. Though plots in the Hyland plateau area are sparse, they are well distributed geographically and contain a significant number of wetland plots. They may also include some thermal spring data, which is not specifically identified in the data base.

The following table shows the data availability for plots found in the Liard Hyland bioclimate subzone.

Total plots	With SMR	With SNR	With soil classification	>5%Tree layer cover	SMR => 6	Drainage = I-P-VP*
976	648	280	244	626	255	197
percent	66	29	25	64	26	20

* Drainage codes: imperfect (I), poor (P), very poor (VP)

The table above illustrates some of the limitations of the VPRO classification for the BOLIh subzone. Site information such as soil moisture (SMR), nutrient status (SNR) and drainage is lacking from many plots and some SMR was assessed in office from recorded site conditions. Site variables such as aspect are also lacking from many plots. Soil information is available for 25 per cent of the plots. In addition, when soil and environmental information is collected it may be very limited, inconsistent or incomplete. Few photographs are available in the data base.

Other limitations are also present. Many vascular plants are only identified to the genus level, not the species. Even more commonly, non-vascular plants may be identified as bryophytes with no indication of species or genus. This lack of data limits the capability to differentiate between ecosites and to fully describe the ecosites. Different projects used different criteria for recording the percent cover of each species. This inconsistency made comparison between plots difficult.

In some cases, the characterization of the vegetation conditions within ecosites is based on limited data, and some vegetation conditions may not have been sampled at all (e.g., vegetation after disturbances on some ecosites). Little information is available to assess the history at a given site. It is possible that users will encounter vegetation conditions that do not match the vegetation characterized for an ecosite in this guide. In such situations, the site and soils factors should receive stronger weighting in the identification of the ecosite.

Additional soil information including detailed soil descriptions and lab analysis (Smith unpublished) has been used to characterize the soils for different ecosites. However, only general plant species lists are associated with this data.

2.0 ECOSITES OF THE BOLlh

The ecosites are organized into three major ecological groups to assist with their identification. The wetland ecosites are further organized into the five major wetland classes:

1. Dry to moist ecosites
2. Floodplain ecosites
3. Wetland ecosites
    a. Bog ecosites (B)
    b. Fen ecosites (F)
    c. Swamp ecosites (S)
    d. Marsh ecosites (M)
    e. Shallow water ecosites (W)

The BOLlh ecosites and wetland classes are displayed on an edatopic grid (Figure 1-2) which illustrates their relationship to each other based on relative soil nutrient and moisture regimes.

The ecosites are also listed in Table 1-1, along with their codes and names.

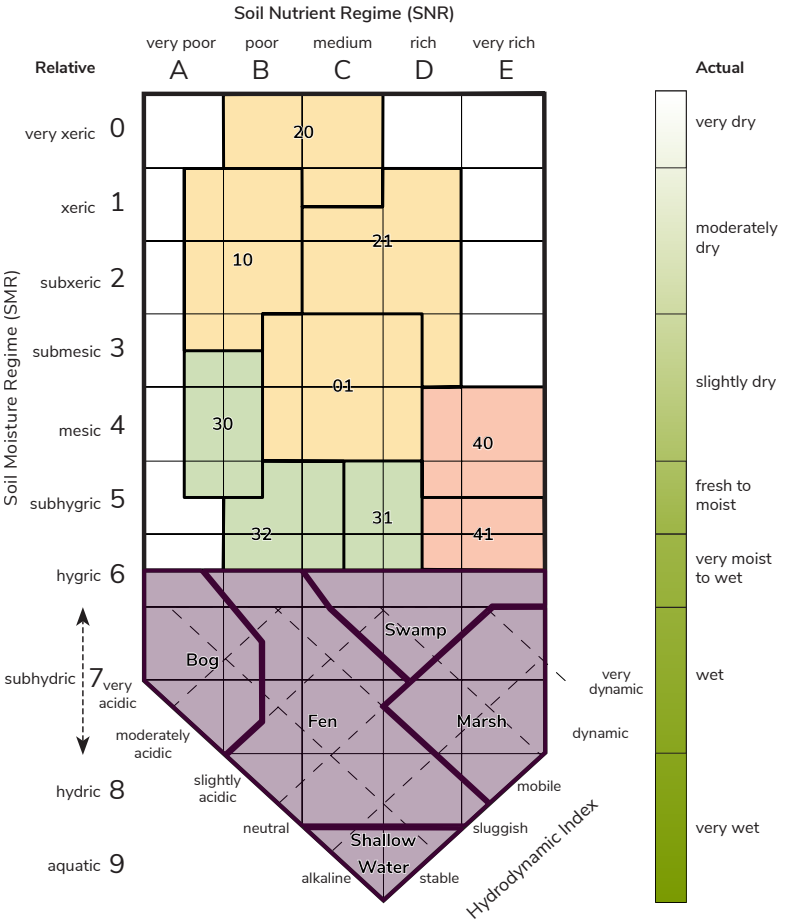


Figure 1-2. Edatopic grid for BOLIh ecosites

Table 1-1. Names and codes of ecosites

Ecosite	Ecosite grouping and name
	DRY TO MESIC ECOSITES
01	PSA – Feathermoss forest
10	PS – Lichen woodland
21	A – Soapberry – Rose woodland
	MESIC TO MOIST ECOSITES
30	PSb – Labrador tea forest
31	SbSw – Willow forest
32	Sb – Labrador tea – Blueberry forest
	RIPARIAN ECOSITES
40	Sw – Riparian forest
41	B – Riparian forest
	WETLAND ECOSITES
	BOG
B02	SbL – Leatherleaf – Peat moss bog
B03	Sb – Labrador tea – Peat moss bog
B04	Sb – Lichen bog
B05	SbL – Peat moss bog
B07	Labrador tea – Peat moss bog
	FEN
F01	Water sedge fen
F02	Shrub birch Fen
F03	Willow – Water sedge fen
F04	SbSw – Water sedge fen
F07	Leatherleaf – Peat moss fen
F11	Clubrush – Sedge Gen
F12	Lesser panicled sedge fen
F13	Water horsetail – sedge fen
F14	SbL – Water sedge fen
F15	Mud Sedge – Bog buckbean fen
	SWAMP
S07	Sb – Labrador tea – Peat moss swamp
S08	SbSw – Red bearberry – Brown moss swamp
S09	Sw – Shrub birch – Grass swamp
	SWAMP CONTINUED
S10	SbSw – Shrub birch – Feathermoss – Brown moss swamp
S11	SbSw – Leatherleaf – Peat moss swamp
S13	Sw – Willow – Horsetail swamp
S14	SbL – Brown moss swamp
S15	Sb – Alder – Labrador tea – Peat moss swamp
S18	FSw – Peatmoss – Feathermoss swamp
S01	Willow – Bluejoint swamp
S02	River alder swamp
S03	Willow – Water sedge swamp
S04	Willow – Horsetail swamp
S06	Willow – Shrub birch – Peat moss swamp
S12	Sweet Gale – Willow swamp
	MARSH
M01	Beaked Sedge – Water sedge marsh
M02	Water horsetail marsh
M05	Creeping spike-rush marsh
M06	Mannagrass marsh
M07	Least spike-rush marsh
M09	Bulrush Marsh
M10	Reedgrass Marsh
M11	Tufted hairgrass marsh
M12	Russet sedge – Water horsetail marsh
M13	Bluegrass – Northern arrowhead marsh
M16	Hair bentgrass marsh
	SHALLOW WATER
W02	Sago pondweed shallow water
W04	Mare's-tail shallow water
W05	Northern arrowhead shallow water
W06	Pondweed shallow water
W07	Hornwort shallow water
W09	Pond-lily shallow water
W10	Water-milfoil shallow water
W11	Burreed shallow water
W12	Giant water moss shallow water

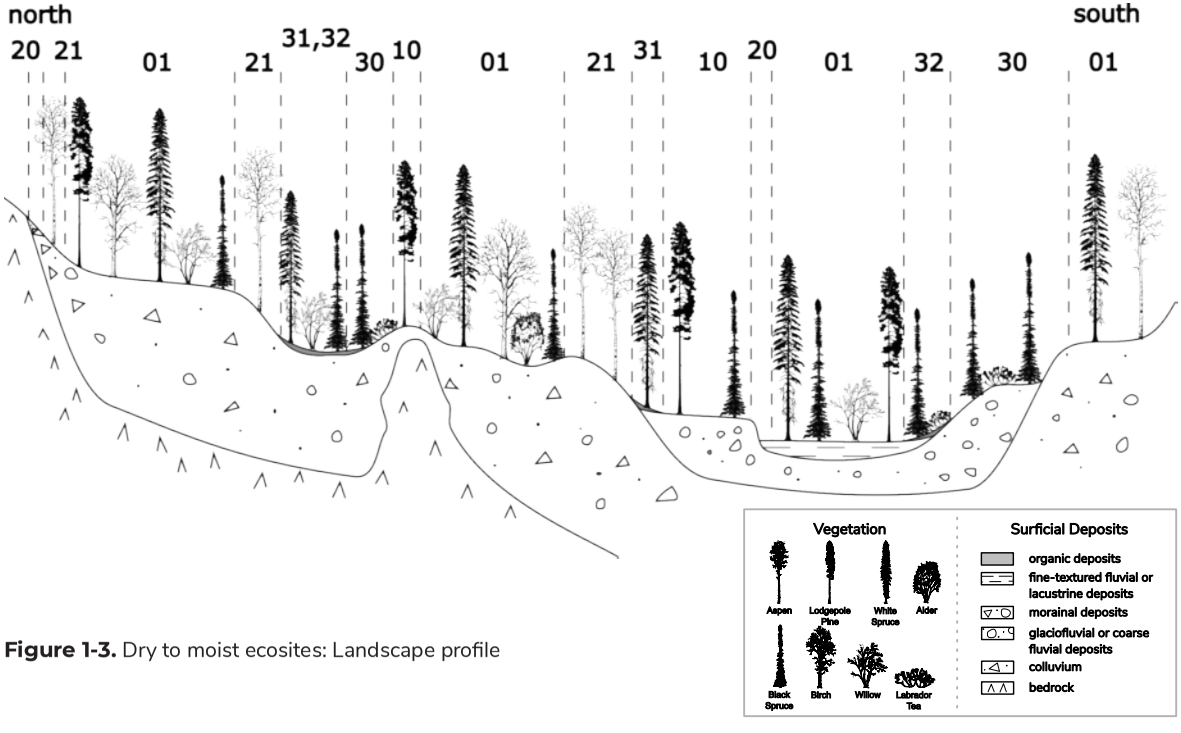


Figure 1-3. Dry to moist ecosites: Landscape profile

Dry to mesic ecosites Ecosite identification table

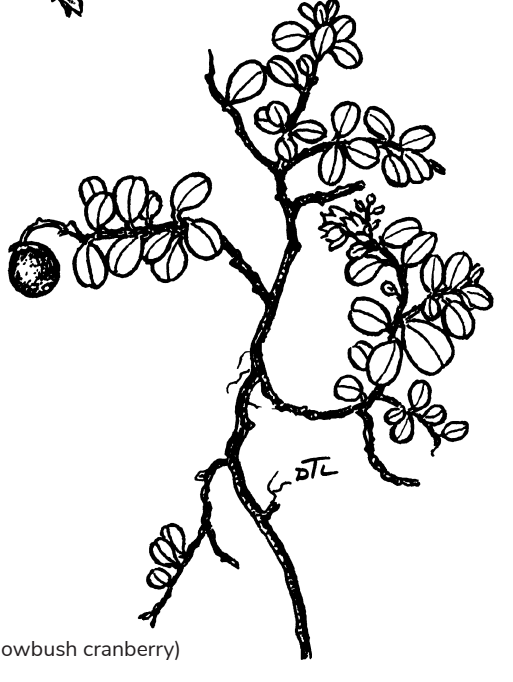
Dry to mesic ecosites		Moisture	Site/soils	Overstorey/shrubs	Ground cover
10	PS – Lichen woodland	SMR= 1-3 Drainage= A-B	poor and dry sites; often coarse textured or shallow to bedrock; soils usually Orthic, Eluviated, Duric or Dystric Brunisols, sometimes Eutric Brunisols	open pine, or pine with black and/or white spruce; sometimes with larch; Labrador tea absent to high cover, otherwise shrub cover is low	lichen, kinnikinnick and/or lowbush cranberry dominate with moderate to high cover; moss cover absent to moderate.
20	Juniper – Kinnikinnick Shrub	SMR= 0-1 Drainage= B-C	steep to extremely steep dry colluvial or bedrock controlled slopes	open to sparse juniper shrub, sometimes with pine or spruce individuals, rose or soapberry	kinnikinnick, with sparse grass and a variety of forbs such as anemone, northern bedstraw or goldenrod
21	A – Soapberry – Rose woodland	SMR= 1–3 Drainage= C-D	warm and richer sites; level to steep slopes; soils Orthic and Eluviated Dystric or Eutric Brunisols	aspen woodland; pine and white spruce often part of canopy; moderate to high shrub cover of soapberry, prickly rose, highbush cranberry, alder, or willow	low to high cover of kinnikinnick, twinflower, and lowbush cranberry; herbs common; moss cover usually low but may be moderate to high
01	PSA – Feathermoss forest	SMR= 3-4 Drainage= C-D	medium moisture and nutrient sites; soils are Orthic and Eutric Brunisols, or Luvisols	open to closed forests, usually of mixed species including spruce, pine, Alaska/paper birch and/or aspen; subalpine fir may occur; low to moderate shrub cover of alder, soapberry, rose, or highbush cranberry	step moss and red-stemmed feathermoss dominate ground cover; twinflower, lowbush cranberry and bunchberry also characteristic

Dry to mesic ecosites Vegetation table

	Ecosite	10	20	21	01	
Stratum	No. of plots	77	2	38	211	
Tree layer	*Picea glauca*	■■■	■■	■■■	■■■■	white spruce
	Picea mariana	■■■			■■■	black spruce
	Pinus contorta	■■■■■	■	■■■	■■■■	lodgepole pine
	Populus tremuloides	□□		■■■■■	□□□	trembling aspen
Shrub layer	*Alnus viridis*			□□□	■■■■	green alder
	Juniper communis		■■■■			common juniper
	Rhododendron groenlandicum	■■■			■■	common Labrador tea
	Rosa acicularis	□	■	■■■	■■	prickly rose
	Salix myrtifolia					blueberry willow
	Salix spp.	■■		■■■	■■	willows
	Shepherdia canadensis	□	■■	■■■■		soapberry
	Vaccinium uliginosum	□□				blueberry
	Viburnum edule			■■■	□□	highbush cranberry
Ground shrub layer	*Arctostaphylos uva-ursi*	■■	■■■■■	■■■■		kinnikinnick
	Arctous rubra					red bearberry
	Empetrum nigrum					crowberry
	Linnaea borealis	□□		■■■	■■	twinflower
	Vaccinium vitis-idaea	■■■■		■■■	■■■	lowbush cranberry
Forb layer	*Chamaenerion angustifolium*	□		■■	□	fireweed
	Cornus canadensis	■		■■	■■■	bunchberry
	Equisetum scirpoides					dwarf scouring-rush
	Geocaulon lividum	□		■■	■■	bastard toadflax
Lichen layer	*Cladina* spp.	■■■■■		■■	■■	reindeer lichens
	Cladonia spp.	■■■		□	■	cladonia lichens
	Peltigera spp.	■■■		■■	■■	pelt lichens
Moss layer	*Aulacomium / Tomentypnum* spp.					brown mosses
	Hylocomium / Pleurozium spp.	■■■■		■■■■	■■■■■	feathermosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

Arctostaphylos uva-ursi (kinnikinnick)



Vaccinium vitis-idaea (lowbush cranberry)

Figure 1-5. Dry to moist ecosites: Landscape profile

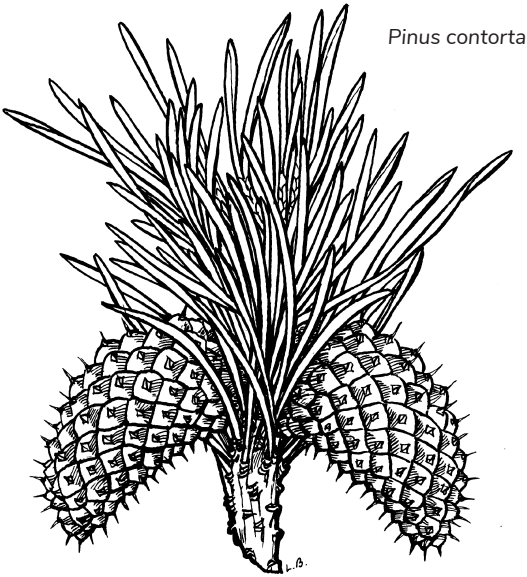
Mesic to moist ecosites Ecosite identification table

Mesic to moist ecosites		Moisture	Site/soils	Overstorey/shrubs	Ground cover
30	PSb – Labrador tea forest	SMR= 4 Drainage= B	poor or cool sites; level or sloping; soils Eluviated or Orthic Brunisols	open to closed black spruce and/or pine; moderate to high cover of Labrador tea	usually high feathermoss; low to high ground shrub cover usually with crowberry or lowbush cranberry dominating
31	SbSw – Willow forest	SMR= 5-6 Drainage= C-D	level, lower and mid slopes or depressions; soils Brunisols or Cryosols	open to closed black and/or white spruce, sometimes with larch or pine; shrubs of low to high cover, sometimes with high willow, alder or prickly rose cover	moss cover strongly dominated by feather mosses; low to trace cover of moist and wet site species including horsetails, coltsfoot, dwarf scouring-rush, red bearberry, dwarf raspberry or brown mosses
32	Sb – Labrador tea - Blueberry forest	SMR= 5-6 Drainage= B-C	level, lower slopes or depressions; cool sites; soils Gleyed Brunisols, Gleysols, or Cryosols	typically, open to closed black spruce canopy; white spruce, larch, or pine also common; moderate to high shrub cover, mostly Labrador tea but including willows or blueberry	High moss cover dominated by feather mosses; low to trace cover of moist and wet species including brown or peat mosses, dwarf scouring-rush, red bearberry or cloudberry

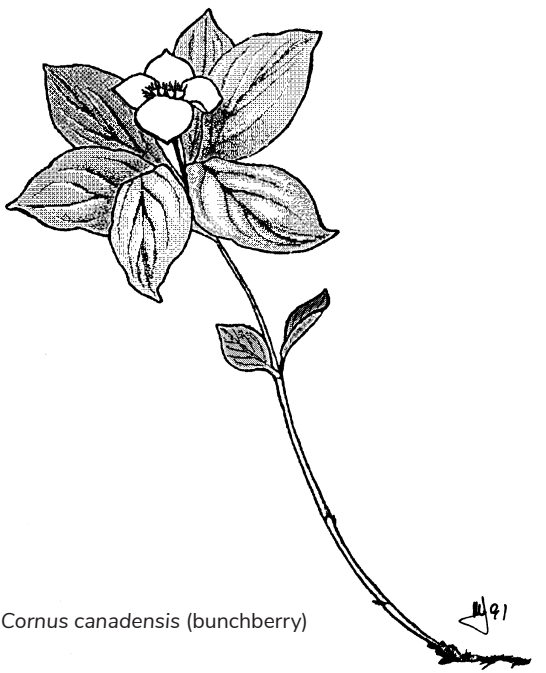
Moist to mesic ecosites Vegetation table

Stratum	Ecosite / No. of plots	30 (54)	31 (47)	32 (36)	
Tree layer	*Picea glauca*	■■■	■■■■	□□	white spruce
	Picea mariana	■■■■	■■■■	■■■■■	black spruce
	Pinus contorta	■■■■■	□□□		lodgepole pine
	Populus tremuloides	□□□			trembling aspen
Shrub layer	*Alnus viridis*				green alder
	Juniper communis				common juniper
	Rhododendron groenlandicum	■■■■■	■■■	■■■■■	common Labrador tea
	Rosa acicularis	■■	■■	■■	prickly rose
	Salix myrtifolia		□□□	■■■	blueberry willow
	Salix spp.	■■■■	■■■■	■■■	willows
	Shepherdia canadensis				soapberry
	Vaccinium uliginosum	■■	□	■■■	blueberry
Ground shrub layer	*Arctostaphylos uva-ursi*	□□			kinnikinnick
	Arctous rubra		□	■■	red bearberry
	Empetrum nigrum	■■■	■■	■■	crowberry
	Linnaea borealis	□□	■■	□	twinflower
	Vaccinium vitis-idaea	■■■■	■■■	■■■	lowbush cranberry
Forb layer	*Chamaenerion angustifolium*	□	□		fireweed
	Cornus canadensis	■■■	■■■	□	bunchberry
	Equisetum scirpoides		□	■■■	dwarf scouring-rush
	Geocaulon lividum	■■	□□	■	bastard toadflax
Lichen layer	*Cladina spp.*	■■■	■■	■■■	reindeer lichens
	Cladonia spp.	■■	□	■■■	cladonia lichens
	Peltigera spp.	■■■	■■	■■■	pelt lichens
Moss layer	*Aulacomium / Tomentypnum spp.*		□□	□□	brown mosses
	Hylocomium / Pleurozium spp.	■■■■■	■■■■■	■■■■■	feathermosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%



Pinus contorta (lodgepole pine)



Cornus canadensis (bunchberry)

Figure 1-6. Riparian ecosites: Landscape profile

Riparian ecosites

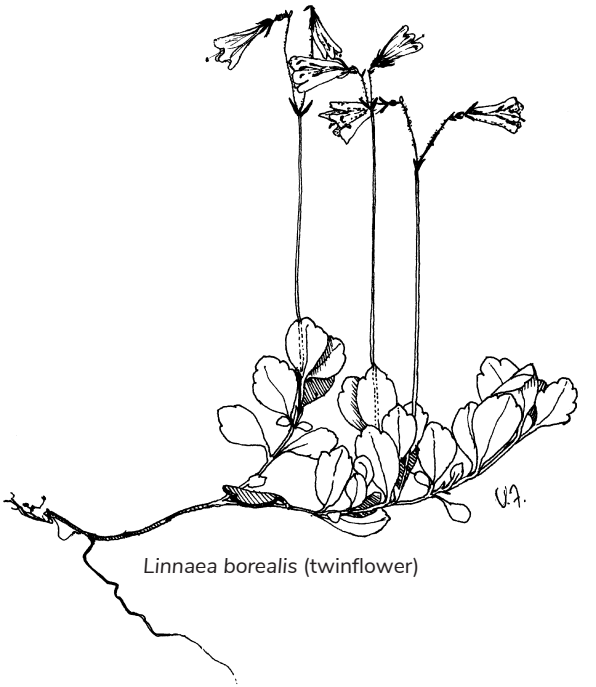
Ecosite identification table

Riparian ecosites		Moisture	Site/soils	Overstorey/shrubs	Ground cover
40	Sw – Riparian forest	SMR= 5-6 Drainage= D-E; fluctuating water table; flooding	fluvial; soils Regosols or Brunisols often gleyed	white spruce forest; shrubs low to high cover of prickly rose or highbush cranberry	meadow and common horsetails characteristic; herb cover variable and can be sparse; moss cover variable but usually high
41	B – Riparian forest	SMR= 5-6 Drainage= D-E; fluctuating water table; flooding	fluvial; soils Regosols, often Cumulic, sometimes Gleysols	balsam poplar or balsam poplar and spruce mixed; moderate to high shrub cover of river alder, willow, highbush cranberry, red-osier dogwood, or prickly rose	meadow or common horsetails cover trace to high; herb cover variable but often low; moss absent to low but moderate in some mixed spruce - poplar stands

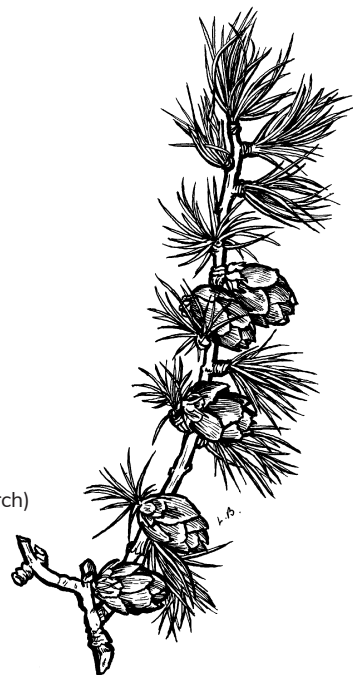
Riparian ecosites Vegetation table

	Ecosite	40	41	
Stratum	No. of plots	56	44	
Tree layer	*Picea glauca*	■■■■■	□□□	white spruce
	Populus balsamifera		■■■■■	balsam poplar
Shrub layer	*Rosa acicularis*	■■■■	■■■■	prickly rose
	Salix spp.	■■■	■■■	willows
	Viburnum edule	■■■	□□□	highbush cranberry
Ground shrub layer	*Linnaea borealis*	■■■	□□□	twinflower
	Vaccinium vitis-idaea	□□□		lowbush cranberry
Forb layer	*Cornus canadensis*	■■■		bunchberry
	Equisetum spp.	■■■■	■■■	horsetails
	Mertensia paniculata	■■	□□	tall bluebell
	Petasites frigidus	□	□	arctic sweet coltsfoot
Grass layer	*Calamagrostis canadensis*		■■■	bluejoint reedgrass
Moss layer	*Hylocomium splendens*	■■■■■		step moss

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%



Linnaea borealis (twinflower)



Larix laricina (larch)

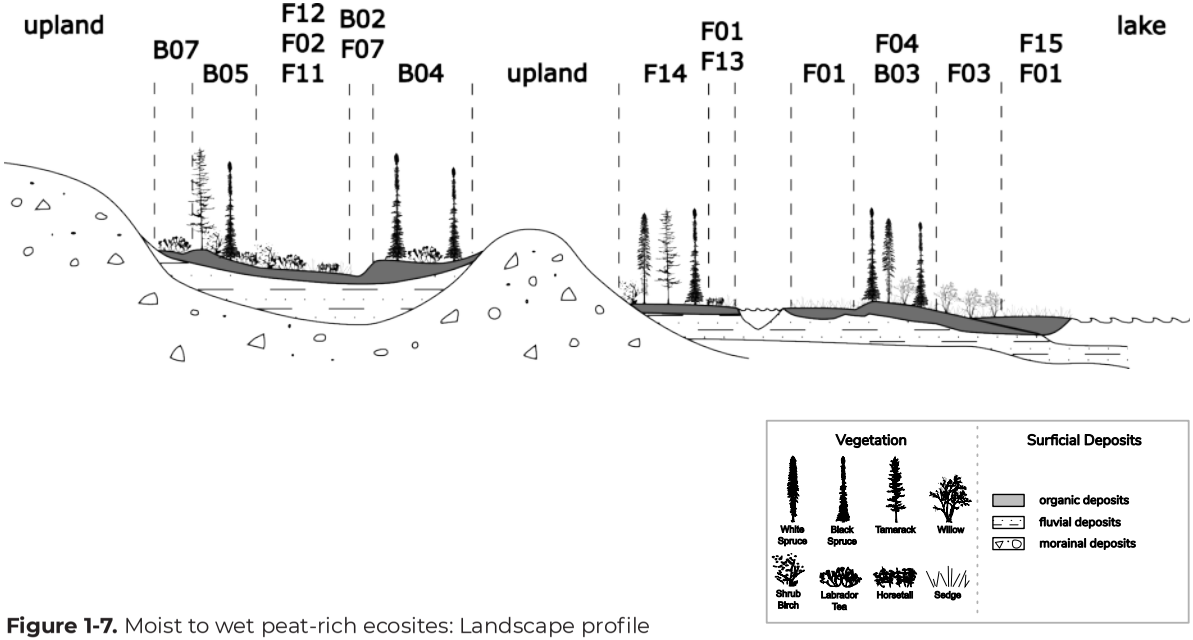


Figure 1-7. Moist to wet peat-rich ecosites: Landscape profile

Bog ecosites Ecosite identification table

Bog ecosites		Moisture	Site/soils	Overstorey/shrubs	Ground cover
B02	SbL – Leatherleaf – Peat moss bog	SMR= 7-8; stable water table	≥40 cm poorly decomposed peat; soils are Organic Cryosols; permafrost	open to closed canopy of larch and black spruce; Leatherleaf and Andromeda characteristic	high cover of peat moss; bog cranberry is characteristic; three-leaved false Solomon's-seal and water sedge are common
B03	Sb – Labrador tea – Peat moss bog	SMR= 6-7; stable water table	≥40 cm poorly decomposed peat; soils are Organic Cryosols; permafrost	open 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
B04	Sb – Lichen bog	SMR= 6-7; stable water table	≥40 cm poor to moderately decomposed peat; soils are Organic Cryosols or Fibrisols	sparse to moderate cover canopy of black spruce; Labrador tea low to high cover; shrub birch sometimes moderate cover	lichen cover moderate to high; moss cover low to high with a mix of feather, peat and brown mosses
B05	SbL – Peat moss bog	SMR= 6-7; stable water table	≥40 cm poor to moderately decomposed peat; soils are Organic Cryosols or Fibrisols	open to closed canopy of larch and black spruce; Labrador tea cover variable;	high cover of peat moss; brown and feather mosses often present; bog cranberry consistent; bog rosemary or cloudberry can be abundant
B07	Labrador tea – Peat moss bog	SMR= 6-8; stable water table	≥40 cm poorly decomposed peat; soils are Organic Cryosols; permafrost	Open to closed Labrador tea	high cover of peat moss; cloudberry, bog cranberry, lowbush cranberry and reindeer lichen common

Bog ecosites Vegetation table

	Ecosite	B02	B03	B04	B05	B07	
Stratum	No. of plots	5	6	12	4	3	
Tree layer	*Larix laricina*	■■■		□	■■■		larch
	Picea mariana	■■■■	■■■■	■■■■■	■■■■■	■■	black spruce
Shrub layer	*Betula glandulosa*	□□□	■■■	■■■	■■■■	■■■■■	shrub birch
	Chamaedaphne calyculata	■■■■					leatherleaf
	Rhododendron groenlandicum	■■■	■■■■■	■■■■■	■■■■■	■■■■■	Labrador tea
	Salix myrtillifolia			□	□□		blueberry willow
	Vaccinium uliginosum	□	■■	□□	■■		bog blueberry
Graminoid layer	*Carex aquatilis*	■■■		□	□□		water sedge
Forb layer	*Maianthemum trifolium*	■■■					three-leaved false Solomon's-seal
Ground shrub layer	*Andromeda polifolia*	■■■■		□		□	bog rosemary
	Empetrum nigrum		□□□	■■	■■■	□□□	crowberry
	Rubus chamaemorus	□□	■■■	■■■	■■■■	■■■■	cloudberry
	Vaccinium oxycoccos	■■■	■■	■	■■■	■	bog cranberry
	Vaccinium vitis-idaea		■■■	■■■	■■■	■■■	low bush cranberry
Moss layer	*Aulacomnium / Tomentypnum* spp.				■■■	□	glow mosses
	Hylocomium / Pleurozium spp.		■■■	■■■	■■■■	□□	step mosses
	Sphagnum spp.	■■■■■	■■■■■	■■■■	■■■■■	■■■■■	peat mosses
Lichen layer	*Cladina* spp.	□□□	■■■■	■■■■■	■■■■	■■■■	reindeer lichens

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

Fen ecosites Ecosite identification table

Bog ecosites		Moisture	Site/soils	Overstorey/shrubs	Ground cover
F01	Water sedge fen	SMR: 7-8; water table at or near the surface	≥30 cm poorly to moderately decomposed peat; soils are Fibrisols, Mesisols, Organic Cryosols	trees <10%; shrubs <20%	water sedge or beaked sedge dominates cover; peat or brown mosses usually present
F02	Shrub birch Fen	SMR: 7-8; stable water table close to surface	peat 10-105 cm or more; soils Fibrisols or Mesisols; may have limnic, cumulic or hydric layers	trees < 10%; shrubs >20% dominated by shrub birch, often with Labrador tea	water sedge and sometimes beaked sedge with brown, peat or other wetland mosses
F03	Willow – Water sedge fen	SMR: 7-8; moderately stable water table close to surface	peat 10-45 cm or more, may have limnic, cumulic or hydric layers	trees < 10%; shrubs >20% dominated by willows	water sedge and sometimes beaked sedge with brown, peat or other wetland mosses
F04	SbSw – Water sedge fen	SMR: 7; moderately stable water table close to surface	peat 10-45 cm or more, may have limnic, cumulic or hydric layers	black or white spruce ≥ 7%; low to high cover of willow often blueberry or grey-leaved willow	water sedge usually dominant with minor cover of other sedges; mosses mix of step moss, brown mosses, and low cover of peat mosses
F07	Leatherleaf – Peat moss fen	SMR: 7-8; water table at or near the surface	70-100 +cm fibric or mesic peat; soils are Organic.	trees < 10%; leatherleaf or bog rosemary dominate	water sedge usually dominant with minor others (e.g., mud or lesser panicled); high cover of bog buckbean may be present; peat moss dominates moss layer
F11	Clubrush – sedge fen	SMR: 7-8; water table at or near the surface	15-125 +cm fibric or mesic peat; soils are Organic or Gleysols peaty phase.	trees < 10%; shrubs < 20%	alpine clubrush and or tufted clubrush present with low to high cover; sedges common; peat moss usually present
F12	Lesser panicled sedge fen	SMR: 8; water table at or near the surface	>40cm fibric or mesic peat; Soils are Organic.	trees < 10%; shrubs < 20%	lesser panicled sedge dominates with bog buckbean; brown mosses characterize moss layer (common hook, giant water, and others)
F13	Water horsetail – Sedge Fen	SMR: 7-8; water table at or near the surface	20-100+cm fibric and mesic peat; soils are Organic or Gleysols peaty phase.	trees <10%; shrubs <20%	water horsetail dominates cover; water or beaked sedge are usually present; mosses can be abundant
F14	SbL – Water sedge fen	SMR: 6-7; SNR: C; moderately stable water table near surface	20-120+ cm fibric or mesic peat; soils are Organic Cryosols, Mesisols or Gleysolic Turbic Cryosols peaty phase	larch and black spruce ≥ 7%; Labrador tea, shrub birch and/or willows dominate shrubs	water sedge and brown mosses dominate; peat mosses low to high cover
F15	Mud Sedge – Bog buckbean fen	SMR: 7-8; water table at or near the surface	70-200 cm fibric or mesic peat; soils are Organic	trees < 10%; shrubs < 20%	bog buckbean and mud sedge dominate herb layer; marsh scheuchzeria sometimes of moderate to high cover; brown or peat moss often abundant

Fen ecosites Vegetation table

Stratum		Ecosite	F01	F02	F03	F04	F07	F11	F12	F13	F14	F15	
		No. of plots	40	12	8	6	10	6	4	4	17	8	
Tree layer		*Larix laricina*		□	□		□	■■	□		■■■		larch
		Picea glauca		□	□	■■					□		white spruce
		Picea mariana		□	□	■■■					■■■		black spruce
Shrub layer		*Betula glandulosa*	□□	■■■■■	■■	■■■	■■	■■			■■■■		shrub birch
		Chamaedaphne calyculata			□□		■■■■					□	leatherleaf
		Myrica gale						■■■■					sweet gale
		Rhododendron groenlandicum		■■■■		■■■		□			■■■		Labrador tea
		Salix spp.	□		■■■■■	■■■■■					■■■■		willows
Graminoid layer		*Carex aquatilis*	■■■■■	■■■	■■■■■	■■■	■■■■	■■■■	■■		■■■■	■	water sedge
		Carex diandra							■■■■			□□	lesser panicled sedge
		Carex limosa			□□□		■■		□□		□□	■■■■■	shore sedge
		Carex spp.	□□	■■■■		■■■■■	■						sedges
		Carex utriculata	■■■■		■■				■■■	■■■■			beaked sedge
Forb layer		*Andromeda polifolia*					■■■	■■					bog rosemary
		Comarum palustre	□□□	□	■■■	□			■■	□□		□	marsh-cinquefoil
		Equisetum spp.	□□			■■■			■	■■■■■			horsetails
		Maianthemum trifolium					■■■						three-leaved false Solomon's-seal
		Menyanthes trifoliata		□□□	□		□□□□	■■■	■■■■■	□□□		■■■■	buckbean
		Scheuchzeria palustris			□□							■■■■	marsh scheuchzeria
		Trichophorum alpinum / caespitosum						■■■■■	□				alpine / tufted clubrush
Moss layer		*Aulacomnium / Tomentypnum* spp.	□□□□	■■■■	■■■■	■■■■		■■	□□□		■■■■■		glow mosses
		Drepanocladus spp.	□□□	□	□□□□	□□□			■■■■■			□□□□	hook mosses
		Hylocomium splendens				■■■■					□□□		step mosses
		Sphagnum spp.	□□□□	■■■■	□□□□	■■■	■■■■■	■■■■■			■■■■	□□□	peat mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

Rhododendron groenlandicum (common Labrador tea)

Salix myrtillifolia (blueberry willow)

Figure 1-8. Swamp to upland transition: Landscape profile

Swamp ecosites

Ecosite identification table

Swamp ecosites		Moisture	Site/soils	Overstorey/shrubs	Ground cover
S01	Willow – Bluejoint swamp	SMR= 5-7 Drainage= C-D; fluctuating water table	20-40+ cm LFH or peat; soils commonly Orthic Gleysols, sometimes Humisols	trees < 10%; tall to medium willow shrubs ≥ 10% usually > 25%	reedgrass moderately abundant, usually bluejoint, but may be slim-stemmed or Lapland reedgrasses; russet sedge or tufted hairgrass can also occur; moss cover low
S02	River alder swamp	SMR= 5-6 Drainage= D-E; fluctuating water table, flooding common	fluvial deposits; soils are Cumulic or Gleyed Regosols or Brunisols; usually <10 cm organic layer	trees < 10%; shrubs are dominated by tall to medium height alder, usually with willow	horsetails usually abundant; bluejoint reedgrass may be abundant; mosses have low to sparse cover
S03	Tea-leaved willow – Water sedge swamp	SMR= 5-7 Drainage= C-D; fluctuating water table	soils are usually Gleysols, or Gleyed Regosols or Brunisols; usually <15 cm organic layer	trees ≤ 10%; tea-leaved or other willows ≥ 15%	large water sedges dominate; marsh cinquefoil and horsetail usually present; moss cover sparse to abundant
S04	Willow – Horsetail swamp	SMR= 5-7 Drainage= C-E fluctuating water table	soils are usually Gleysols or Gleyed Regosols	trees ≤ 10%; tall or medium height willow ≥ 15% cover	moderate to high cover of horsetail (usually common but also variegated scouring-rush or water or meadow horsetail)
S06	Shrub birch – Willow – Grass swamp	SMR= 6-7 Drainage= C-D; fluctuating water table	5-10cm organics over loam; Gleysols	trees < 10%; shrubs include shrub birch and willow, tea-leaved, blueberry willow common	Grass ≥10%; peat moss common moss
S07	Sb – Labrador tea – Peat moss swamp	SMR= 6-7 Drainage= B-C; water table close to surface	< 30cm fibric peat over loamy soils; Gleysols (Cryosols	Sb ≥10%; Labrador tea characteristic	peat moss ≥20%, feathermosses and other moss also common
S08	SbSw – Red bearberry – Brown moss swamp	SMR= 5-7 Drainage= C-E; fluctuating water table	peaty with 10-40 cm organic layer of LFH, Of, Om or Oh; soils are Gleysols, Cryosols or Gleyed Brunisols; may have permafrost.	SbSw >10%; shrub cover usually moderate to high cover of Labrador tea, shrub birch and/or willow	red bearberry characteristic; horsetails usually present; moss cover high, usually dominated by feathermosses but characterized by presence of brown mosses

Swamp ecosites

Ecosite identification table

Swamp ecosites		Moisture	Site/soils	Overstorey/shrubs	Ground cover
S09	Sw – Shrub birch – Grass swamp	SMR= 7-6 Drainage= C-E; water table usually within 30 cm of surface	5-30cm peat over mineral; soils Gleysols, Gleyed Brunisols, Cryosols; may have permafrost	Sw>10%; shrub birch present; also willow, shrubby cinquefoil, Labrador tea common	Grasses greater than 10%; feathermoss
S10	SbSw – Shrub birch – Feathermoss – Brown moss swamp	SMR= 6-7 Drainage= C-D;	shallow peat; soils Gleysols, Cryosols; may have permafrost	SbSw>10%; shrub birch diagnostic also Labrador tea, willow and bog blueberry	Common or meadow horsetail characteristic; also red bearberry; moderate to high feathermoss and brown moss
S12	Sweet Gale – Willow swamp	SMR= 6-7 Drainage= D; variable water table	soils are usually Gleysols	trees ≤10%; shrubs ≥15% with low to high cover of sweet gale commonly with Athabasca willow	variable groundcover with grasses, rushes and sedge
S13	Sw – Blueberry Willow – Horsetail swamp	SMR= 5-7 Drainage= C-D; fluctuating water table, close to surface	peaty with 10-30 cm LFH, Of, Om or Oh; soils are Gleysols, Brunisols or Turbic Cryosols	Sw or SwB >10%; moderate cover of willow shrubs; characterized by blueberry willow	low to high cover of horsetail; mosses are usually brown mosses and step moss
S14	SbL – Brown moss swamp	SMR= 5-7 Drainage= C-E;	10-40+ cm of peat; soils may be Organic or Turbic Gleysols or Cryosols; may have permafrost	SwSbL ≥ 10%; mixed shrubs usually low to moderate cover	water sedge usually present; high moss cover characterized by brown and peat mosses; feathermosses present
S15	SbSw – Alder – Labrador tea – Peat moss swamp	SMR= 6-78 Drainage= B-D;	up to 30cm peat over variable mineral soil; Cryosols, Gleysols; may have permafrost	open Sb, Sw, and sometimes W >10%; shrubs include alder, Labrador tea, willow	common horsetail, peat moss and other mosses
S18	FSw – Peat Moss – Feathermoss swamp	SMR= 6-7 Drainage= C;	up to 40cm peat over gravelly till or colluvium; Cryosols; permafrost present	open canopy fir and Sw; willow and labrador tea common	forest horsetail, crowberry, lowbush cranberry, twinflower moderate to high cover with feathermosses and brown or peat moss

Swamp ecosites

Vegetation table - Shrub-dominated ecosites

Stratum	Ecosite / No. of plots	S01 (18)	S02 (7)	S03 (13)	S04 (20)	S06 (1)	S12 (3)	
Tree layer	*Picea glauca*		■					white spruce
	Betula glandulosa					■■■■■	■■	shrub birch
Shrub layer	*Alnus incana*		■■■■■				■	mountain alder
	Dasiphora fruticosa						□	shrubby-cinquefoil
	Myrica gale						■■■■■	sweet gale
	Rosa acicularis		■					prickly rose
	Salix alaxensis	□□□			■■■■			Alaska willow
	Salix planifolia	■■■■		■■■■■	■■■■		□□□	tea-leaved willow
	Salix spp.	■■■■■	■■■■■	■■■■	■■■■■	■■	■■■	willows
Grass layer	Poaceae	■■■■	■■■■		■	■■■■■	■■	grass
	Carex spp.	□		■■■■■	■■■	■■■	■	sedges
	Juncus balticus						■■	Baltic rush
Forb layer	*Comarum palustre*	□□		■■		■■		marsh cinquefoil
	Equisetum arvense	□	■■■■		■■■■■		□	common horsetail
	Rubus arcticus		□				■	Arctic raspberry
Moss layer	Bryophyta	■■■■	□	□□□	□□□□	■	□	mosses
	Drepanocladus spp.			□				broom mosses
	Sphagnum spp.			□		■■■■■		peat mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

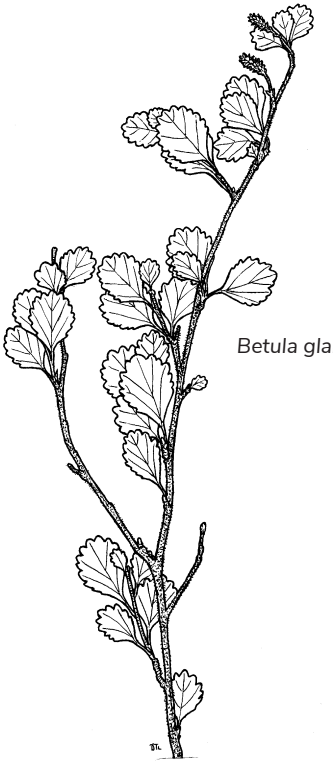
Swamp ecosites

Vegetation table - Tree-dominated ecosites

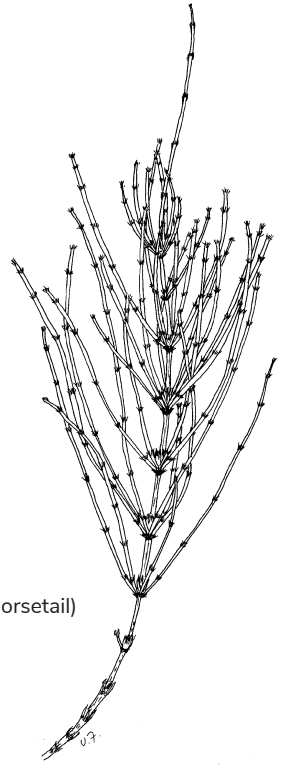
Stratum	Ecosite / No. of plots	S07 2	S08 8	S09 2	S10 6	S13 3	S14 12	S15 2	S18 1	
Tree layer	*Abies lasiocarpa*								■■■	subalpine fir
	Betula neoalaskana / papyrifera							■■		Alaska / paper birch
	Larix laricina						■■■			larch
	Picea mariana	■■■	■■■■■	■■■	■■■■■	■■■	■■■■	■■■■■	■■■	black spruce
	Picea glauca			■■■■■	■■■■	■■■■■	□□	■■■	■■■■	white spruce
Shrub layer	*Alnus alnobetula*							■■■		green alder
	Betula glandulosa	■■■■	□□	■■■■■	■■■■■		■■■			shrub birch
	Dasiphora fruticosa	■■		■■■	■■■	■■	□□			shrubby-cinquefoil
	Rhododendron groenlandicum	■■■■■	■■■■	■■■	■■■■■	■■	■■■■	■■■■■	■	common Labrador tea
	Salix myrtillifolia	■■■■	■■■			■■■■■	□□			blueberry willow
	Salix spp.	■■■	■■■	■■■■	■■■■	■■■■	■■■	■■■■	■■■	willows
	Vaccinium uliginosum	■■■■		■	■■■		■■■	■■	■	bog blueberry
Forb layer	*Arctous rubra*	■■■	■■■		■■■■	■■	■■■	■■■■		red bearberry
	Empetrum nigrum	■■	■■	■■	■■■	■■■■	■■■	■	■■■	crowberry
	Equisetum arvense / pratense		■■	■	■■■	■■■■■	□□□	■■		common / meadow horsetail
	Equisetum scirpoides / sylvaticum	■■	■		□		■■■	■■■■	■■■■■	dwarf scouring-rush / woodland horsetail
Grass layer	Poaceae	■■■	■	■■■■■	■	■	■■	■■		grass
Ground shrub layer	*Linnaea borealis*		□	■		■■■			■■■■	twinflower
	Rubus chamaemorus					■	□□	■■■■		cloudberry
	Vaccinium vitis-idaea	■■	■■■	■	□□□	■■■	■■	■■■■	■■■■	lowbush cranberry
Moss layer	*Aulacomnium / Tomentypnum* spp.	■■■■	■■■■		□□□	■■■■■	■■■■		■■■■	glow mosses
	Bryophyta	■■■■■		■■■	■■■■■	■	□□□	■■■■■		mosses
	Hylocomium / Pleurozium / Ptillium spp.	■■■■	■■■■■	■■■■	■■■■■	■■■■■	■■■		■■■■■	feathermosses
	Sphagnum spp.	■■■■■	□	■	□	■■■■	■■■■■	■■■■		peat mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%

Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%



Betula glandulosa (shrub birch)



Equisetum arvense (common horsetail)

Figure 1-8. Marsh transition: Landscape profile

Marsh ecosites

Ecosite identification table

Marsh ecosites		Moisture	Site/soils	Overstorey/shrubs	Ground cover
M01	Beaked – Water sedge marsh	SMR= 6-8 Drainage= C-E; fluctuating water table at or close to the surface	Usually less than 10 cm organic; soils are Gleysols	trees ≤10%; tall or medium shrubs ≤10 %	dominated by beaked or water sedge, russet sedge is also common; low to sparse moss cover
M02	Water horsetail marsh	SMR= 7-8 Drainage= C-E; fluctuating water table at or close to the surface	mineral soil at the surface; soils are Gleysols	trees ≤10%; tall and medium shrubs ≤10 %	dominated by horsetail (usually water horsetail, sometimes marsh horsetail); sedges sometimes moderately abundant; wetland herbs common
M05	Creeping spike-rush marsh	SMR= 7-8 Drainage= C-E; fluctuating water table at or close to the surface	Gleysolic soils	trees ≤10%; tall and medium shrubs ≤10 %	characterized by creeping spike-rush; water or beaked sedge sometimes abundant; horsetails usually present (water horsetail or variegated scouring-rush); wetland or aquatic herbs present with low to moderate cover
M06	Mannagrass marsh	SMR= 6-8 Drainage= C-E; fluctuating water table at or close to the surface	Gleysolic soils	trees ≤10%; tall and medium shrubs ≤10 %	moderate to high cover of mannagrass (boreal or fowl) is characteristic; may occur with sedge, grass, or horsetail
M07	Least spike-rush marsh	SMR= 6-8 Drainage= D-E; fluctuating water table at or close to the surface	Gleysolic soils	trees ≤10%; tall and medium shrubs ≤10 %	moderate to high cover of least spike-rush; creeping spike-rush, alpine bluegrass, burreed or northern arrowhead are sometimes of moderate to high cover
M09	Hard-stem bulrush marsh	SMR= 7-8; fluctuating water table	Gleysolic soils	trees ≤10%; tall and medium shrubs ≤10 %	low to high cover of hard-stem bulrush
M10	Bluejoint marsh	SMR= 6-78 Drainage= D-E;	Gleysolic soils	trees ≤10%; tall and medium shrubs ≤10 %	moderate to high cover of bluejoint reedgrass characteristic; sedges are common

Marsh ecosites

Ecosite identification table

Marsh ecosites		Moisture	Site/soils	Overstorey/shrubs	Ground cover
M11	Tufted hairgrass marsh	SMR= 6-8 Drainage= D-E; fluctuating water table	Gleysolic soils	trees ≤ 10%; tall and medium shrubs ≤ 10%	low to moderate cover of tufted hairgrass or rough bentgrass; horsetails or creeping spike-rush are sometimes of moderate cover
M12	Russet Sedge – Water horsetail marsh	SMR= 7 Drainage= C-D; fluctuating water table	Gleysolic soils	trees ≤ 10%; tall and medium shrubs ≤ 10%	russet and beaked sedges co-dominate; creeping spike-rush and water horsetail are also present with low to high cover
M13	Bluegrass – Northern arrowhead marsh	SMR= 7-8 Drainage= C-D; fluctuating water table	Gleysolic soils	trees ≤ 10%; tall and medium shrubs ≤ 10%	dominated by alpine or Kentucky bluegrass; northern arrowhead and pondweeds usually present
M16	Hair bentgrass marsh	SMR= 6-7 Drainage= D-E; fluctuating water table	Gleysolic soils	trees ≤ 10%; tall and medium shrubs ≤ 10%	dominated by hair bentgrass

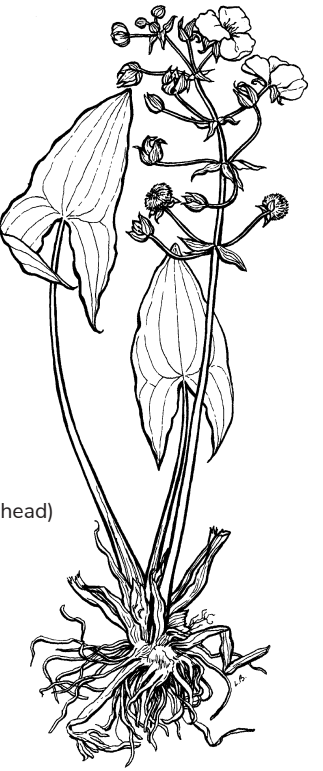
Marsh ecosites

Vegetation table - Tree-dominated ecosites

Stratum	Ecosite / No. of plots	M01 20	M02 30	M05 11	M06 3	M07 9	M09 1	M10 1	M11 14	M12 20	M13 7	M16 2	
Grass layer	*Agrostis scabra*											■■■■■	hair bentgrass
	Calamagrostis canadensis				□			■■■■■					bluejoint reedgrass
	Calamagrostis stricta				□□					□□□		■	slimstem reedgrass
	Carex aquatilis	■■■■		□□□				■■		□□□			water sedge
	Carex saxatilis			□					□□	■■■■			russet sedge
	Carex utriculata	■■■■■	■■■■	□□□□	□□□					■■■■■			beaked sedge
	Deschampsia cespitosa			□□		□			■■■■■	□□			tufted hairgrass
	Eleocharis acicularis					■■■■■					□	■	needle spikerush
	Eleocharis palustris			■■■■■		■■■			■■■■	■■■■	□	■	common spikerush
	Glyceria spp.				■■■■■								mannagrass
	Poa spp.		□	□□□		□□□					■■■■■		bluegrasses
	Poaceae				□□□□				□□□	□	□□□□		grasses
Forb layer	*Equisetum fluviatile*	□	■■■■■	□□□□						■■■	□□	■■■	water horsetail
	Equisetum spp.			■■■■■	■■				■■■■	□□□	□□	■■■	horsetails
	Hippuris vulgaris			■		■■					■■■		common mare's-tail
	Potamogeton richardsonii			□□□		□□□					□□□	■	Richardson's pondweed
	Ranunculus aquatilis					■					□	■	white water buttercup
	Ranunculus flammula			■■■					□	□		■■	lesser water buttercup
	Rumex occidentalis		□□	□						■■			western dock
	Sagittaria cuneata					■■■					■■■	■	northern arrowhead
	Schoenoplectus acutus						■■■						hard-stemmed bulrush
	Sium suave		□	□						■■			hemlock water-parsnip
Moss layer	Bryophyta	□□	■■■	■■■■	■■				□	■■■	■■■■	■■■■	mosses
	Polystrichum strictum							■■■■					bog haircap moss
	Sphagnum spp.							■■■■■					peat mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

Carex aquatilis (water sedge)



Sagittaria cuneata (northern arrowhead)

Figure 1-8. Shallow water to upland transition: Landscape profile

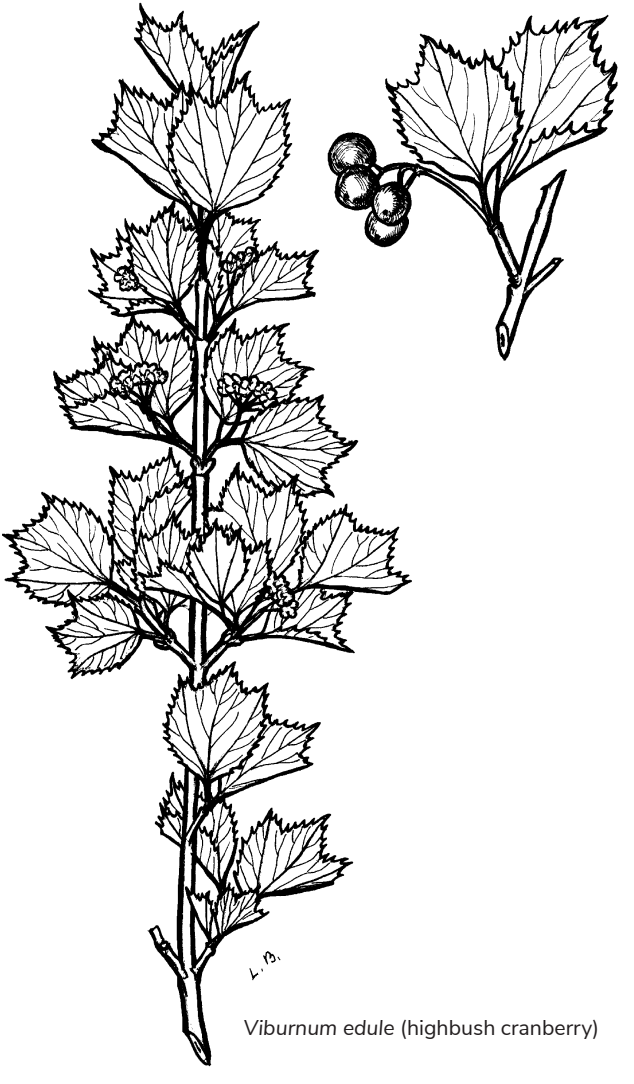
Shallow water ecosites Ecosite identification table

Shallow water ecosites		Moisture	Site/soils	Overstorey/shrubs	Ground cover
W02	Sago pondweed shallow water	SMR: 9 SNR: E	data not available	trees ≤ 10%; tall and medium shrubs ≤ 10%	sago pondweed dominant; sometimes codominant with other pondweeds
W04	Mare's-tail shallow water	SMR: 8-9 SNR: D	data not available	trees ≤ 10%; tall and medium shrubs ≤ 10%	common mare's-tail with moderate to high cover
W05	Northern arrowhead shallow water	SMR: 9 SNR: E	data not available	trees ≤ 10%; tall and medium shrubs ≤ 10%	northern arrowhead dominates
W06	Pondweed shallow water	SMR: 9 SNR: D-E	data not available	trees ≤ 10%; tall and medium shrubs ≤ 10%	pondweeds dominate, usually Richardson's, but also sago, flat-stemmed, or others
W07	Hornwort shallow water	SMR: 9 SNR: D-E	data not available	trees ≤ 10%; tall and medium shrubs ≤ 10%	common hornwort of low to high cover, algae may have significant cover
W09	Pond-lily shallow water	SMR: 9 SNR: D	data not available	trees ≤ 10%; tall and medium shrubs ≤ 10%	moderate to high cover of Rocky Mountain pond-lily
W10	Water-milfoil shallow water	SMR: 9 SNR: E	data not available	trees ≤ 10%; tall and medium shrubs ≤ 10%	high cover of water-milfoil
W11	Burreed shallow water	SMR: 9 SNR: E	data not available	trees ≤ 10%; tall and medium shrubs ≤ 10%	low to moderate cover of burreed
W12	Giant water moss shallow water	SMR: 9 SNR: C-D	data not available	trees ≤ 10%; tall and medium shrubs ≤ 10%	giant water moss dominates; aquatic species have trace to low cover

Shallow water ecosites Vegetation table

Stratum	Ecosite / No. of plots	W02 5	W04 9	W05 1	W06 15	W07 4	W09 5	W10 1	W11 4	W12 5	
Forb layer	*Eleocharis acicularis*			■■							needle spikerush
	Equisetum pratense						■				meadow horsetail
	Menyanthes trifoliata						■■■				buckbean
Aquatic layer	*Ceratophyllum demersum*					■■■■■					common hornwort
	Hippuris vulgaris		■■■■■								common mare's-tail
	Myriophyllum spp.				□□			■■■■■			water-milfoils
	Nuphar polysepala						■■■■■				Rocky Mountain pond-lily
	Potamogeton alpinus		□□		□	■■■■					alpine pondweed
	Potamogeton richardsonii		■■■					■■■			Richardson's pondweed
	Potamogeton spp.		□□		□□□			■■			pondweeds
	Potamogeton zosteriformis				□□□			■■			flat-stemmed pondweed
	Ranunculus aquatilis			■■	□						white water buttercup
	Ranunculus spp.			■■■							buttercups
	Sagittaria cuneata	□		■■■■■	□□						northern arrowhead
	Sparganium spp.								■■■■		burreeds
	Stuckenia pectinata	■■■■■			□□□□			■■■			fennel-leaved pondweed
	Chara spp.					■■■■■					muskgrasses
Moss layer	*Calliergon giganteum*									■■■■■	giant water moss

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

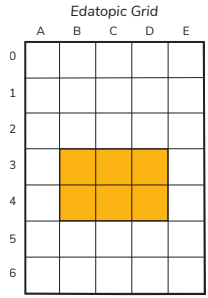


Viburnum edule (highbush cranberry)

3.0 Guides to BOLlh ecosites

BOLlh/01 PSA – Feathermoss forest

General description



The PSA – Feathermoss forest ecosite occurs on well to moderately drained, sloping and level areas of the Liard plain and its river valleys. This is the reference ecosite for the BOLlh bioclimate subzone.

Forests with a mixed-wood overstorey of two or more of the following species: lodgepole pine (*Pinus contorta*), white spruce (*Picea glauca*), black spruce (*Picea mariana*), Alaska paper (*Betula neoalaskana*), paper birch (*B. papyrifera*) or aspen (*Populus tremuloides*) are characteristic of this ecosite. A low cover of subalpine fir (*Abies lasiocarpa*) can be a later succession component of the overstorey at all elevations, though fir stands are more common at elevations over 850 metres. Understorey shrub development is variable and can include green alder (*Alnus viridis*), prickly rose (*Rosa acicularis*), highbush cranberry (*Viburnum edule*), soapberry (*Shepherdia canadensis*) or willows (*Salix* spp.). Ground cover is dominated by feathermosses (*Hylocomium splendens, Pleurozium schreberi, Ptillium crista-castrensis*).

BOLlh/01 - PSbW22
(Pine – Black spruce – Alaska birch / Alder / Lowbush cranberry – Fireweed / Feathermoss)

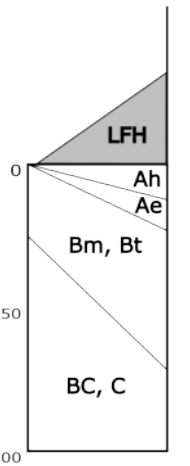
Undisturbed areas are usually more coniferous dominated, while aspen, paper birch and shrubs increase in cover following disturbance such as forest fire or logging. On these successional sites and some steeper slopes, tree cover can be dominated by Alaska paper birch or paper birch, commonly with some lodgepole pine, spruce or aspen. A low to high cover of alder is characteristic with a groundcover of bunchberry (*Cornus canadensis*), twinflower (*Linnea borealis*), lowbush cranberry (*Vaccinium vitis-idaea*) and feathermosses (*Hylocomium splendens, Pleurozium schreberi, Ptilium crista-castrensis*).

In addition to occurring on level sites, this mesic to submesic ecosite is found on moderately steep middle and upper slopes on cooler east, north or west aspects. Slopes can vary from 5 per cent to greater than 50 per cent. The soil parent material is usually morainal, colluvial or glaciofluvial, and sometimes lacustrine. The well drained soils are mostly classified as Eluviated Eutric Brunisols or Orthic, Eluviated or Duric Dystric Brunisols.

Site and soils

Site and soil characteristics

Plots in unit	211
Moisture regime	mesic to submesic
Nutrient regime	C (B-D)
Meso slope position	usually middle and upper slope or level
Aspect	variable
Slope gradient	level to steep
Surficial material	usually morainal, glaciofluvial, colluvial, lacustrine
Soil texture	variable
Soil classification	Dystric and Eutric Brunisols, Luvisols
Humus form	mor
Humus depth	0–16 cm
Soil drainage	well to moderately well
Seepage/water table	none
Permafrost	none



Vegetation summary

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

Aspen-dominated and mixed-wood aspen – Conifer (P, Sb, Sw) stands

The following vegetation associations characterize the variation in species composition for stands dominated by aspen or mixed-wood-wood aspen – Conifer (pine, black spruce, white spruce) on this ecosite.

AP22 Aspen – Pine – White spruce / Alder / Lowbush cranberry / Feathermoss

AP27 Aspen – Pine / Lowbush cranberry / Feathermoss

APSb26 Aspen – Pine – Black spruce / Lowbush cranberry / Feathermoss

ASb26 Aspen – Black spruce / Lowbush cranberry / Feathermoss
ASw06 Aspen – White spruce / Soapberry / Fireweed
ASw21 Aspen – White spruce / Alder – Highbush cranberry / Raspberry – Bunchberry

Alaska birch-dominated and mixed-wood Alaska birch – Conifer (F, P, Sb, Sw) stands

The following vegetation associations characterize the variation in species composition for stands dominated by Alaska birch or mixed-wood Alaska birch – Conifer (fir, pine, black spruce, white spruce) on this ecosite.

W25 Alaska birch / Alder – Prickly rose
W26 Alaska birch / Highbush cranberry – Prickly rose / Tall bluebells
FSW25 Fir – Spruce – Birch / Prickly rose / Bunchberry
PSbW22 Pine – Black spruce – Alaska birch / Alder / Lowbush cranberry – Fireweed / Feathermoss
PSwW25 Pine – White Spruce – Alaska birch / Alder / Feathermoss
SbSwW25 Spruce – Alaska birch / Prickly rose / Twinflower – Tall bluebells / Feathermoss
SwW30 White spruce – Alaska birch / Common Labrador tea

Conifer-dominated stands fir, larch, pine, black spruce, white spruce

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

FSP22 Fir – Spruce – Pine / Feathermoss
P21 Pine / Lowbush cranberry – Twinflower
P23 Pine / Alder / Feathermoss
P28 Pine / Lowbush cranberry / Step moss
PSbSw23 Pine – Black spruce – White spruce / Lowbush cranberry / Feathermoss
PSb23 Pine – Black spruce / Alder / Feathermoss
PSw24 Pine – White spruce / Lowbush cranberry / Feathermoss
SbL05 Black spruce – Larch
Sb22 Black spruce / Lowbush cranberry / Feathermoss
SbSw22 Black spruce – White spruce / Lowbush cranberry – Feathermoss
Sw27 White spruce / Feathermoss

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

BOLlh/01 Mixed-wood aspen – Conifer – Birch stands Vegetation table

Stratum	Vegetation association / No. of plots	AP22 12	AP27 9	APSb26 2	ASb26 5	ASw06 6	ASw21 5	
Tree layer	*Betula neoalaskana / papyrifera*	□		■	□	□	□□	Alaska / paper birch
	Picea glauca	■■■	■■■	■■■■	■■■	■■■■	■■■■	white spruce
	Picea mariana	□□□						black spruce
	Pinus contorta	■■■■	■■■■	■■■■		■■		lodgepole pine
	Populus tremuloides	■■■■	■■■■■	■■■■	■■■■■	■■■■	■■■■■	trembling aspen
Shrub layer	*Alnus alnobetula*	■■■■		■■■			■■■■■	green alder
	Rhododendron groenlandicum	■■	■■		□□□			common Labrador tea
	Rosa acicularis	■	■■	■■■	■■■■	■■■	■■■■	prickly rose
	Salix spp.	■■	□□	■	■■■■	■	■■	willows
	Shepherdia canadensis		■■	■■■	□	■■■■		soapberry
	Viburnum edule	□	■	■■■	■■	■	■■■■	highbush cranberry
Ground shrub layer	*Arctostaphylos uva-ursi*		■■■				□□	kinnikinnick
	Linnaea borealis	■■	■■■	■■■	■■■	■■	■■■■	twinflower
	Vaccinium vitis-idaea	■■■	■■■	■■■	■■■	■■	■■■	lowbush cranberry
Forb layer	*Chamaenerion angustifolium*		■■	■■	■	■	■	fireweed
	Cornus canadensis	□□	■■■	■■■	■■■	■■■	■■■	bunchberry
	Geocaulon lividum	■■■	■■■	■■■	□	■■	■■	bastard toadflax
	Lupinus arcticus		■■	■	□□	■■		arctic lupine
	Orthilia secunda	■	■	■	■■	■	■	one-sided wintergreen
	Pyrola spp.	■		■	■	■	■■	wintergreens
Lichen layer	*Cladina* spp.	■■	■■	■	□		□	reindeer lichens
Moss layer	*Hylocomium splendens*	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■	step mosses
	Pleurozium schreberi	■■■■	□□□	■■■■	□	■■■	□	red-stemmed feathermoss
	Ptilium crista-castrensis	■■■■		■■	□		□	knight's plume

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLIh/01 Alaska birch-dominated and mixed-wood Alaska birch – Conifer stands Vegetation table

Stratum	Vegetation association	FSW25	PSbW22	PSwW25	SbSwW25	SwW30	W25	W26	
	No. of plots	8	5	5	13	1	5	2	
Tree layer	*Abies lasiocarpa*	■■■■■		□					subalpine fir
	Betula neoalaskana / papyrifera	■■■■	■■■■	■■■■	■■■■■	■■■■■	■■■■■	■■■■■	Alaska / paper birch
	Picea glauca	■■■		■■■	■■■■	■■■■	■■	■■■	white spruce
	Picea mariana	□□	■■■■		■■■			■	black spruce
	Pinus contorta		■■■■	■■■■	□				lodgepole pine
Shrub layer	*Alnus alnobetula*	■■■■	■■■■	■■■■	■■	■■■■■	■■■■■		green alder
	Rhododendron groenlandicum		■		□□	■■	□□□		common Labrador tea
	Rosa acicularis	■■■	□□	□□	■■■	■■■■■	■■■	■■■	prickly rose
	Salix spp.	□□	□	■■	■■■		□□□	■■■	willows
	Viburnum edule			□□	■■■	■■■	□	■■■	highbush cranberry
Ground shrub layer	*Linnaea borealis*	□	□	■■	■■■	■■■■	■■■	■	twinflower
	Vaccinium vitis-idaea	□	■■	■■■	■■■	■■■■		■	lowbush cranberry
Forb layer	*Chamaenerion angustifolium*	□	□	■			□	■	fireweed
	Cornus canadensis	■■■■	■■	■■	■■■	■■■■■	■■■■	■■■■	bunchberry
	Geocaulon lividum	□□□	■	■■	□□	■■■			bastard toadflax
	Mertensia paniculata	■■			■		□	■■	tall bluebells
	Orthilia secunda	■		■	■	■■■			one-sided wintergreen
	Pyrola spp.			■■	□		■		wintergreens
Lichen layer	*Cladina* spp.		■■		■			■	reindeer lichens
Moss layer	*Hylocomium splendens*	■■■■	■■■■	■■■■	■■■■■	■■■■■		■■■■	step moss
	Pleurozium schreberi	■■■■	■■■■	■■■■	■■■			■■■	red-stemmed feathermoss
	Ptilium crista-castrensis	■■■	□□□	■■	■■	■■■■			knight's plume

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/01 Conifer dominated stands Fir, Pine, black and White spruce Vegetation table

Stratum	Vegetation association	FSP22	P21	P23	P28	PSb23	PSbSw23	PSw24	Sb22	SbL05	SbSw22	Sw227t	
	No. of plots	5	7	14	5	39	27	4	12	4	3	13	
Tree layer	*Abies lasiocarpa*	■■■						□					subalpine fir
	Btula neoalaskana					■							Alaska birch
	Larix laricina									■■■			larch
	Picea glauca	▪▪▪▪	▪▪	□	▪▪	□□□	□□□	■■■■■			■■■■■	■■■■■	white spruce
	Picea mariana	■■■				■■■■	■■■■	□	■■■■■	■■■■	■■■■		black spruce
	Pinus contorta	■■■■	■■■■■	■■■■■	■■■■■	■■■■	■■■■■	■■■■■	▪▪	▪▪▪	□□		lodgepole pine
Shrub layer	*Alnus alnobetula*	▪		■■■■■		■■■■■	□□		□		□		green alder
	Betula glandulosa									■■■			shrub birch
	Picea mariana					▪▪							*black spruce*
	Rhododendron groenlandicum	▪▪	■■	▪▪	▪	▪▪	▪▪		■■■	■■■	▪		common Labrador tea
	Rosa acicularis	□	■	□	▪▪▪	▪	▪	■	▪	▪▪	■■	▪▪	prickly rose
	Salix spp.	□□□□	▪▪		□□		□	□□	▪	■■	▪	□	willows
Ground shrub layer	*Arctostaphylos uva-ursi*		▪▪▪	▪▪	□□			□					kinnikinnick
	Linnaea borealis	□	■■■	▪	■■		▪▪▪	■■■			■	▪▪	twinflower
	Vaccinium vitis-idaea	■■	■■■■	■■■	■■■	■■■	■■■■	■■■■	■■■	■■■■	■■■	▪▪▪▪	lowbush cranberry
Forb layer	*Cornus canadensis*	■■■	▪	▪	■■■	▪▪	▪▪	■■■■	▪	▪▪		□□□	bunchberry
	Geocaulon lividum	▪▪	▪	□□	▪▪	▪▪	□□	■	□	□	■	■■	bastard toadflax
Lichen layer	*Cladina spp.*	▪	■■■	■■	■■■	■■		■	▪▪▪	■■■■■	□	▪▪▪	reindeer lichens
	Cladonia spp.	■	▪▪	▪▪	▪▪		■■	■■	■■■	■■■	□		pixie cup lichens
	Nephroma arcticum	▪▪					□		▪▪	■■■			Arctic kidney lichen
	Peltigera aphthosa	▪	■■■	■■■	■■■	■■	■■■	▪	■■	■■■	■■	■■	freckle pelt lichen
Moss layer	*Hylocomium splendens*	■■■■■	▪▪▪▪	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■	■■■■	■■■■■	■■■■■	step moss
	Pleurozium schreberi	■■■■■	□□□	■■■■	■■■■	■■■■	■■■■■	□□□□	■■■■■	■■■	▪▪▪▪		red-stemmed feathermoss
	Ptilium crista-castrensis	▪▪▪		■■■■		■■■■	▪▪▪		▪▪	▪	■■■■	□□□	knight's plume

Frequency of occurrence: ■ = 70–100% ▪ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/01 ASPEN-DOMINATED AND MIXED-WOOD ASPEN STANDS

BOLlh/01 - AP27 (Aspen – Pine / Lowbush cranberry / Feathermoss)

no photo available

BOLlh/01 - ASb26 (Aspen – Black spruce / Lowbush cranberry / Feathermoss)

BOLlh/01 - AP22 (Aspen – Pine – White spruce / Alder/ Lowbush cranberry / Feathermoss)

no photo available

BOLlh/01 - APSb26 (Aspen – Pine – Black spruce / Lowbush cranberry / Feathermoss)

BOLlh/01 ASPEN-DOMINATED AND MIXED-WOOD ASPEN - CONIFER STAND
ALASKA BIRCH-DOMINATED AND MIXED-WOOD ALASKA BIRCH - CONIFER STAND

BOLlh/01-ASw21 (Aspen – White spruce / Alder – Highbush cranberry / Raspberry – Bunchberry)

no photo available

BOLlh/01-W26 (Alaska birch / Highbush cranberry – Prickly rose / Tall bluebells)

BOLlh/01-ASw06 (Aspen – White spruce / Soapberry / Fireweed)

no photo available

BOLlh/01-W25 (Alaska birch / Alder – Prickly rose)

BOLlh/01 ALASKA BIRCH-DOMINATED AND MIXED-WOOD ALASKA BIRCH - CONIFER STAND

BOLlh/01 - PSbW22 (Pine – Black spruce – Alaska birch / Alder / Lowbush cranberry – Fireweed / Feathermoss)

BOLlh/01 - FSW25 (Fir – Spruce – Birch / Prickly rose / Bunchberry)

BOLlh/01 - SbSwW25 (Spruce – Alaska birch / Prickly rose / Twinflower – Tall bluebells / Feathermoss)

BOLlh/01 - PSwW25 (Pine – White Spruce – Alaska birch / Alder / Feathermoss)

no photo available

BOLlh/01- SwW30 (White spruce – Alaska birch / Common Labrador teas)

BOLlh/01 CONIFER-DOMINATED STANDS

no photo available

BOLlh/01 - P21 (Pine / Lowbush cranberry – Twinflower)

BOLlh/01 - P28 (Pine / Lowbush cranberry / Step moss)

BOLlh/01 - FSP22 (Fir – Spruce – Pine / Feathermoss)

BOLlh/01 - P23 (Pine / Alder / Feathermoss)

BOLlh/01 CONIFER-DOMINATED STANDS

BOLlh/01 - PSbSw24 (Pine – Black spruce / Alder / Feathermoss)

BOLlh/01 - SbLO5 (Black spruce – Tamarack)

no photo available

BOLlh/01 - PSbSw23 (Pine – Black spruce – White spruce / Lowbush cranberry / Feathermoss)

BOLlh/01 - PSw24 (Pine – White spruce / Lowbush cranberry / Feathermoss)

BOLlh/XX DRY TO MESIC ECOSITES

BOLlh/01 CONIFER-DOMINATED STANDS

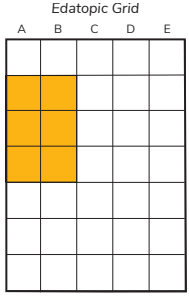
BOLlh/01 - SbSw22 (Black spruce – White spruce / Lowbush cranberry – Feathermoss)

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

BOLlh/01 - Sw27 (White spruce / Feathermoss)

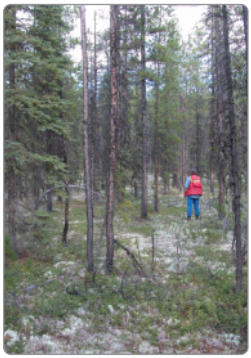
BOLlh/10 PS – Lichen woodland

General description



The PS – Lichen woodland ecosite is the most nutrient poor dry forested ecosite in the BOLlh landscape.

Stands are open coniferous forest with a groundcover dominated by lichens, mostly reindeer (*Cladina* spp.) and clad (*Cladonia* spp.) lichens but including pelt lichens (*Peltigera* spp.). Feathermosses may be of moderate to high cover; however, total lichen cover exceeds moss cover. Tree cover may be dominated by lodgepole pine (*Pinus contorta*), black spruce (*Picea mariana*) or white spruce (*Picea glauca*). A significant cover of ground shrubs, mostly lowbush cranberry (*Vaccinium vitis-idaea*) or kinnikinnick (*Arctostaphylos uva-ursi*) is also characteristic. Associates include Common Labrador tea (*Rhododendron groenlandicum*) and crowberry (*Empetrum nigrum*), along with scattered forbs such as bunchberry (*Cornus canadensis*), bastard toadflax (*Geocaulon lividum*) and arctic lupine (*Lupinus arcticus*).



BOLlh/10 - PSw01
(Pine – White spruce / Kinnikinnick / Lichen)

This ecosite is typically found on level to gently sloped coarse textured sandy and gravelly glaciofluvial terraces but can also be found on steep terrain or shallow soils associated with near surface bedrock. Because of their coarse texture, soils are droughty and limited in nutrients available for plants. Soils are usually classified as Eluviated, Duric or Orthic Dystric Brunisols, and sometimes as Eutric Brunisols.

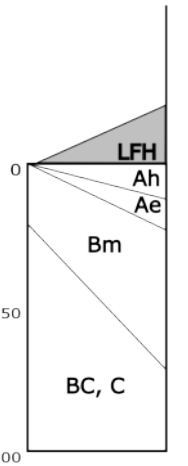
Comments

Areas of this ecosite with high lichen groundcover provide necessary caribou winter forage.

Site and soils

Site and soil characteristics

Plots in unit	77
Moisture regime	subxeric (xeric to submesic)
Nutrient regime	poor (very poor to medium)
Meso slope position	level, upper slopes, crests, other
Aspect	variable
Slope gradient	0-90 %
Surficial material	glaciofluvial, morainal, shallow colluvium over bedrock
Soil texture	sandy, gravelly
Soil classification	Dystric Brunisols, sometimes Eutric Brunisols
Humus form	mor
Humus depth	0–6 cm
Soil drainage	rapid, well
Seepage/water table	absent
Permafrost	absent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite 10

P01r	Pine / Kinnikinnick / Lichen; reindeer lichen subassociation
P26	Pine / Grass – Kinnikinnick – Lowbush cranberry
PSb09	Pine – Black spruce / Common Labrador tea / Lowbush cranberry / Lichen
PSb11	Pine – Black spruce / Lowbush cranberry – Kinnikinnick / Lichen
PSbSw03	Pine – Black spruce – White spruce / Lowbush cranberry / Lichen
PSw01	Pine – White spruce / Kinnikinnick / Lichen
PSw03	Pine – White spruce / Lowbush cranberry / Lichen
PSw09	Pine – White spruce / Common Labrador tea / Lowbush cranberry / Lichen

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

BOLIh/10 Vegetation table

Stratum	Vegetation association / No. of plots	P01r 21	P26 3	PSb09 10	PSb11 17	PSbSw03 12	PSw01 7	PSw03 3	PSw09 2	
Tree layer	*Betula neoalaskana / papyrifera*									birch trees
	Picea glauca	□	■			■■■	■■■	■■■■	■■■■	white spruce
	Picea mariana		□□	■■■■	■■■■	■■■				black spruce
	Pinus contorta	■■■■■	■■■■■	■■■■	■■■■	■■■■■	■■■■■	■■■■■	■■■■■	lodgepole pine
Shrub layer	*Alnus alnobetula*									green alder
	Juniperus communis									common juniper
	Rhododendron groenlandicum	□□	□□□	■■■■■	■■■	■■	■■	□	■■■■	common Labrador tea
	Rosa acicularis	□	■■■	□		■■	■	■	■	prickly rose
	Vaccinium uliginosum			■■■	□□	□□	□	■■		bog blueberries
Ground shrub layer	*Arctostaphylos uva-ursi*	■■■■	■■■■		□□	■■■	■■■■■		■■■	kinnikinnick
	Empetrum nigrum	□		■■■	■■	■■■	□	■■■	■■■■	crowberry
	Linnaea borealis	□□	□□		□	□□	■■	□	■■	twinflower
	Vaccinium vitis-idaea	■■■■	■■■■■	■■■■	■■■■	■■■■	■■■		■■■■	lowbush cranberry
Graminoid layer	Poaceae	■■	■■■■			■■	■■■	■■	■	grasses
Forb layer	*Cornus canadensis*		■	■■	■■	■	□	□	■■	bunchberry
	Geocaulon lividum	□		□	■	■	■■	■■	■■■	bastard toadflax
	Lupinus arcticus		■■■			■■	□	□	■	Arctic lupin
Lichen layer	*Stereocaulon* spp.	■■	■■■		□□	■	■■	□	■■■	foam lichens
	Cladina spp.	■■■■■	■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	reindeer lichens
	Cladonia spp.	■■■	□□	■■■■	■■■	■■■	■■■	■■	■	pixie cup lichens
	Peltigera aphthosa	■■	■■■	■■■■	■■■	■■■	■■	■■■	■■■	freckle pelt lichen
Moss layer	*Hylocomium/Pleurozium / Ptillium* spp.		□□□	■■■■	■■■■	■■■	■■	□	■■■■	feathermosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/10 PS – Lichen woodland

BOLlh/10 - P26 (Pine / Grass – Kinnikinnick – Lowbush cranberry)

BOLlh/10 - PSb11 (Pine – Black spruce / Common Labrador tea / Lowbush cranberry / Lichen)

BOLlh/10 - P01r (Pine / Kinnikinnick / Lichen)

no photo available

BOLlh/10 - PSb09 (Pine – Black spruce / Common Labrador tea / Lowbush cranberry / Lichen)

BOLlh/10 PS – Lichen woodland

BOLlh/10 - PSbSw03 (Pine – Black spruce – White spruce / Lowbush cranberry / Lichen)

BOLlh/10 - PSw01 (Pine – White spruce / Kinnikinnick / Lichen)

BOLlh/10 PSw – Lichen woodland

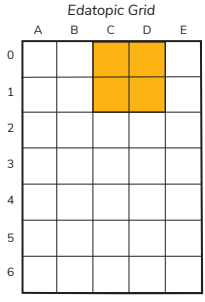
BOLlh/10 - PSw09 (Pine – White spruce / Common Labrador tea / Lowbush cranberry / Lichen)

no photo available

BOLlh/10 - PSw03 (Pine – White spruce / Lowbush cranberry / Lichen)

BOLlh/20 Juniper – Kinnikinnick

General description



The Juniper – Kinnikinnick ecosite occurs rarely on extremely dry, very steep southerly (warm) and neutral facing slopes.

Common juniper (*Juniperus communis*) and kinnikinnick (*Arctostaphylos uva-ursi*) are the dominant species. A variety of forbs are commonly present with low to moderate cover. Mosses and lichens are sparse.

This ecosite is found on steep bedrock-controlled slopes or on colluvial material at the base of river cut bluffs. Sites are very rapidly drained shallow or actively colluviating soils. They are medium in nutrients and soils are classified as Regosols.

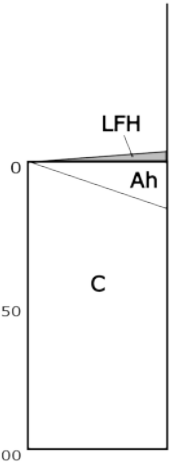
Comments

Only 2 plots were recorded in the BOLlh.

Site and soils

Site and soil characteristics

Plots in unit	2
Moisture regime	xeric to subxeric (0-1)
Nutrient regime	medium (C)
Meso slope position	very steep slopes
Aspect	southerly
Slope gradient	40-80 %
Surficial material	shallow colluvium over bedrock, glaciofluvial
Soil texture	sandy
Soil classification	Regosol
Humus form	mor
Humus depth	4-15 cm
Soil drainage	very rapidly drained
Seepage/water table	none
Permafrost	none



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite 20

Juco04 Juniper / Kinnikinnick

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

BOLlh/20 Vegetation table

	Vegetation association	Juco04	
Stratum	No. of plots	2	
Tree layer	*Picea glauca*	■■	white spruce
	Pinus contora	■	lodgepole pine
Shrub layer	*Juniperus communis*	■■■■	common juniper
	Rosa acicularis	■	prickly rose
	Shepherdia canadensis	■■	soapberry
Ground shrub layer	*Arctostaphylos uva-ursi*	■■■■■	kinnikinnick
Graminoid layer	Poaceae	■■	grasses
Forb layer	*Achillea millefolium*	■	common yarrow
	Anemone multifida	■■	cut-leaved anemone
	Anticlea elegans	■	mountain death-camas
	Boechera holboellii	■	Holboell's rockcress
	Equisetum hyemale	■	common scouring-rush
	Fragaria virginiana	■	wild strawberry
	Galium boreale	■■	northern bedstraw
	Oxytropis campestris	■	field locoweed
	Polemonium pulcherrimum	■	showy Jacob's-ladder
	Saxifraga tricuspidata	■	three-toothed saxifrage
	Solidago spp.	■	goldenrods

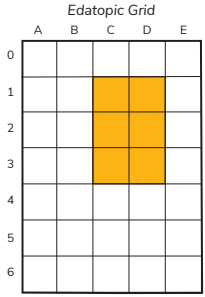
Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/20 Juniper – Kinnikinnick

no photo available

BOLlh/20 - Juco04 (Juniper / Kinnikinnick)

BOLlh/21 A – Soapberry – Rose woodland



General description

The A – Soapberry – Rose woodland ecosite, dominated by forests of aspen (*Populus tremuloides*) or mixed-wood aspen, is associated with dry, nutrient medium to rich sites found on southerly (warm) and neutral facing slopes, as well as on level terraces.

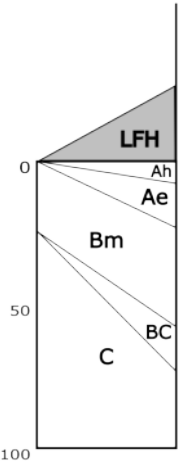
Aspen dominates or co-dominates the forest canopy. White (*Picea glauca*) and black spruce (*P. mariana*), lodgepole pine (*Pinus contorta*) and birch (*Betula neoalaskana / papyrifera*), are commonly present and are often co-dominant with the aspen overstorey. Occasionally, pine or white spruce characterize the canopy. A well-developed shrub layer composed of highbush cranberry (*Viburnum edule*), prickly rose (*Rosa acicularis*), soapberry (*Shepherdia canadensis*), willows (mostly *Salix scouleriana*), and/or green alder (*Alnus viridis*), is characteristic. Groundcover is typically dominated by ground shrubs such as twinflower (*Linnea borealis*), lowbush cranberry (*Vaccinium vitis-idaea*) or kinnikinnick (*Arctostaphylos uva-ursi*). A variety of forbs are commonly present with a very low cover. A low cover of step moss (*Hylocomium splendens*) is also usually present.

Terrain is level to steep with aspects ranging from southeasterly to westerly. The surficial material is often glaciofluvial but can be colluvial, morainal or lacustrine. The well to rapidly drained soils are classified as Eluviated or Orthic Eutric or Dystric Brunisols.

Site and soils

Site and soil characteristics

Plots in unit	38
Moisture regime	xeric-submesic (1-3)
Nutrient regime	medium – rich (C-D)
Meso slope position	slopes and crest
Aspect	south, west, east
Slope gradient	0-80 %
Surficial material	mixed, glaciofluvial
Soil texture	loamy, sandy
Soil classification	Eutric and some Dystric Brunisols
Humus form	mor
Humus depth	4-15 cm
Soil drainage	rapid to well drained
Seepage/water table	none
Permafrost	none



Vegetation summary

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

A21	Aspen / Soapberry / Kinnikinnick
A26	Aspen / Highbush cranberry / Bunchberry
AP04	Aspen – Pine / Kinnikinnick / Lichen
APSw03	Aspen – Pine – White spruce / Kinnikinnick
APSw25	Aspen – Pine – White spruce / Soapberry
AW22	Aspen – Paper birch / Highbush cranberry / Twinflower
P22	Pine / Soapberry
Sw20	White spruce / Grass

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

BOLIh/21 Vegetation table

	Vegetation association	A21	A26	AP04	APSw03	APSw25	AW22	P22	Sw20	
Stratum	No. of plots	5	13	2	2	6	6	3	1	
Tree layer	*Betula neoalaskana / papyrifera*	□	□				■■■■			Alaska / paper birch
	Picea glauca	■■	■■	■■	■■■	■■■	■	■■	■■■■■	white spruce
	Pinus contorta	■	□□	■■■■■	■■■■■	■■■	■■	■■■■■		lodgepole pine
	Populus tremuloides	■■■■■	■■■■■	■■■■	■■■■	■■■■■	■■■■■		■	trembling aspen
Shrub layer	*Alnus alnobetula*		■■■■				■■■■	■■		green alder
	Cornus sericea		□□□				□	■		red-osier dogwood
	Rosa acicularis	■■	■■■		■■	■■■	■■■■	■		prickly rose
	Salix scouleriana	□□□	□□			□□□	■■■			Scouler's willow
	Salix spp.	■■	□□	■	■	■■	□□	■■■		willows
	Shepherdia canadensis	■■■■■	□		■	■■■■■	■■	■■■		soapberry
	Viburnum edule	□□□	■■	■■■	■■■	■■■	■■■	■■		high bush-cranberry
Ground shrub layer	*Arctostaphylos uva-ursi*	■■■■■	■■■■	■■■■	■■■■■	■■■	□	■■■	■■	kinnikinnick
	Linnaea borealis	■■■	■■■	■■	■■■■	■■■	■■■■	■■■	■■	twinflower
	Vaccinium vitis-idaea	■■■■	■■■	■■■■	■■■■	■■■	■■	■■	■■■	lowbush cranberry
Graminoid layer	Poaceae	■■	□	■	■■■■		□	■	■■■■	grasses
Forb layer	*Chamaenerion angustifolium*	■	■■	■■	■■	■■■	■■	■■■		fireweed
	Cornus canadensis	■	■■■	■	■■■	■■	■	■■		bunchberry
	Geocaulon lividum	■■	■■	■	■	■■	■■■	■■		bastard toadflax
	Lupinus arcticus	□		■■	■■	■■■		■		Arctic lupin
	Mertensia paniculata	□				■■	□□		■	tall bluebells
	Orthilia secunda	□	■■			■■	□□	■		one-sided wintergreen
	Pedicularis labradorica		□		■	□	□	■		Labrador lousewort
	Pyrola asarifolia	□	■			□	■■	■		pink wintergreen
Lichen layer	*Cladonia* spp.	■■■	■■	■■■■	■■■			■■■	■■	pixie cup lichens
	Peltigera aphthosa	■	■	■■	■■■	■■	□	■■■	■■	freckle pelt lichen
Moss layer	*Hylocomium / Pleurozium* spp.	□	■■■■		■■■■■	■■■■■	■■■	■■■■	■■	feathermosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/21 A – Soapberry – Rose woodland

BOLlh/21 - A26 (Aspen / Highbush cranberry / Bunchberry)

no photo available

BOLlh/21 - APSw03 (Aspen – Pine – White spruce / Kinnikinnick)

BOLlh/21 - A21 (Aspen / Soapberry / Kinnikinnick)

no photo available

BOLlh/21 - AP04 (Aspen – Pine / Kinnikinnick / Lichen)

BOLlh/21 A – Soapberry – Rose woodland

BOLlh/21 - AW22 (Aspen – Paper birch / Highbush cranberry / Twinflower)

no photo available

BOLlh/21 - Sw20 (White spruce / Grass)

BOLlh/21 - APSw25 (Aspen – Pine – White spruce / Soapberry)

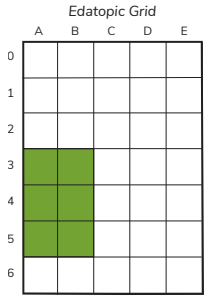
no photo available

BOLlh/21 - P22 (Pine / Soapberry)

Geocaulon lividum (bastard toadflax)

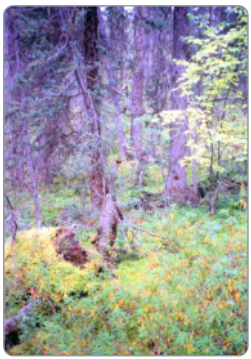
BOLlh/30 PSb – Common Labrador tea forest

General description



This PSb – Common Labrador tea forest ecosite represents nutrient poor, submesic to slightly moist sites.

Tree cover is often dominated by black spruce (*Picea mariana*), though white spruce (*Picea glauca*) and lodgepole pine (*Pinus contorta*) are common associates. Trembling aspen (*Populus tremuloides*) may be present. Common Labrador tea (*Rhododendron groenlandicum*) is diagnostic for the ecosite, dominating the shrub cover. Willows (*Salix* spp.), and bog blueberry (*Vaccinium uliginosum*) are common shrubs. Bunchberry (*Cornus canadensis*), lowbush cranberry (*Vaccinium vitis-idaea*) and bastard toadflax (*Geocaulon lividum*) are characteristic of the forest floor. The ground cover is dominated by feathermosses (mostly *Hylocomium splendens* and *Pleurozium schreberi*).



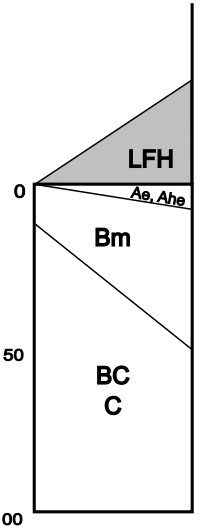
BOLlh/30 - Sb23
(Black spruce / Labrador tea / Feathermoss)

Soil moisture regime ranges from submesic to subhygric. Sites are often associated with morainal or glaciofluvial parent materials and are generally nutrient poor due to low soil nutrient availability. Soils are coarse or, commonly, compacted resulting in shallow rooting depths. Soils are acidic and often eluviated (nutrients have been leached downward from the surface horizons), all of which result in fewer nutrients being available to the plants. Soils are usually classified as Eluviated, Orthic or Duric Dystric Brunisols.

Site and soils

Site and soil characteristics

Plots in unit	54
Moisture regime	submesic to subhygric [3-5]
Nutrient regime	poor [B]
Meso slope position	mixed
Aspect	variable
Slope gradient	0-45 %
Surficial material	usually morainal or glaciofluvial
Soil texture	gravelly with sandy or sand and silt matrix
Soil classification	Usually Dystric Brunisol; also Grey Luvisol, Eutric Brunisol, Regosol
Humus form	hemimor
Humus depth	0-13 cm
Soil drainage	well to moderately well
Seepage/water table	none
Permafrost	none



Vegetation summary

The following vegetation associations characterize the variation in species composition on this ecosite.

A28	Aspen / Common Labrador tea
APSb27	Aspen – Pine – Black spruce / Common Labrador tea / Lowbush cranberry
ASb27	Aspen – Black spruce / Common Labrador tea / Lowbush cranberry
P29	Pine / Common Labrador tea / Feathermoss
PSb25	Pine – Black spruce / Common Labrador tea / Feathermoss
PSw27	Pine – White spruce / Common Labrador tea / Crowberry / Feathermoss
Sb23	Black spruce / Common Labrador tea / Feathermoss
SbSw30	Black spruce – White spruce / Common Labrador tea / Feathermoss
SbSwW29	Black spruce – White spruce – Birch / Common Labrador tea / Feathermoss
Sw29	White spruce / Common Labrador tea / Crowberry / Feathermoss

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

BOLIh/30 Vegetation table

Stratum	Vegetation association / No. of plots	A28 2	APSb27 7	ASb27 3	P29 10	PSb25 7	PSw27 1	Sb23 9	SbSw30 6	SbSwW29 4	Sw29 2	
Tree layer	*Betula neoalaskana / papyrifera*	■■								■■■■■		Alaska / paper birch
	Picea glauca	■■■	□□□	■■	■■	■■■	■■■■		■■■■■	■■■	■■■■■	white spruce
	Picea mariana	■■	■■■■	■■■■■		■■■■■		■■■■■	■■■■	■■■■■		black spruce
	Pinus contorta		■■■■■		■■■■■	■■■■■	■■■■■	■■	■■	■■■■		lodgepole pine
	Populus tremuloides	■■■■■	■■■■■	■■■■■	□□		■			■■■■		trembling aspen
Shrub layer	*Alnus alnobetula*		□□				■■■■					green alder
	Betula glandulosa						■■		■■	■■		shrub birch
	Rhododendron groenlandicum	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■	common Labrador tea
	Rosa acicularis	■■■	□□	■■■	■	■		■■	□		■■	prickly rose
	Salix spp.			□□□	■■■■	■■	■■■	■■	■■■■	■■■■	■■■	willows
	Vaccinium uliginosum		■■■				■■■■	■■■	■■	■■■	■	bog blueberry
Ground shrub layer	*Arctostaphylos uva-ursi*						■■■					kinnikinnick
	Artous rubra						■					red bearberry
	Empetrum nigrum		■■		■■■	■■■■		■■■	■■■		■■	crowberry
	Vaccinium vitis-idaea	■■■■	■■■■	■■■■	■■■■	■■■■■	■■■■	■■■■	■■■■	■■■■■	■■■	lowbush cranberry
Grass layer	Poaceae						■■■					
Forb layer	*Chamaenerion angustifolium*						■■■					firewee
	Cornus canadensis		■■■		■■■	■■■	■■■	■■	□		■■■	bunchberry
	Geocaulon lividum	■■	■■			■■■		□	■■	■■	■	bastard toadflax
	Lupinus arcticus	■■■■					■					arctic lupin
Lichen layer	*Cladian* spp.						■■■					reindeer lichens
	Cladonia spp.	■■	■■■■	■■■	■■■	■■■■	■	■■■■	■■■■	■■■■	□	pixie cup lichens
	Peltigera aphthosa	■	■■■■	■■	■■	■■■	■■	■■	■■	■■	■	freckle pelt lichen
Moss layer	*Hylocomium / Pleurozium / Ptilium* spp.	■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	feathermosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/30 Sw – Common Labrador tea forest

BOLlh/30 - APSb27 (Aspen – Pine - Black spruce / Common Labrador tea / Lowbush cranberry)

BOLlh/30 - A28 (Aspen / Common Labrador tea)

no photo available

BOLlh/30-ASb27 (Aspen – Black spruce / Common Labrador tea / Lowbush cranberry)

no photo available

BOLlh /30-P29 (Pine / Common Labrador tea / Feathermoss)

BOLlh/30 Sw – Common Labrador tea forest

no photo available

BOLlh/30 - PSw27 (Pine – White spruce / Common Labrador tea / Crowberry / Step moss)

no photo available

BOLlh/30 - SbSw30 (Black spruce – White spruce / Common Labrador tea / Feathermoss)

no photo available

BOLlh/30 - Psb25 (Pine – Black spruce / Common Labrador tea / Feathermoss)

BOLlh/30 - Sb23 (Black spruce / Common Labrador tea / Feathermoss)

BOLlh/30 Sw – Common Labrador tea forest

no photo available

BOLlh/30 - SbSwW29 (Black spruce - White spruce – Birch / Common Labrador tea / Feathermoss)

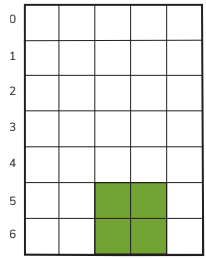
no photo available

BOLlh/30 - Sw29 (White spruce / Common Labrador tea / Crowberry / Feathermoss)

BOLlh/31 SbSw – Willow forest

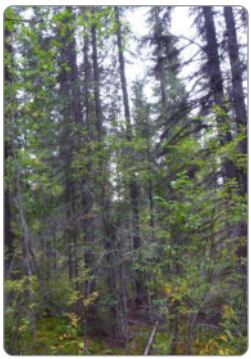
General description

Edatopic Grid



SbSw – Willow forest ecosite is a diverse moist ecosite of depressional, level, lower and mid slopes.

This ecosite is characterized by a coniferous overstorey of white and black spruce, sometimes with pine, larch or fir with a variety of moist indicator species. The shrub understorey may be sparse or include a high cover of willow. The understorey is characterized by trace amounts of wet or moist indicator species such as blueberry willow (*Salix myrtilifolia*), coltsfoot (*Petasites* sp.), red bearberry (*Arctous rubra*), horsetail (*Equisetum* sp.), or sedge (*Carex* sp.) and a lack or low cover of common Labrador tea (*Rhododendron groenlandicum*). Brown mosses (*Aulacomnium* sp., *Tomentypnum* sp.) are often present with a low or trace cover. High grass cover occurs on a few sites. None of these moist or wet species are diagnostic individually but their combined presence represents the ecosite. Because of the variety of indicators this is a diverse ecosite.



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

The soil moisture regime is typically subhygric to hygric. The medium to rich nutrient regime indicates that the site receives some nutrients from subsurface seepage or seepage on top of permafrost where permafrost is present. The soils are imperfectly to poorly drained. Soils often develop on finer textured lacustrine or morainal deposits. Deep organic rich mineral horizons (Ah horizons) found on some sites, are associated with the higher nutrients. Permafrost may be present close to the surface, found at depths below the soil control section, or may be absent. Soils are classified as Brunisols (Gleyed, Eluviated and Orthic subgroups) or Cryosols.

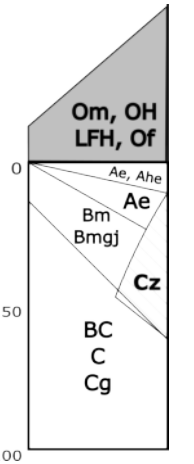
Comments

Ecosite 31 includes some plots occurring on organic soils which appear to be wetlands that were burned and no longer show evidence of many wetland species.

Site and soils

Site and soil characteristics

Plots in unit	47
Moisture regime	subhygric to hygric
Nutrient regime	medium to rich
Meso slope position	level, mid and lower slopes
Aspect	variable
Slope gradient	0-22 %
Surficial material	commonly morainal, lacustrine, colluvial
Soil texture	fine loamy - loamy skeletal
Soil classification	Dystric and Eutric Brunisols
Humus form	mor, moder, mull
Humus depth	8-38 cm
Soil drainage	moderately well to poor
Seepage/water table	usually below 50 cm
Permafrost	usually absent



Vegetation summary

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

The following vegetation associations characterize the variation in species composition on this ecosite.

ASw28 Aspen – White spruce / bunchberry – Fireweed

FSw36 Fir – White spruce / Currant / Horsetail – Tall bluebells / Step moss

PSbSw31 Pine – Black spruce – White spruce / Blueberry willow / Feathermoss

PSw21 Pine – White spruce / Shrub birch / Crowberry

PSw25 Pine – White spruce / Altai fescue

SL23 Spruce – Larch / Lowbush cranberry / Step moss

SbSw31 Black spruce – White spruce / Blueberry willow / Feathermoss

SbSwW34 Black spruce – Alaska birch / Alder – Highbush cranberry / Horsetail

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

Sw31 White spruce / Willow / Red bearberry / Feathermoss

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

BOLIh/31 Vegetation table

Stratum	Vegetation association / No. of plots	ASw28 2	FSw36 2	PSbSw31 8	PSw21 1	PSw25 7	SbSw31 4	SbSwW34 9	SL23 5	Sb32 6	Sw31 3	
Tree layer	*Abies lasiocarpa*		■■■■									fir
	Larix laricina								■■■			larch
	Picea glauca	■■■	■■■■■	■■■	■■■	■■■■	■■■	■■■■	■■■		■■■■	white spruce
	Picea mariana		■■	■■■■	■		■■■■■	■■■■	■■■■	■■■■		black spruce
	Pinus contorta			■■■■	■■■■	■■■■			□□			lodgepole pine
	Populus tremuloides	■■■■■				■■■						trembling aspen
Shrub layer	*Alnus* spp.		■■					■■■■■				green alder
	Betula glandulosa	■■■			■■■■■				□□	■■	□□□	shrub birch
	Rhododendron groenlandicum		■■	■■■■		■■■	■■	■■■		■■■	■	common Labrador tea
	Ribes spp.	■■■	■■				□□	□□	■		□	currants
	Rosa acicularis	■■■■	■■■	■■		■■	■■	■■■	■■	■■	■■■	prickly rose
	Salix myrtillifolia	■■■■		■■■			■■■■		□□	■■■■	■	blueberry willow
	Salix spp.	■■■■	■■■■	■■■■		■■■■	■■		■	■■■	■■	willows
Ground shrub layer	*Arctous rubra*	■■		□		■	■■		□	■	■■	red bearberry
	Empetrum nigrum		■	■■		□□□	■■			■■	□	crowberry
	Linnaea borealis	■■■	■■■	■■	■■	■■	■	■	■■	□	■■	twinflower
	Vaccinium vitis-idaea	■■	■■	■■■	■■	■■	■■	■■	■■■	■■■	■■■■	lowbush cranberry
Forb layer	*Cornus canadensis*	■■■■	■■■	■■■	■■	■■■	■■■	■■■	□	■■■		bunchberry
	Equisetum arvense		■■■■	□□□			□	■■■			□	common horsetail
	Equisetum sylvaticum		■■■■					■■■		■■■		wood horsetail
	Mertensia paniculata	■■■	■■■	■		□		■	□		■■	tall bluebells
	Mitella nuda	■	■■				■	■	□		□	naked mitrewort
	Petasites frigidus	■	■	■		■■				■■■		sweet coltsfoot
Graminoid layer	Poaceae	■■	■	□	■■	■■■■■	■		□□	□	■	grasses
Moss layer	*Aulacomnium palustre*			□	■■■				□		□□	glow moss
	Hylocomium / Pleurozium / Ptillium spp.	■■	■■■■■	■■■■■	■■■■■	■■■■	■■■■■	■■■■	■■■■■	■■■■■	■■■■■	feathermosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/31 SbSw - Willow forest

BOLlh/31 - FSw36 (Fir – White spruce / Currant / Horsetail – Tall bluebells / Step moss)

no photo available

BOLlh/31 - PSw21 (Pine – White spruce / Shrub birch / Crowberry)

no photo available

BOLlh/31 - ASw28 (Aspen – White spruce / bunchberry – fireweed)

BOLlh/31 - PsbSw31 (Pine – Black spruce – White spruce / Blueberry willow / Feathermoss)

BOLlh/31 SbSw - Willow forest

BOLlh/31 - SL23 (Spruce – Larch / Lowbush cranberry / Step moss)

no photo available

BOLlh/31 - PSw25 (Pine – White spruce / Altai fescue)

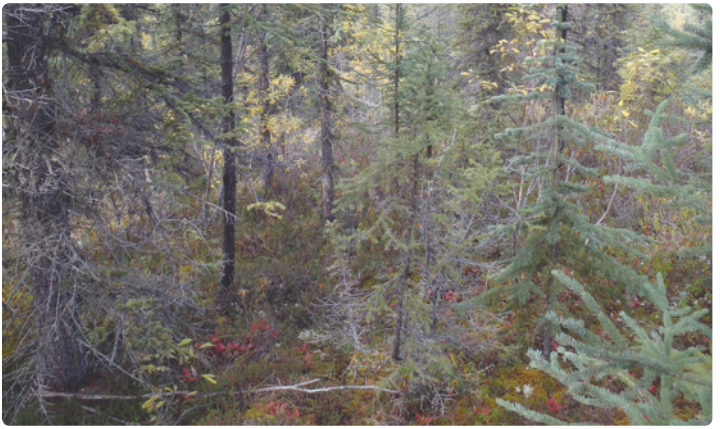
no photo available

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

no photo available

BOLlh/31 - SbSwW34 (Black spruce – Alaska birch / Alder – Highbush cranberry / Horsetail)

BOLlh/31 SbSw - Willow forest

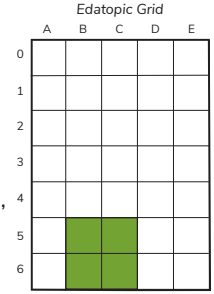


BOLlh/31 - Sw31 (White spruce / Willow / Red bearberry / Feathermoss)

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

BOLlh/32 Sw Shrub birch woodland

General description



The cold, moist to wet coniferous forests of the Sw Shrub birch woodland ecosite are found on lower and toe slopes, on cool aspects and on permafrost influenced level sites.

Open black spruce (*Picea mariana*) forest is typical of this ecosite although white spruce (*Picea glauca*), larch (*Larix laricina*) and lodgepole pine (*Pinus contorta*) are common components of the canopy. The shrub understorey is dominated by a moderate to high cover of Common Labrador tea (*Rhododendron groenlandicum*), with willows (*Salix* spp.), shrub birch (*Betula glandulosa*) and blueberry (*Vaccinium uliginosum*) also common, sometimes with a high cover. Ground shrubs such as lowbush cranberry (*Vaccinium vitis-idaea*) and crowberry (*Empetrum nigrum*) are usually present. The presence of moist indicator species such as blueberry willow (*Salix mytillifolia*), red bearberry (*Arctous rubra*), and horsetails (*Equisetum* spp.), and a low cover of wetland indicator species including sedges (*Carex* spp.), bog cranberry (*Vaccinium oxycoccus*), cloudberry (*Rubus chamaemorus*), and wetland mosses such as peat mosses (*Sphagnum* spp.), golden fuzzy fen moss (*Tomentypnum nitens*), glow moss (*Aulacomnium palustre*) and hook mosses (*Drepanocladus* spp.) help to define the ecosite. A moderate lichen cover may be present.

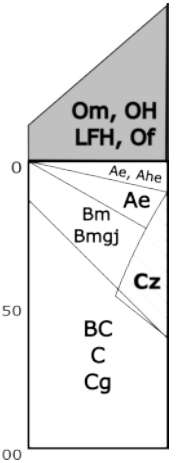
BOLlh/32 - SbL31
(Black spruce – Larch / Blueberry / Red bearberry / Step moss)

The soil moisture regime ranges from subhygric to hygric with a nutrient regime of poor to medium. Soils are imperfect to very poorly drained till, lacustrine and glaciofluvial deposits. They are classified as Gleysols, Brunisols, Cryosols, and Podzols.

Site and soils

Site and soil characteristics

Plots in unit	36
Moisture regime	hygric (subhydric to subhygric)
Nutrient regime	poor to medium
Meso slope position	lower slope, toe, level or midslope
Aspect	north and east most common
Slope gradient	0-40 %
Surficial material	usually morainal, lacustrine, glaciofluvial
Soil texture	loamy, sandy
Soil classification	Gleysols, Gleyed Brunisols, Cryosols
Humus form	mor, mull, moder
Humus depth	7-40 cm
Soil drainage	imperfect to poor
Seepage/water table	may be found at 25-60 cm or more
Permafrost	may be present below 50 cm.



Vegetation summary

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

Sb26 Black spruce / Shrub birch / Lowbush cranberry / Feathermoss

Sb33 Black spruce / Common Labrador tea – Blueberry willow / Scouring-rush / Step moss

SbF31 Black spruce – Fir / Cloudberry / Feathermoss – Peat moss

SbL31 Black spruce – Larch / Blueberry / Red bearberry / Step moss

SbSw33 Black spruce – White spruce / Common Labrador tea – Blueberry willow / Feathermoss

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

BOLlh/32 Vegetation table

	Vegetation association	Sb26	Sb33	SbF31	SbL31	SbSw33	
Stratum	No. of plots	3	11	2	14	6	
Tree layer	*Abies lasiocarpa*			■■■■■			fir
	Larix laricina				■■■		larch
	Picea glauca			■■■■		■■■	white spruce
	Picea mariana	■■■■	■■■■■	■■■■	■■■■■	■■■■	black spruce
	Pinus contorta			■■■			lodgepole pine
Shrub layer	*Betula glandulosa*		□		■■■■		shrub birch
	Rhododendron groenlandicum	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	common Labrador tea
	Ribes spp.			■■			currants
	Rosa acicularis	□□	■■	■	■	■	prickly rose
	Salix myrtillifolia	□□	□□		■■■■	■■■	blueberry willow
	Salix spp.	■■	■■■	■■■■■	■■■	■■■■	willows
	Vaccinium uliginosum	■■■■■	□□□	■	■■■	■■■	bog blueberry
Ground shrub layer	*Arctous rubra*	□□	□□		■■	■■■	red bearberry
	Empetrum nigrum	■■	□□	■■	■	■■	crowberry
	Rubus chamaemorus	□	■■	■■			cloudberry
	Vaccinium vitis-idaea	■■■	■■■	■■■	■■■	■■■	lowbush cranberry
Forb layer	*Equisetum arvense*			■■			common horsetail
	Equisetum scirpoides	□	■■		■■■	■■■	dwarf scouring-rush
	Geocaulon lividum	□	■	■	■	■	bastard toadflax
Lichen layer	*Cladonia* spp.	■■■	■■■	■■■	■■	■■■	pixie cup lichens
	Peltigera aphthosa	■■	■■	■	■■■	■	freckle pelt lichen
	Peltigera spp.	□		■■■■	□	■■	pelt lichens
Moss layer	Bryophyta			■■■■■			mosses
	Hylocomium splendens	■■■■	■■■■■		■■■■■	■■■■■	feathermosses
	Pleurozium schreberi	■■■■■	■■■■■		■■■■	■■■■	red-stemmed feathermosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/32 Sw Shrub birch woodland

BOLlh/32 - Sb33 (Black spruce / Common Labrador tea – Blueberry willow / Scouring-rush / Step moss)

no photo available

BOLlh/32 - Sb26 (Black spruce / Shrub birch / Lowbush cranberry / Feathermoss)

no photo available

BOLlh/32 - SbF31 (Black spruce – Fir / Cloudberry / Feathermoss – Peat moss)

no photo available

BOLlh/32-SbL31 (Black spruce – Larch / Blueberry / Red bearberry / Step moss)

BOLlh/32 Sw Shrub birch woodland

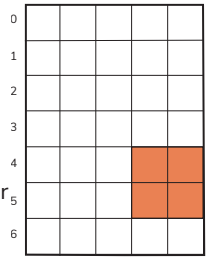
BOLlh/32 - SbSw33 (Black spruce – White spruce / Common Labrador tea – Blueberry willow / Feathermoss)

Rosa acicularis (prickly rose)

BOLlh/40 Sw – Riparian forest

General description

Edatopic Grid



The Sw – Riparian forest ecosite is found on mid to upper bench fluvial floodplains adjacent to large and smaller rivers throughout the BOLlh.

White spruce (*Picea glauca*) is the dominant overstorey species of this ecosite. On occasion, black spruce (*P. mariana*) replaces white. Balsam poplar (*Populus balsamifera*), aspen (*Populus tremuloides*), fir (*Abies lasiocarpa*) and larch (*Larix laricina*) are occasional components of the canopy. Under the spruce canopy, a low to high shrub cover is characteristic, with alder (Alnus incana or A. viridis), prickly rose (*Rosa acicularis*), currants (*Ribes* spp.), red osier dogwood (*Cornus stolonifera*), highbush cranberry (*Vibunum edule*), and/or willow (*Salix* spp.). Groundcover usually has a low to high cover of horsetail (*Equisetum arvense, E. pratense,* or *E. sylvaticum*) and feathermoss. Grasses (Poaceae) may constitute a significant cover on logged sites.

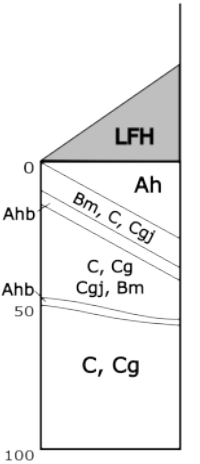
BOLlh/40 - Sw36
(White spruce / Highbush cranberry / Horsetail)

Occasional to frequent short duration flooding is typical, bringing extra nutrients. These sites are influenced by subsurface water, which enriches the sites resulting in a medium to rich nutrient regime. The moisture regime is usually mesic to subhygric. Soils are commonly moderately well to imperfectly drained sandy, silty or loamy fluvial deposits. Soils are poorly developed and are most often classified as Cumulic Regosols, sometimes as Orthic Regosols or Brunisols.

Site and soils

Site and soil characteristics

Plots in unit	56
Moisture regime	subhygric (mesic to subhygric)
Nutrient regime	rich (to very rich)
Meso slope position	usually level
Aspect	usually level
Slope gradient	1-11%
Surficial material	usually fluvial
Soil texture	sandy and silty
Soil classification	Regosols, Brunisols
Humus form	more, moder, mull
Humus depth	5-23 cm
Soil drainage	imperfect to moderately well
Seepage/water table	usually at >50 cm
Permafrost	absent



Vegetation summary

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

A34 Aspen – Rose – Horsetail

ASw29 Aspen – White spruce / Alnus incana / Rubus pubescens – Equisetum spp.

ASw30 Aspen – White spruce / Equisetum spp. – Cornus canadensis

Sb24 Black spruce / Alder / Sweet coltsfoot – Horsetail / Feathermoss

SbL31 Spruce – Larch – Balsam poplar / Soapberry

Sw18 White spruce / Red osier dogwood / Horsetail – Mitrewort

Sw34 White spruce / Alder – Highbush cranberry / Wild sarsaparilla – Mitrewort

Sw36 White spruce / Highbush cranberry / Horsetail

SwW34 White spruce – Alaska birch /Red osier dogwood – Highbush cranberry / Horsetail

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

BOLIh/40 Vegetation table

Stratum	Vegetation association / No. of plots	A34 1	ASw29 1	ASw30 1	Sb24 4	SbL31 2	Sw18 4	Sw34 2	Sw27a 2	Sw36 34	SwW34 5	
Tree layer	*Abies lasiocarpa*				■■							fir
	Betula neoalaskana / papyrifera										■■■	Alaska / paper birch
	Larix laricina					■■■■						larch
	Picea glauca		■■■■■	■■■	■■■■■	■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	white spruce
	Populus tremuloides	■■■■	■■■■	■■■■■		■						lodgepole pine
Shrub layer	*Actaeca rubra*			■■■	□							red baneberry
	Alnus incana / alnobetula		■■■■■		■■■■		□□□	■■■■	■■■■		■■■	Mountain / green alder
	Cornus sericea						□□	■■	■■			common Labrador tea
	Ribes triste			■■■	■		□□				□	wild red currant
	Rosa acicularis	■■■	■■■	■■■■■	■■■	■■■	■■■■	■■■	■■■	■■■■	■■■■	prickly rose
	Salix spp.			■■	□	■■■	■■■	■■■■	■■■	■■■	■■■	willows
	Shepherdia canadensis				□	■■■■	□	■■■	■■■		□	soapberry
	Viburnum edule		■■■■		■		■■■	■■■	■■	■■■	■■■	highbush cranberry
Ground shrub layer	*Linnaea borealis*		■■■	■■	■	■■	■■■	■■■	■■■	■■■	■■■	twinflower
	Vaccinium vitis-idaea			■	■	■■■	□□□	■■■	■■■	□□□	■■■■	lowbush cranberry
Forb layer	*Aralia nudicaulis*							■■■				wild sarsparilla
	Cornus canadensis			■■	■■■	■■■■	■■■	■■■■	■■	■■■	■■■	bunchberry
	Equisetum arvense / pratense	■	■■■	■■■■■	■■■■■	■■	■■■■			■■■■	■■■■	common/meadow horsetail
	Fragaria virginiana					■■■						wild strawberry
	Geocaulon lividum		■	■	□		□□	■■■	■■■		■	bastard toadflax
	Mertensia paniculata		■	■	■■	■■	■	■	■	□□	■■	tall bluebells
	Mitella spp.			■	■	■	■■	■■■		□	□□	mitrewort
	Rubus pubescens							■■■■				dwarf raspberry
Moss layer	*Hylocomium / Pleurozium / Ptillium* spp.		■		■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■	feathermoss

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/40 Sw – Riparian forest

no photo available

BOLlh/40 - Asw29 (Aspen – White spruce / Alnus incana / Rubus pubescens – Equisetum spp.)

no photo available

BOLlh/40 - SbL31 (Black spruce – Larch / Blueberry / Red bearberry / Step moss)

BOLlh/40 - A34 (Aspen – Rose – Horsetail)

BOLlh/40 - ASw30 (Aspen – White spruce / Equisetum spp. – Cornus canadensis)

BOLlh/40 Sw – Riparian forest

BOLlh/40 - Sb131 (Spruce – Larch – Balsam poplar / Soapberry)

BOLlh/40 - Sw34 (White spruce / Alder – Highbush cranberry / Wild sarsaparilla – Mitrewort)

BOLlh/40 - Sb24 (Black spruce / Alder / Sweet coltsfoot – Horsetail / Feathermoss)

no photo available

BOLlh/40 - Sw18 (White spruce / Red osier dogwood / Horsetail – Mitrewort)

BOLlh/40 Sw – Riparian forest

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

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

BOLlhl/41 B – Riparian forest

General description

Edatopic Grid

	A	B	C	D	E
0					
1					
2					
3					
4					
5				■	■
6				■	■

The B – Riparian forest ecosite occurs on lower to mid bench fluvial floodplains and is characterized by a moderate to high cover of balsam poplar (*Populus balsamifera*).

Balsam poplar is the distinguishing tree species however mixed-wood stands of white spruce (*Picea glauca*) and balsam poplar are common. A significant shrub cover of alder (*Alnus incana* or *A. viridis*), prickly rose (*Rosa acicularis*), highbush cranberry (*Viburnum edule*), willows (*Salix* spp.) or red osier dogwood (*Cornus sericea*) is also characteristic. A diverse variety of forbs, horsetails (*Equisetum* spp.) and grasses (Poaceae) are common in the understorey. Moss cover is usually low, and lichens absent.

BOLlh/41 - B23
(Balsam poplar / Horsetail)

These fluvial benches are subject to periodic flooding. The poorly developed soils are often sandy or loamy, enriched with organic material deposited during flooding. Soils are usually Cumulic Regosols or Gleysols.

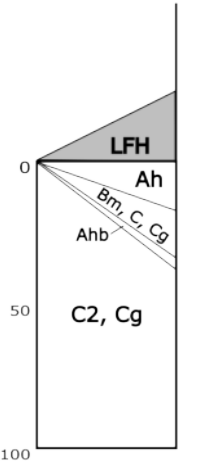
Comments

The diversity of vegetation associations reflects the variable flood regimes, water tables, textures and source of the parent materials.

Site and soils

Site and soil characteristics

Plots in unit	44
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	rich to very rich (D-E)
Meso slope position	level
Aspect	usually level
Slope gradient	level to gently sloping
Surficial material	fluvial
Soil texture	sandy and silty
Soil classification	Cumulic Regosols, other Regosols, Gleysols
Humus form	mor-mull
Humus depth	0-10 cm
Soil drainage	imperfect to poor
Seepage/water table	fluctuating water table; subject to flooding
Permafrost	absent



Vegetation summary

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

B22 Balsam poplar / River alder – Red osier dogwood / Horsetail

B23t Balsam poplar / Horsetail; typic subassociation

B23d Balsam poplar / Red-osier dogwood – Rose / Horsetail; dogwood subassociation

B29 Balsam poplar / Shrubby cinquefoil – Soapberry / Strawberry

B31 Balsam poplar / Willow / Fireweed

SwB22 White spruce – Balsam poplar / Highbush cranberry / Tall bluebells

SwB29 White spruce – Balsam poplar / Highbush cranberry / Horsetail

SwB39 White spruce – Balsam poplar / River alder / Variegated scouring-rush

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

BOLIh/41 Vegetation table

	Vegetation association	B22	B23t	B23d	B29	B31	SwB22	SwB29	SwB39	
Stratum	No. of plots	4	5	6	2	3	8	4	3	
Tree layer	*Picea glauca*	□□				□	■■■■	■■■■■	■■■■	white spruce
	Populus balsamifera	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■	■■■■■	balsam poplar
Shrub layer	*Alnus alnobetula*	□□□			■■				□	green alder
	Alnus incana	■■■■				■■■■	■■■■	■■■	■■■	river alder
	Cornus sericea	■■■■		■■■■		□	■■■	□		red-osier dogwood
	Dasiphora fruticosa				■■					shrubby cinquefoil
	Rosa acicularis	■■■■	■■■	■■■■■		□	■■■■■	■■■■■		prickly rose
	Salix spp.	■■■■	■■■■	■■■	■	■■■	■■■	■■■■	■■■■■	willows
	Shepherdia canadensis				■■■■		□	□	■■■■	soapberry
	Viburnum edule	■■■		□			■■■	■■■■		highbush cranberry
Ground shrub layer	*Linnaea borealis*						■■■	■■■■		twinflower
Grass layer	Poaceae	■■■	■■■■	■■■	■■	■■■■	■■	■■	■■■■	grass family
Forb layer	*Achillea millefolium*	□				■	□		■■■	common yarrow
	Antennaria pulcherrima								■■■	showy pussytoes
	Artemisia tilesii	■			■■				□□	Tilesius' wormwood
	Chamaenerion angustifolium					□	■■	□□		fireweed
	Cornus canadensis						□	■■■		bunchberry
	Equisetum arvense / pratense	■■■■	■■■■■	■■■				■■■■	■■	common / meadow horsetail
	Equisetum variegatum	□			■■■				■■■■	variegated scouring-rush
	Eurybia sibirica			■	■■		□		■■	Siberian wood-aster
	Fragaria virginiana				■■■				■■■■	wild strawberry
	Galium boreale	■				■	□	□	□□□	northern bedstraw

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/41 Vegetation table cont.

	Vegetation association	B22	B23t	B23d	B29	B31	SwB22	SwB29	SwB39	
Stratum	No. of plots	4	5	6	2	3	8	4	3	
Forb layer	*Linnaea borealis*						■■■	■■■■		twinflower
	Hedysarum alpinum				■■				■■■	alpine hedysarum
	Lupinus arcticus							■■	□	arctic lupine
	Mertensia paniculata	□	□□				■■	■■■	□□	tall bluebells
	Orthilia secunda	□		■■			■	■		one-sided wintergreen
	Petasites frigidus		□	□		■	■■■	□	■■	sweet coltsfoot
	Platanthera obtusata								■	one-leaved rein orchid
	Senecio lugens				■				■■■	black-tipped groundsel
Moss layer	*Brachythecium* spp.	■				□			■■■■■	ragged mosses
	Hylocomium splendens					□□	□□□	■■■■		step moss

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/41 B – Riparian forest

BOLlh/41 - B23t (Balsam poplar / Horsetail)

no photo available

BOLlh/41 - B29 (Balsam poplar / Shrubby cinquefoil – Soapberry / Strawberry)

no photo available

BOLlh/41 - B22 (Balsam poplar / River alder – Red osier dogwood / Horsetail)

BOLlh/41 - B26d (Balsam poplar / Red-osier dogwood – Rose / Horsetail)

BOLlh/41 B – Riparian forest

BOLlh/41 -B31 (Balsam poplar / Willow / Fireweed)

no photo available

BOLlh/41 - SwB22 (White spruce – Balsam poplar / Highbush cranberry / Tall bluebells)

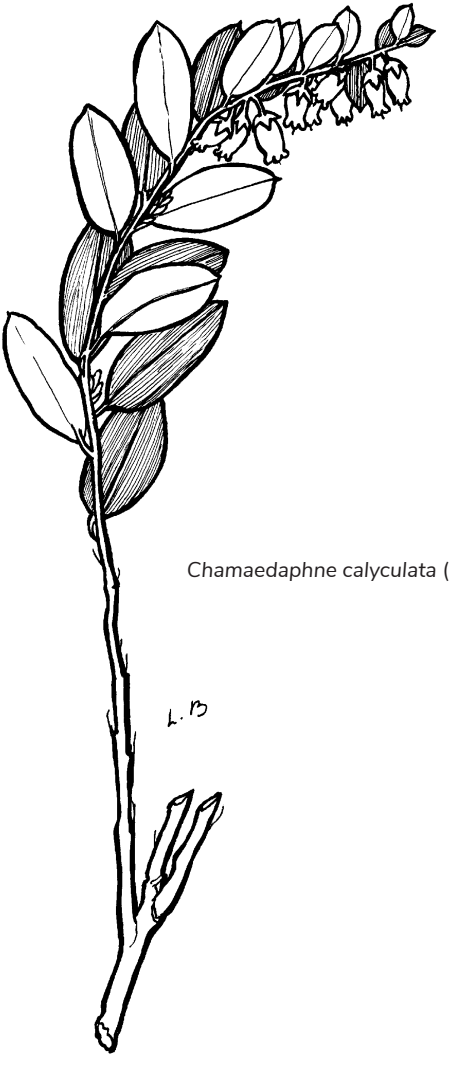
BOLlh/41 B – Riparian forest

no photo available

BOLlh/41 - SwB29 (White spruce – Balsam poplar / Highbush cranberry / Horsetail)

no photo available

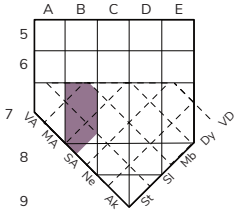
BOLlh/41 - SwB39 (White spruce – Balsam poplar / River alder / Variegated scouring-rush)



Chamaedaphne calyculata (leatherleaf)

BOLlh/B02 SbL – Leatherleaf – Peat moss bog

General description



B02 bogs are characterized by larch (*Larix laricina*) and black spruce (*Picea mariana*) which are often stunted. A low to high cover of leatherleaf (*Chamaedaphne calyculata*) and bog rosemary (*Andromeda polifolia*) is also characteristic. Bog cranberry (*Vaccinium oxycoccus*) is consistently present and most sites also have shrub birch (*Betula glandulosa*). Peat mosses (*Sphagnum* spp.) dominate the ground cover.

The SbL – Leatherleaf – Peat moss bog ecosite occurs on very poorly drained sites, with a hydric to subhydric moisture regime and a poor nutrient regime. These sites may be wetter portions of bogs with degrading permafrost. Soils are comprised of mostly fibric organic peat, with some mesic peat at depth. Although detailed soil information is limited, the soils may have permafrost, or they may be unfrozen to greater than one metre. Soils are classified as Organic Cryosols, Fibrisols

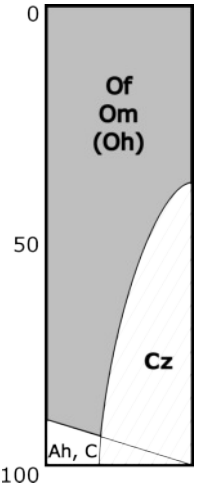
BOLlh/B02 - SbL45
(Black spruce – Larch / Leatherleaf – Bog rosemary / Peat moss)

or Mesisols.

Site and soils

Site and soil characteristics

Plots in unit	5
Moisture regime	subhydric to hydric (7-8)
Nutrient regime	very poor – poor (A-B)
Meso slope position	level or depressional
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric
Soil classification	Fibric Organic Cryosol, Fibrisol
Humus form	Fibrimor
Humus depth	> 30-40 cm
Soil drainage	poor to very poor
Seepage/water table	may be frozen about 50 cm
Permafrost	usual



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite B02.

SbL45 Black spruce – Larch / Leatherleaf / Peat moss

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

BOLlh/B02 Vegetation table

	Vegetation association	SbL45	
Stratum	No. of plots	5	
Tree layer	*Larix laricina*	■■■	larch
	Picea mariana	■■■■	black spruce
Shrub layer	*Chamaedaphne calyculata*	■■■■	leatherleaf
	Betula glandulosa	■■■	shrub birch
	Rhododendron spp.	■■■	Common Labrador tea
Ground shrub layer	*Andromeda polifolia*	■■■	bog rosemary
	Vaccinium oxycoccos	■■■	bog cranberry
Forb layer	*Maianthemum trifolium*	■■■■	three-leaved false Solomon's-seal
Graminoid layer	*Carex aquatilis*	■■■	water sedge
Moss layer	*Sphagnum* spp.	■■■■■	peat mosses

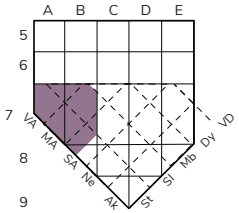
Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/B02 SbL – Leatherleaf – Peat moss bog

BOLlh/B02 - SbL45 (Black spruce – Larch / Leatherleaf / Peat moss)

BOLlh/B03 Sb – Common Labrador tea – Peat moss bog

General description



The Sb – Common Labrador tea – Peat moss bog ecosite occurs on poorly drained sites with a subhydric to hydric soil moisture regime.

These bogs are characterized by sparse to open, often stunted, black spruce (*Picea mariana*) underlain by peat mosses (*Sphagnum* spp.) and sometimes feathermosses (*Hylocomium splendens*, *Pleurozium schreberi*) with peat moss. Common Labrador tea (*Rhododendron groenlandicum*) is also characteristic. Shrub birch (*Betula glandulosa*), cloudberry (*Rubus chamaemorus*), bog cranberry (*Vaccinium oxycoccus*), and lowbush cranberry (*Vaccinium vitis-idaea*) are also common.

These bogs are often found associated with other wetlands in wetland complexes, raised slightly above the rest of the wetland. Soils are organic (>40 centimetres fibric peat) with a poor to very poor nutrient regime associated with low pH. These bogs probably have frozen soils and would usually be classified as Fibric or Terric Fibric Organic Cryosols. If not frozen, they would be Fibrisols.

BOLlh/B03 - Sb43
(Black spruce / Common Labrador tea / Feathermoss – Peat moss)

Comments

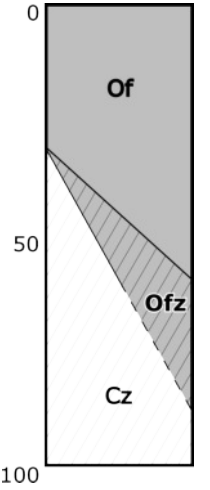
Some peat wetlands can appear fairly dry at the surface following fire with water table and permafrost, if present, at greater than 50 centimetres.

Soil data is incomplete.

Site and soils

Site and soil characteristics

Plots in unit	6
Moisture regime	subhydric to hydric (7-8)
Nutrient regime	poor to very poor (B-A)
Meso slope position	level or depressional
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric
Soil classification	Fibric Organic Cryosol
Humus form	Fibrimor
Humus depth	> 30-40 cm
Soil drainage	poor to very poor
Seepage/water table	may be frozen about 50 cm
Permafrost	usual



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite B03.

Sb43 Black spruce / Common Labrador tea / Feathermoss – Peat moss

Sb44 Black spruce / Common Labrador tea / Cloudberry – Lowbush cranberry / Peat moss

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

BOlhl/B03 Vegetation table

	Vegetation association	Sb43	Sb44	
Stratum	No. of plots	2	4	
Tree layer	*Picea mariana*	■■■■	■■■■	black spruce
Shrub layer	*Betula glandulosa*	■■■	■■■	shrub birch
	Rhododendron groenlandicum	■■■■■	■■■■■	common Labrador tea
	Vaccinium uliginosum	■■	□	blueberry
Ground shrub layer	*Rubus chamaemorus*	■■■	■■■	cloudberry
	Vaccinium oxycoccos	■■	■■	bog cranberry
	Vaccinium vitis-idaea	■■■	■■■	lowbush cranberry
Forb layer	*Cornus canadensis*		■	bunchberry
Moss layer	*Hylocomium splendens*	■■■■	□	step moss
	Pleurozium schreberi	■■■■	□	red-stemmed feathermoss
	Sphagnum spp.	■■■■	■■■■■	peat mosses
Lichen layer	*Cladina* spp.	■■■■	■■■	reindeer lichens
	Cladonia spp.	■	■	cladonia lichens
	Icmadophila ericetorum	■	■	fairy puke
	Nephroma arcticum	■■■	■	arctic kidney lichen
	Peltigera aphthosa	■■	□	freckle pelt lichen

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/B03 Sb – Common Labrador tea – Peat moss bog

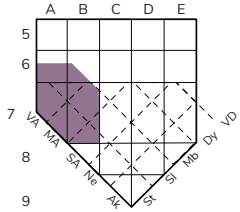
no photo available

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

BOLlh/B03 - Sb43 (Black spruce / Common Labrador tea / Feathermoss – Peat moss - soil)

BOLlh/B04 Sb – Lichen bog

General description



The Sb – Lichen bog ecosite is a common treed wetland in southeast Yukon.

B04 bogs have a sparse to open black spruce (*Picea mariana*) tree or shrub cover and a groundcover dominated by Cladina and Cladonia lichens. Common Labrador tea (*Rhododendron groenlandicum*) is characteristic; shrub birch (*Betula glandulosa*) may or may not be present. Ground shrubs such as cloudberry (*Rubus chamaemorus*), bog cranberry (*Vaccinium oxycoccus*), lowbush cranberry (*Vaccinium vitis-idaea*) and crowberry (*Empetrum nigrum*) are usually present. The bryophyte layer is most commonly dominated by peat mosses (*Sphagnum* spp.), but feathermosses (*Pleurozium schreberi*, *Hylocomium splendens*), glow moss (*Aulacomnium palustre*) and golden fuzzy fen moss (*Tomentypnum nitens*) may also occur.

BOLlh/B04 - Sb42
(Black spruce / Common Labrador tea / Reindeer lichen – Peat moss)

Soils are organic with 30 to >40 centimetres or more of fibric peat on these hygric to hydric sites. Permafrost is present and soils are classified as Fibric or Terric Fibric Organic Cryosols and Turbic Cryosols, peaty phase.

Comments

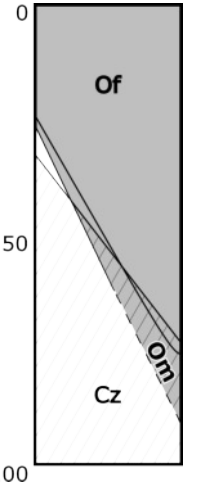
Lichen is a very important habitat food. Lichen cover may also be a key indicator for climate change. Permafrost bogs, especially in the north, are commonly lichen dominated. Permafrost is often preserved in peatlands due to their insulating soil properties. If permafrost warms and thaws, bogs may get wetter with less lichen cover, or possibly drier because of more frequent fires.

Feathermosses in the moss layer may also be indicators of climate change associated with deeper active layers, and they may increase following forest fires

Site and soils

Site and soil characteristics

Plots in unit	12
Moisture regime	hygric to hydric (6-8)
Nutrient regime	poor to very poor (B-A)
Meso slope position	level or lower slope
Aspect	none
Slope gradient	0
Surficial material	organic
Soil texture	fibric
Soil classification	Fibric Organic Cryosol, Turbic Cryosol, Terric Fibrisol
Humus form	fibrimor
Humus depth	30-70 cm
Soil drainage	poor to very poor
Seepage/water table	frozen at 30-70 cm
Permafrost	likely present



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite B04.

Sb42 Black spruce / Common Labrador tea / Reindeer lichen – Peat moss

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

BOLlh/B04 Vegetation table

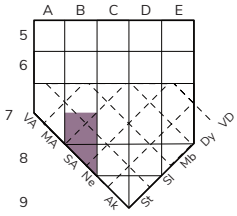
	Vegetation association	Sb42	
Stratum	No. of plots	12	
Tree layer	*Picea mariana*	■■■■	black spruce
Shrub layer	*Betula glandulosa*	■■■	shrub birch
	Rhododendron groenlandicum	■■■■■	common Labrador tea
Ground shrub layer	*Rubus chamaemorus*	■■■	cloudberry
	Empetrum nigrum	■■	crowberry
	Vaccinium oxycoccos	■	bog cranberry
	Vaccinium vitis-idaea	■■■	lowbush cranberry
Moss layer	*Hylocomium* / *Pleurozium* spp.	■■■■	feathermosses
	Sphagnum spp.	■■■■	peat mosses
Lichen layer	*Cladina* spp.	■■■■■	reindeer lichens
	Icmadophila ericetorum	■	fairy puke
	Peltigera aphthosa	■■	freckle pelt lichen

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/B04 Sb – Lichen bog

BOLlh/B04 - Sb42 (Black spruce / Common Labrador tea / Reindeer lichen – Peat moss)

BOLlh/B05 SbL – Peat moss bog



General description

The SbL – Peat moss bog ecosite occurs on poor to very poorly drained sites. In wetland classification, these sites are transitional between bogs and poor fens.

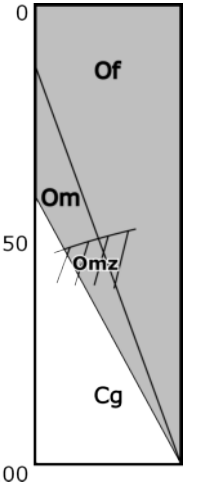
Larch (*Larix laricina*) and black spruce (*Picea mariana*), often stunted, with a groundcover dominated by peat mosses (*Sphagnum* spp.) characterize the ecosite. The shrub layer is dominated by common Labrador tea (*Rhododendron groenlandicum*) and usually shrub birch (*Betula glandulosa*). Bog cranberry (*Vaccinium oxycoccus*), cloudberry (*Rubus chamaemorus*) and lowbush cranberry (*Vaccinium vitis-idaea*) are characteristic of the groundcover.

These sites have a hydric to subhydric moisture regime and a poor nutrient regime. Soils are mostly comprised of fibric organic peat, with some mesic peat at depth. Detailed soil information is limited, soils likely have permafrost and could be classified as Fibric Organic Cryosols.

Site and soils

Site and soil characteristics

Plots in unit	4
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	poor to very poor (B-A)
Meso slope position	level or lower slope
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric
Soil classification	Fibric Organic Cryosol, peaty phase of mineral Cryosol, Gleysol
Humus form	fibrimor
Humus depth	29-100 cm
Soil drainage	very poor to poor
Seepage/water table	water present at or close to the surface
Permafrost	likely (data is limited)



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite B05.

SbL44 Black spruce – Larch / Common Labrador tea / Peat moss

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

BOLlh/B05 Vegetation table

	Vegetation association	SbL44	
Stratum	No. of plots	4	
Tree layer	*Larix laricina*	■■■	larch
	Picea mariana	■■■■■	black spruce
Shrub layer	*Betula glandulosa*	■■■■	shrub birch
	Rhododendron groenlandicum	■■■■■	common Labrador tea
	Vaccinium uliginosum	■■	blueberry
Ground shrub layer	*Empetrum nigrum*	□□	crowberry
	Vaccinium oxycoccos	■■■	bog cranberry
	Vaccinium vitis-idaea	■■■	lowbush cranberry
Forb layer	*Rubus chamaemorus*	■■■■	cloudberry
Graminoid layer	*Carex aquatilis*		water sedge
Moss layer	*Pleurozium schreberi*	■■■■	red-stemmed feathermoss
	Sphagnum spp.	■■■■■	peat mosses
	Aulacomium / Tomentypnum	■■■	brown mosses
Lichen layer	*Cladina* spp.	■■■■	reindeer lichen

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

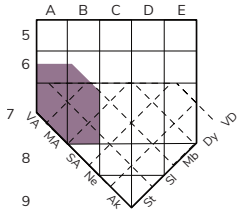
BOLlh/B05 SbL – Peat moss bog

no photo available

BOLlh/B05 - SbL44 (Black spruce – Larch / Common Labrador tea / Peat moss

BOLlh/B07 Common Labrador tea – Peat moss bog

General description



The Common Labrador tea – Peat moss bog ecosite occurs infrequently throughout Boreal and Subarctic Yukon.

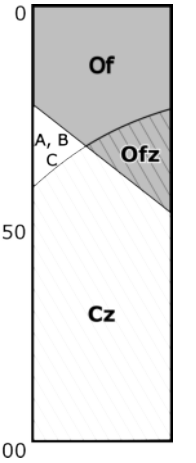
These bogs are dominated by common Labrador tea (*Rhododendron groenlandicum*) and peat mosses (*Sphagnum* spp.). Some scattered, stunted black spruce (*Picea mariana*) occur, but they are of very low cover. Other common species are shrub birch (*Betula glandulosa*), cloudberry (*Rubus chamaemorus*), lowbush cranberry (*Vaccinium vitis-idaea*), and bog cranberry (*Vaccinium oxycoccos*). Reindeer lichens (*Cladina* spp.) often occur with low cover.

This ecosite primarily develops on more than 30 centimetres of poorly decomposed peat, with permafrost starting at a depth of about 35-45 centimetres. Soils are peaty Gleysols or Organic Cryosols.

Site and soils

Site and soil characteristics

Plots in unit	3
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	poor to very poor (A-B)
Meso slope position	level
Aspect	none (to variable)
Slope gradient	level
Surficial material	organic
Soil texture	fibric
Soil classification	peaty Gleysols or Organic Cryosols
Humus form	fibrimor
Humus depth	greater than 30 – 40 cm
Soil drainage	poor to very poor
Seepage/water table	water may occasionally pool on top of permafrost
Permafrost	present



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite B07.

Rhod55 Common Labrador tea / Peat moss

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

BOLlh/B07 Vegetation table

	Vegetation association	Rhod55	
Stratum	No. of plots	3	
Tree layer	*Picea mariana*	■■	black spruce
Shrub layer	*Betula glandulosa*	■■■■■	shrub birch
	Rhododendron spp.	■■■■■	Labrador teas
	Vaccinium uliginosum	■	bog blueberry
Ground shrub layer	*Rubus chamaemorus*	■■■■	cloudberry
	Vaccinium oxycoccos	■	bog cranberry
	Vaccinium vitis-idaea	■■■	lowbush cranberry
Moss layer	*Sphagnum* spp.	■■■■■	peat mosses
Lichen layer	*Cladina* spp.	■■■■	reindeer lichens

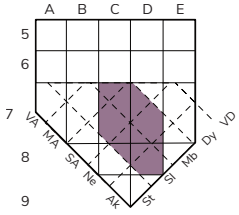
Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/B07 Common Labrador tea – Peat moss bog

BOLlh/B07 - Rhod55 (Common Labrador tea / Peat moss)

BOLlh/F01 Water sedge fen

General description



The Water sedge fen ecosite dominated by water sedge (*Carex aquatilis*) and/or beaked sedge (*Carex utriculata*) is the most common fen ecosite in the Liard Hyland region.

A high to moderate cover of water sedge or beaked sedge is diagnostic. Other sedges, including mud sedge (*C. limosa*), few-flowered sedge (*C. pauciflora*), and silvery sedge (*C. canescens*) may occur with trace to moderate cover. Marsh cinquefoil (*Comarum palustre*) is a common associate. The significant bryophyte layer is variable and may be dominated by peat mosses (*Sphagnum* spp.), usually associated with water sedge, glow moss (*Aulacomnium palustre*), golden fuzzy fen moss (*Tomentypnum nitens*), or hook mosses (*Drepanocladus* spp., *Scorpidium revolvens*).

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

F01 occurs in some large wetlands but it is also very common along the margins of lakes and ponds. It occurs on peaty, hydric or subhydric sites, where the water table is at or very close to the surface. Soils are very poor to poorly drained, with greater than 30 to 40 centimetres of peat. They are usually classified as Terric, Typic or Hydric Mesisols and Fibrisols.

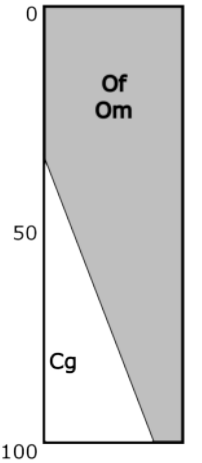
Comments

Ecosite F01 is equivalent to Wf01 in British Columbia (Mackenzie and Moran 2004).

Site and soils

Site and soil characteristics

Plots in unit	40
Moisture regime	subhydric to hydric (7-8)
Nutrient regime	medium to rich (C-D)
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	organic over fluvial or lacustrine
Soil texture	fibric, mesic humic
Soil classification	Terric or Typic Mesisols, Fibrisols
Humus form	fibrimor, mesimor
Humus depth	30-125 cm
Soil drainage	very poor to poor
Seepage/water table	at or near surface
Permafrost	absent



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.

BOLlh/F01 Vegetation table

	Vegetation association	Caaq55	Caut55	
Stratum	No. of plots	27	13	
Forb layer	*Comarum palustre*	■■■■■	■■■	marsh cinquefoil
	Equisetum spp.	□□□	■■■■■	horsetails
Graminoid layer	*Carex aquatilis*	□□□	■■■	water sedge
	Carex utriculata		■■■	beaked sedge
Moss layer	*Aulacomium / Tomentypnum / Drepanocladus / Calliergon / Scorpidium / Sanionia* spp.	■■■■		brown mosses
	Sphagnum spp.	□□□	■■■■	peat mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = 1%

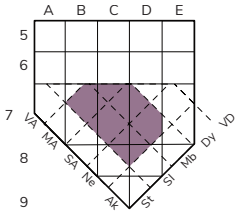
BOLlh/F01 Water Sedge fen

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

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

BOLlh/F02 Shrub birch – Water sedge fen

General description



The Shrub birch – Water sedge fen ecosite occurs at higher elevations of the BOLlh on cool valley bottom sites with hygric to hydric moisture regime.

Shrub birch (*Betula glandulosa*) dominates the shrub layer. A significant cover of common Labrador tea (*Rhododendron groenlandicum*) is also characteristic. Willows (*Salix* spp.) are usually present with a low cover but may be codominant on some sites. Water sedge (*Carex aquatilis*) cover is variable ranging from trace to greater than 50% but is replaced by common horsetail (*Equisetum arvense*) on some sites. A high moss cover of glow moss (*Aulacomnium palustre*), golden fuzzy fen moss (*Tomentypnum nitens*) or peat mosses (*Sphagnum* spp.) is characteristic.

These nutrient poor to rich sites with poor to very poorly drained soils are classified as Fibrisols or Mesisols. They may be frozen at depth and would be classified as Organic Cryosols or Turbic Cryosols with peaty surface horizons.

BOLlh/F02 - Begl50
(Shrub birch – Water sedge)

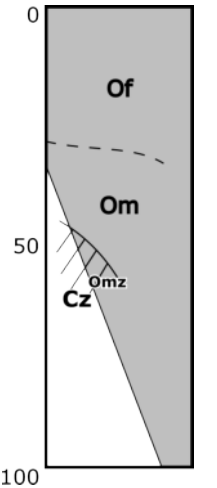
Comments

Shrub birch fens also occur at higher elevations in the BOH.

Site and soils

Site and soil characteristics

Plots in unit	12
Moisture regime	subhydric to hydric (7-8)
Nutrient regime	poor to rich (B-D)
Meso slope position	level or depressional
Aspect	none
Slope gradient	level
Surficial material	organic/organic over fluvial
Soil texture	organic
Soil classification	Typic & Terric Mesisols & Fibrisols, peaty Gleysols, possibly Organic Cryosols
Humus form	fibric and mesic
Humus depth	30-105+ cm
Soil drainage	imperfect to very poor
Seepage/water table	at or near surface
Permafrost	Absent (may be present at depth)



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite F02.

BegI50 Shrub birch – Water sedge

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

BOLlh/F02 Vegetation table

	Vegetation association	Begl50	
Stratum	No. of plots	12	
Shrub layer	*Betula glandulosa*	■■■■■	green alder
	Rhododendron groenlandicum	■■■■	shrub birch
	Salix spp.	■■■	willows
Ground shrub layer	*Vaccinium oxycoccos*	■	bog cranberry
Forb layer	*Comarum palustre*	■■■	marsh cinquefoil
Graminoid layer	*Carex aquatilis*	■■■	water sedge
	Carex spp.	■■■■	sedges
Moss layer	*Aulacomnium / Tomentypnum* spp.	■■■■	brown mosses
	Sphagnum spp.	■■■■	peat mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = 1%

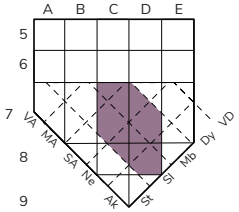
BOLlh/F02 Shrub birch – Water sedge fen

BOLlh/F02 - Begl50 (Shrub birch – Water sedge)

BOLlh/F03 Willow – Water sedge fen

General description

The Willow – Water sedge fen ecosite is often associated with other wetlands in wetland complexes or on the margins of ponds and lakes. It occurs on subhydric sites with a medium to rich nutrient regime.



Willows (such as *Salix planifolia*, *S. athabascensis*, *S. pedicellaris*, *S. bebbiana*) dominate the shrub layer. Water sedge (*Carex aquatilis*), sometimes beaked sedge (*C. utriculata*) or mud sedge (*C. limosa*), dominates the herb layer with some marsh cinquefoil (*Comarum palustre*). A moss cover of golden fuzzy fen moss (*Tomentypnum nitens*), glow moss (*Aulacomnium palustre*), rusty scorpion moss (*Scorpidium revolvens*), peat moss (*Sphagnum* spp.) or other wetland mosses is characteristic.

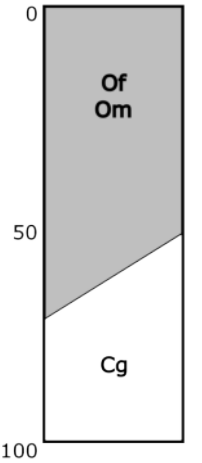
This poor to very poorly drained ecosite develops on organic soils. Permafrost is likely not present. Soils are classified as Fibrisols, Mesisols, Gleysols (with peaty surface horizons).

BOLlh/F03 - Sasp58
(Willow / Water sedge)

Site and soils

Site and soil characteristics

Plots in unit	8
Moisture regime	subhydric to hydric (7-8)
Nutrient regime	medium to rich (C-D)
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric or mesic
Soil classification	Terric Fibrisols, peaty Gleysols
Humus form	fibrimor, moder
Humus depth	15-60 cm
Soil drainage	poor to very poor
Seepage/water table	at or near surface
Permafrost	absent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite F03.

Sasp58 Willow / Water sedge

Sasp59 Willow / Beaked sedge

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

BOLlh/F03 Vegetation table

	Vegetation association	Sasp58	Sasp59	
Stratum	No. of plots	6	2	
Shrub layer	*Betula glandulosa*	■■■	□	shrub birch
	Chamaedaphne calyculata		□□	leatherleaf
	Salix spp.	■■■■■	■■■■■	willows
Forb layer	*Scheuchzeria palustris*		■■■■	marsh scheuchzeria
Graminoid layer	*Carex aquatilis*	■■■■■		water sedge
	Carex utriculata	□	■■■	beaked sedge
	Carex limosa	■■■■	■■■■	mud sedge
Moss layer	*Aulacomnium / Tomentypnum* spp.	■■■■	■■■■	brown mosses
	Sphagnum spp.	□□□□	■	peat mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/F03 Willow – Water sedge fen

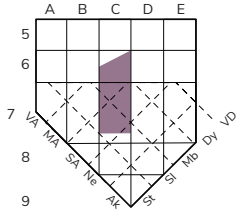
BOLlh/F03 - Sasp58 (Willow / Water sedge)

no photo available

BOLlh/F03 - Sasp59 (Willow / Beaked sedge)

BOLlh/F04 SbSw – Water sedge fen

General description



The SbSw – Water sedge fen ecosite often occurs in channels between uplands and along the margins of larger wetland complexes.

A sparse to open black spruce (*Picea mariana*) and/or white spruce (*P. glauca*) canopy underlain by water sedge (*Carex aquatilis*) characterizes the ecosite. Willows (*Salix myrtilifolia*, *S. glauca*, *S. arbusculoides*, *S. planifolia*) and shrub birch (*Betula glandulosa*) compose the well-developed shrub layer. Water sedge dominates the sedge layer but a sparse cover of other sedges (*C. capillaris*, *C. capitata*, *C. gynocrates*) is common. Brown mosses (*Tomentypnum nitens*, *Aulacomnium palustre*, *Sanionia uncinata*) usually dominate the bryophyte layer, but step moss (*Hylocomium splendens*) and a low cover of peat mosses (*Sphagnum* spp.) is common.

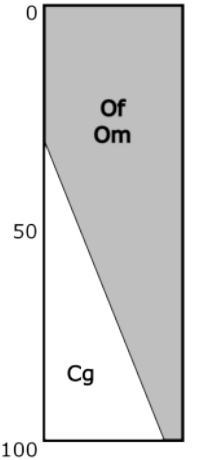
This treed fen is found on hygric to subhydric sites with a medium nutrient regime. Organic soils are poor to very poorly drained. Soils are usually classified as Typic or Terric Mesisols and Fibrisols.

BOLlh/F04 - Sb54
(Black spruce / Water sedge / Brown moss)

Site and soils

Site and soil characteristics

Plots in unit	6
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	medium (C)
Meso slope position	level, toe, lower slope and depression
Aspect	none
Slope gradient	0-3%
Surficial material	organic or organic over fluvial
Soil texture	fibric, mesic, humic, silty
Soil classification	Mesisols, Fibrisols
Humus form	mesimor, fibrimor
Humus depth	15-170 cm
Soil drainage	poor to very poor
Seepage/water table	usually at or within 50 cm of the surface
Permafrost	abesent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite F04.

Sb54 Black spruce / Water sedge / Brown moss

SbSw56 Black spruce – White spruce / Water sedge / Brown moss

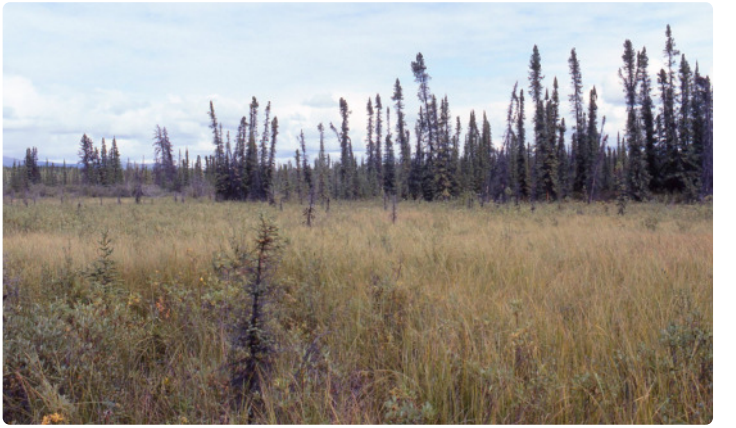
The frequency and abundance of species for these associations are shown in the following vegetation table.

BOLlh/F04 Vegetation table

	Vegetation association	SbSw56	Sb54	
Stratum	No. of plots	4	2	
Tree layer	*Picea mariana*	■■■	■■■■	black spruce
Shrub layer	*Picea glauca*	■■■		white spruce
	Betula glandulosa	■■■■	■■■	shrub birch
	Dasiphora fruticosa	■■■	■	shrubby cinquefoil
	Rhododendron groenlandicum	■■	■■■	common Labrador tea
	Salix spp.	■■■■■	■■■	willows
	Salix myrtillifolia	■■■■		blueberry willow
	Vaccinium uliginosum	■■	■■■	blueberry
Ground shrub layer	*Arctous rubra*	■■■	■■	red bearberry
	Empetrum nigrum	■■	■■	crowberry
Forb layer	*Comarum palustre*		■	marsh cinquefoil
	Equisetum spp.	■■■■	■■■	horsetails
	Rubus arcticus	■	■■	arctic raspberry
Graminoid layer	*Carex aquatilis*	■■■■		water sedge
	Carex spp.	■■■	■■■■■	sedges
Moss layer	*Aulacomium / Tomentypnum* spp.	■■■■■	■■■■■	brown mosses / sickle leaved hook moss
	Hylocomium / Pleurozium spp.	■■■■■	■■■■	feathermosses
	Sphagnum spp.	■■	■■■	peat mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = 1%

BOLlh/F04 SbSw – Water sedge fen

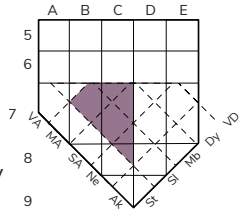


BOLlh/F04 - SbSw56 (Black spruce – White spruce / Water sedge / Brown moss)

BOLlh/F04 - Sb54 (Black spruce / Water sedge / Brown moss)

BOLlh/F07 Leatherleaf – Peat moss fen

General description



The Leatherleaf – Peat moss fen ecosite is found on hydric sites characterized by leatherleaf (*Chamaedaphne calyculata*) and/or bog rosemary (*Andromeda polifolia*) shrubs.

A low to high cover of leatherleaf or bog rosemary is diagnostic. A moderate to high cover of sedges, most commonly water sedge (*Carex aquatilis*) is characteristic but mud sedge (*C. limosa*), lesser panicled sedge (*C. diandra*), few-flowered sedge (*C. pauciflora*) and others also occur. Bog buckbean (*Menyanthes trifoliata*) or three-leaved Solomon's-seal (*Maianthemum trifolium*) are commonly present. The moss layer is usually dominated by a high cover of peat moss (*Sphagnum* spp.), but it may occasionally be of low cover.

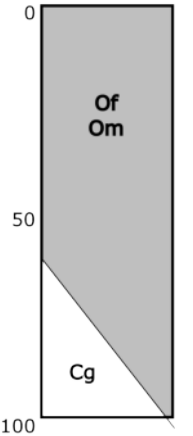
Soils are organic, usually classified as Mesisols or Fibrisols.

BOLlh/F07 - Chca51
(Leatherleaf / Bog rosemary / Peat moss)

Site and soils

Site and soil characteristics

Plots in unit	10
Moisture regime	hydric to subhydric (8-7)
Nutrient regime	medium to poor (C-B)
Meso slope position	level, lower slopes and depressions
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric and mesic
Soil classification	Typic and Terric Fibrisols
Humus form	fibrimor
Humus depth	45-100+ cm
Soil drainage	very poor
Seepage/water table	at or near the surface
Permafrost	absent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite F07.

Anpo55 Bog rosemary / Peat moss

Chca51 Leatherleaf / Bog rosemary / Peat moss

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

BOLlh/F07 Vegetation table

	Vegetation association	Anpo55	Chca51	
Stratum	No. of plots	3	7	
Shrub layer	*Betula glandulosa*	□□	■■	shrub birch
	Chamaedaphne calyculata	□	■■■■	leatherleaf
	Larix laricina	■■		larch
	Rhododendron groenlandicum	■■		common Labrador tea
Ground shrub layer	*Andromeda polifolida*	■■■	□□□	bog rosemary
	Vaccinium oxycoccos	■■	□	bog cranberry
Forb layer	*Maianthemum trifolium*	■	□□□□	three-leaved Solomon's-seal
	Menyanthes trifoliata		■■■■	bog buckbean
Graminoid layer	*Carex aquatilis*	■■	■■■■	water sedge
	Carex limosa		■■■	mud sedge
Moss layer	*Sphagnum* spp.	■■■■■	■■■■■	peat mosses
	Tomentypnum nitens	■■■■		golden fuzzy fen moss

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = 1%

BOLlh/F07 Leatherleaf – Peat moss fen

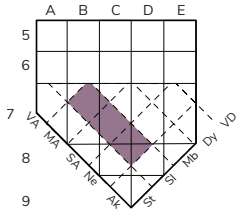
no photo available

BOLlh/F07 - Anpo55 (Bog rosemary / Peat moss)

BOLlh/F07 - Chca51 (Leatherleaf / Bog rosemary / Peat moss)

BOLlh/F11 Clubrush – Sedge fen

General description



The Clubrush – Sedge fen ecosite is characterized by a significant cover of alpine clubrush (*Tricophorum alpinum*) or tufted clubrush (*T. caespitosum*).

Clubrush is diagnostic of F11 although cover is variable—usually moderately high to high but can be low. Occasional larch (*Larix laricina*) trees may occur. Shrub birch (*Betula glandulosa*), sweet gale (*Myrica gale*) and shrubby cinquefoil (*Dasiphora fruiticosa*) are common shrubs. Water sedge (*Carex aquatilis*) is a common associate with moderate cover. Other sedges, bog rosemary (*Andromeda polifolia*) and sundews (*Drosera rotundifolia*, *D. anglica*) are sometimes present. Peat mosses (*Sphagnum* spp.) are the most common mosses, but other wetland mosses also occur.

This ecosite occurs on calcareous subhydric to hydric sites. The very poorly drained soils are organic and likely classified as Terric or Typic Mesisols and Fibrisols.

BOLlh/F11 - Tral51
(Alpine clubrush – Peat moss)

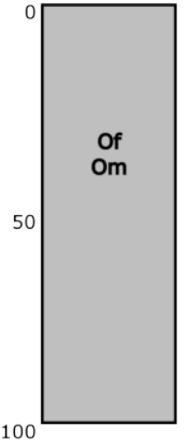
Comments

Environment and soil data is limited. More environment data could indicate the two vegetation associations shown in the vegetation table belong in separate ecosites.

Site and soils

Site and soil characteristics

Plots in unit	6
Moisture regime	hydric to subhydric (8-7)
Nutrient regime	medium to rich (C-D)
Meso slope position	level and lower slope
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric
Soil classification	Fibrisols
Humus form	fibrimor
Humus depth	usually greater than 100 cm
Soil drainage	very poor
Seepage/water table	at or near the surface
Permafrost	probably absent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite F11.

Tral51 Alpine clubrush – Peat moss

Trce51 Tufted clubrush

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

BOLlh/F11 Vegetation table

	Vegetation association	Tral51	Trce51	
Stratum	No. of plots	3	3	
Shrub layer	*Betula glandulosa*	□	■■	shrub birch
	Dasiphora fruticosa	□	■■■	shrubby cinquefoil
	Larix laricina	□	■■	larch
	Myrica gale	□□	■■■■	sweet gale
Ground shrub layer	*Andromeda polifolia*	■■	■	bog rosemary
Forb layer	*Drosera* spp.	□□□	□	sundews
	Menyanthes trifoliata	■■■■	□□□	bog buckbean
	Spiranthes romanzoffiana	■	□	hooded ladies'-tresses
	Triantha glutinosa	■	■■	sticky triantha
Graminoid layer	*Carex aquatilis*	■■■■	□□□□	water sedge
	Trichophorum alpinum	■■■■■	■■■	alpine clubrush
	Trichophorum cespitosum		■■■■■	tufted clubrush
Moss layer	*Sphagnum* spp.	■■■■	■■■■■	peat mosses
	Tomentypnum nitens	□□	■	golden fuzzy fen moss

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = 1%

BOLlh/F11 Clubrush – Sedge fen

BOLlh/F11 - Tral51 (Alpine clubrush – Peat moss)

no photo available

BOLlh/ F11 - Trce51 (Tufted clubrush)

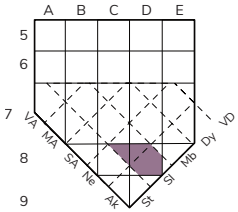
BOLlh/F12 Lesser panicled sedge – Water sedge fen

General description

Lesser panicled sedge (*Carex diandra*) is diagnostic and usually dominates the Lesser panicled sedge fen ecosite but sometimes beaked sedge (*Carex utriculata*) can have a higher cover.

In addition to lesser panicled and beaked sedge, water sedge (*Carex aquatilis*) can also occur. Bog buckbean (*Menyanthes trifoliata*) occurs with moderate to high cover. Wetland mosses such as common hook moss (*Drepanocladus aduncus*) and giant water moss (*Calliergon giganteum*), golden fuzzy fen moss (*Tomentypnum nitens*), or other brown mosses form the ground cover.

Soils can be rich in marl. Soils are likely classified as Fibrisols or Mesisols.

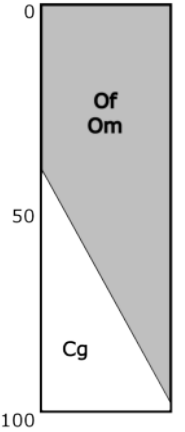


BOLlh/F12 - Cadi50
(Lesser panicled sedge – Water sedge)

Site and soils

Site and soil characteristics

Plots in unit	4
Moisture regime	hydric to subhydric (8-7)
Nutrient regime	medium to rich (C-D)
Meso slope position	level and depressional
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric and mesic
Soil classification	usually Terric Fibrisols
Humus form	fibrimor
Humus depth	>30 cm
Soil drainage	poor
Seepage/water table	near surface
Permafrost	absent



Vegetation summary

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

Cadi50 Lesser panicled sedge – Water sedge

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

BOLlh/F12 Vegetation table

	Vegetation association	Cadi50	
Stratum	No. of plots	4	
Forb layer	*Comarum palustre*	■■	marsh cinquefoil
	Equisetum fluviatile	■	water horsetail
	Menyanthes trifoliata	■■■■■	bog buckbean
Graminoid layer	*Carex diandra*	■■■■	lesser panicled sedge
	Carex aquatilis	■■	water sedge
	Carex utriculata	■■	beaked sedge
Moss layer	*Calliergon giganteum*	■■■	giant water moss
	Drepanocladus aduncus	■■■■■	common hook moss

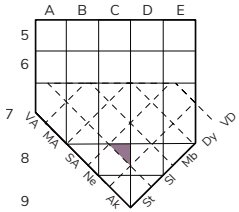
Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = 1%

BOLlh/F12 Lesser panicled sedge – Water sedge fen

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

BOLlh/F13 Water horsetail – Sedge fen

General description



The Water horsetail – Sedge fen ecosite occurs on hydric sites characterized by a moderate to high cover of water horsetail (*Equisetum fluviatile*).

Beaked sedge (*Carex utriculata*) is a common associate of water horsetail (*Equisetum fluviatile*). Trace to moderate amounts of other wetland graminoid and forb species are common. Wetland mosses, such as hook mosses (*Drepanocladus* spp.), or golden fuzzy fen moss (*Tomentypnum nitens*) often occur with high cover.

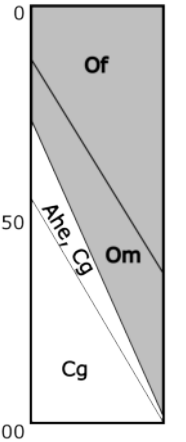
The surface organic layer is greater than 20 centimetres, and usually more than 40 centimetres. Rooting appears to be primarily within the organic horizons. Soils are classified as Terric Mesisols, Terric Fibrisols or Gleysols.

BOLlh/F13 - Eqfl56
(Water horsetail – Sedge)

Site and soils

Site and soil characteristics

Plots in unit	4
Moisture regime	hydric (8)
Nutrient regime	medium (C)
Meso slope position	level, lower slope and depressional
Aspect	none
Slope gradient	0-6%
Surficial material	organic, organic over fluvial
Soil texture	organic, silt and sand
Soil classification	Gleysols, Fibrisols, Mesisols
Humus form	mesimor, fibrimor
Humus depth	20-60 cm
Soil drainage	very poor to poor
Seepage/water table	at or close to the surface
Permafrost	absent



Vegetation summary

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

Eqfl56 Water horsetail – Sedge

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

BOLlh/F13 Vegetation table

	Vegetation association	Eqfl56	
Stratum	No. of plots	4	
Forb layer	*Equisetum fluviatile*	■■■■■	water horsetail
Graminoid layer	*Carex utriculata / aquatilis* spp.	■■■■	beaked / water sedge

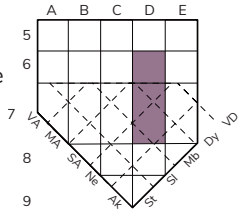
Frequency of occurrence: ■ = 70–100% ▪ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = 1%

BOLlh/F13 Water horsetail – Sedge fen

BOLlh/F13 - Eqfl56 (Water horsetail – Sedge)

BOLlh/F14 SbL – Water sedge fen

General description



The SbL – Water sedge fen ecosite occurs on rich subhydric to hygric sites characterized by a sparse to open cover of larch (*Larix laricina*) usually with some black (*Picea mariana*) or white spruce (*P. glauca*).

The presence of larch characterizes the F14 ecosite. Black or white spruce are common associates. Shrub birch (*Betula glandulosa*) dominates the shrub cover with a low to high cover. A low to moderate cover of common Labrador tea (*Rhododendron groenlandicum*) and willow (*Salix myrtilifolia* or *S. planifolia*) is also common. Leatherleaf (*Chamaedaphne calyculata*) sometimes occurs. A moderate cover of sedge, mostly water sedge (*Carex aquatilis*) is usually present. Horsetail (*Equisetum* spp.), low bush cranberry (*Vaccinium vitis-idaea*) and lousewort (*Pedicularis labradorica*) are common in the diverse and variable forb and grass understory. Brown mosses (*Aulacomnium palustre*, *Tomentypnum nitens*) and peat mosses (*Sphagnum* spp.) dominate the ground surface.

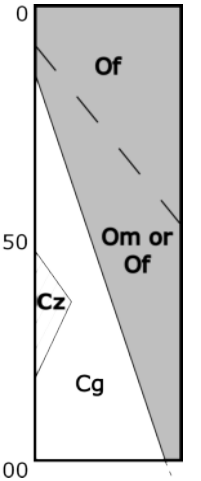
BOLlh/F14 - SbL50
(Black spruce – Larch / Shrub birch / Water sedge / Glow moss – Peat moss)

The ecosite is characterized by poor to very poorly drained organic soils, classified as Organic Cryosols, or Gleysols and Turbic Cryosols with greater than 30 centimetres of fibric or mesic peat.

Site and soils

Site and soil characteristics

Plots in unit	17
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	rich (D)
Meso slope position	usually level, lower or toe slope or depressional
Aspect	variable
Slope gradient	0-15%
Surficial material	organic, organic over lacustrine, fluvial
Soil texture	fibric, mesic, loamy
Soil classification	Fibrisols, Mesisols, Gleysols
Humus form	fibrimor, mesimor, mull
Humus depth	20-125+ cm
Soil drainage	usually poor to very poor
Seepage/water table	usually close to the surface
Permafrost	may be present



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite F14.

SbL50 Black spruce – Larch / Shrub birch / Water sedge / Glow moss – Peat moss

SbL52%[1] Larch / Buckbean / Peat moss

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

[1] % Indicates a provisional association.

BOLlh/F14 Vegetation table

	Vegetation association	SbL50	SbL52%[1]	
Stratum	No. of plots	16	1	
Tree layer	*Larix laricina*	■■■	■■■■	larch
	Picea mariana	■■■	■■■	black spruce
Shrub layer	*Betula glandulosa*	■■■■	■■■■	shrub birch
	Chamaedaphne calyculata		■■■■	leatherleaf
	Rhododendron groenlandicum	■■■	■■■	common Labrador tea
	Salix spp.	■■■■	■■■	willows
Ground shrub layer	*Andromeda polifolia*		■■■	bog rosemary
	Vaccinium vitis-idaea	■■		lowbush cranberry
Forb layer	*Pedicularis labradorica*	■	■■	Labrador lousewort
	Menyanthes trifoliata		■■■■■	buckbean
	Triantha glutinosa		■■■■	sticky triantha
Graminoid layer	*Carex aquatilis*	■■■■		water sedge
	Carex diandra		■■■■	lesser panicled sedge
Moss layer	*Aulacomium palustre*	■■■■		glow moss
	Tomentypnum nitens	■■■■		golden fuzzy fen moss
	Sanionia uncinata		■■■■	sickle-leaved hook moss
	Sphagnum spp.	■■■■■	■■■■■	peat mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = 1%
[1] % Indicates a provisional association.

BOLlh/F14 Lesser panicled sedge – Water sedge fen

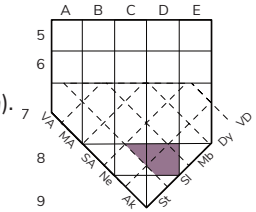
BOLlh/F14 - SbL50 (Black spruce – Larch / Shrub birch / Water sedge / Glow moss – Peat moss)

no photo available

BOLlh/F14 - SbL52% (Black spruce – Larch / Buckbean / Peat moss)

BOLlh/F15 Mud Sedge – Bog buckbean fen

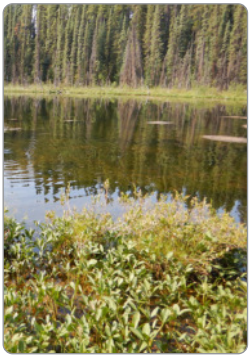
General description



The Mud sedge – Bog buckbean fen is a rich, hydric fen dominated by mud sedge (*Carex limosa*) and bog buckbean (*Menyanthes trifoliata*).

Mud sedge is diagnostic, but the cover is highly variable. A low to high cover of bog buckbean is found on most sites and marsh scheuchzeria (*Scheuchzeria palustris*) is a common associate with a low to high cover. Other sedges may be present in low or trace amounts. A high cover of wetland mosses such as hook mosses (*Scorpidium revolvens*, *Drepanocladus* spp.), yellow starry fen moss (*Campylium stellatum*), peat moss (*Sphagnum* sp.), felted leafy moss (*Rhizomnium pseudopunctatum*), golden fuzzy fen moss (*Tomentypnum nitens*) or glow moss (*Aulacomnium palustre*) is characteristic.

Nutrient status is generally medium to rich on these hydric sites. The water table is usually at or close to the surface. Soils are likely classified as Fibrisols.



BOLlh/F15 - Metr55
(Buckbean – Mud sedge)

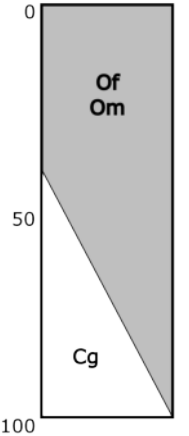
Comments

Ecosite F15 is similar to Wf08 in British Columbia (MacKenzie and Moran 2004).

Site and soils

Site and soil characteristics

Plots in unit	8
Moisture regime	hydric (8)
Nutrient regime	medium to rich (C-D)
Meso slope position	level, lower slope or depressional
Aspect	none
Slope gradient	level
Surficial material	organic
Soil texture	fibric and mesic
Soil classification	Fibrisols
Humus form	fibrimor
Humus depth	70-100+ cm
Soil drainage	very poor to poor
Seepage/water table	at or close to the surface
Permafrost	absent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite F15.

Cali58 Mud sedge / Bog buckbean

Metr55 Buckbean – Mud sedge

Scpa55 Marsh scheuchzeria – Mud sedge

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

BOLlh/F15 Vegetation table

	Vegetation association	Cali58	Metr55	Scpa55	
Stratum	No. of plots	2	3	3	
Forb layer	*Menyanthes trifoliata*	■■	■■	■■■■■	bog buckbean
	Scheuchzeria palustris		■■■■■	□□□	marsh scheuchzeria
Graminoid layer	*Carex limosa*	■■■■■	■■■■	■■■	lesser panicled sedge
	Carex aquatilis / utriculata spp.	■■■	□		water / beaked sedge
Moss layer	*Scorpidium revolvens*		□□□□□	□□□□□	rusty scorpion moss
	Sphagnum spp.	■■■■■			peat mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = 1%

BOLlh/F15 Mud sedge – Bog buckbean fen

BOLlh/F15 - Metr55 (Buckbean – Mud Sedge)

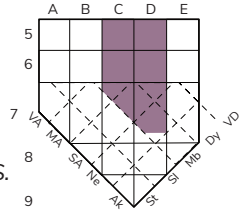
no photo available

BOLlh/F15 - Cali58 (Mud sedge / Bog buckbean)

BOLlh/F15 - Scpa55 (Marsh scheuchzeria – Mud sedge)

BOLlh/S01 Willow – Bluejoint swamp

General description



The Willow – Bluejoint swamp ecosite is found along rivers, deltas, smaller creeks and ponds that may flood less frequently than some other swamps.

Willows (*Salix planifolia, S. alaxensis, S. barclayi, S. glauca* and others) characterize these swamps, along with moderate to high cover of bluejoint reedgrass (*Calamagrostis canadensis*) or other reedgrasses (*C. stricta, C. lapponica*). Tufted hairgrass (*Deschampsia cespitosa*) and other grasses can occur with moderate to low cover. Various sedges (*Carex saxatilis, C. aquatilis, C. utriculata*) are sometimes present as well as various forbs. The variable moss cover is generally moderately high and may be comprised of glow moss (*Aulacomnium palustre*), golden fuzzy fen moss (*Tomentypnum nitens*), hook-mosses (*Drepanocladus* spp.), tree moss (*Climacium dendroides*), thread-moss (*Bryum* sp.), peat mosses (*Sphagnum* spp.) or leafy mosses (*Rhizomnium* spp.).

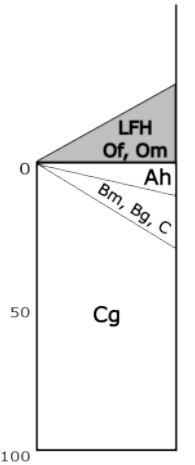
BOLlh/S01 - Sasp50
(Willow / Bluejoint reedgrass)

Soils are usually found on hygric to subhydric sites. Parent materials are fluvial or sometimes lacustrine. The imperfect to poorly drained soils are usually classified as Gleysols though organic soils can also occur. Permafrost may be present at depth.

Site and soils

Site and soil characteristics

Plots in unit	18
Moisture regime	hygric to hydric (7-8)
Nutrient regime	medium to rich (C-D)
Meso slope position	level, depressional
Aspect	none
Slope gradient	0-3%
Surficial material	fluvial, sometimes lacustrine
Soil texture	fine loamy, fine sandy
Soil classification	Gleysols, may also be Humisols
Humus form	fibrimor, sparimoder
Humus depth	0-48 cm
Soil drainage	imperfect to very poor
Seepage/water table	near surface, fluctuating
Permafrost	absent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite S01.

Sasp50 Willow / Bluejoint reedgrass

Sasp52 Willow / Grass

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

BOLlh/S01 Vegetation table

	Vegetation association	Sasp50	Sasp52	
Stratum	No. of plots	12	6	
Shrub layer	*Salix* spp.	■■■■■	■■■■■	willows
Graminoid layer	*Calamagrostis* spp.	■■■■		reedgrasses
	Poaceae		■■■■	grasses
Moss layer	Bryophyta	■■■■	■■■■	mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

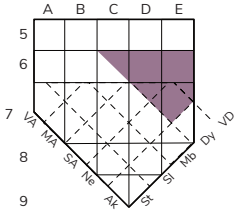
BOLIh/S01 Willow – Bluejoint swamp

BOLIh/S01 - Sasp50 (Willow / Bluejoint reedgrass)

BOLIh/S01 - Sasp52 (Willow / Grass)

BOLlh/S02 River alder – Willow swamp

General description



The River alder – Willow swamp ecosite occurs on the frequently flooded low benches and banks of larger rivers and smaller creeks and lakeshores. Although both river alder (*Alnus incana*) and willows (*Salix* spp.) are adapted to the frequent flooding and can establish quickly on recently exposed river flats, river alder is less tolerant of long periods of inundation.

River alder dominates the shrub layer, sometimes with significant willow or red-osier dogwood (*Cornus sericea*). Key understorey species are bluejoint reedgrass (*Calamagrostis canadensis*) and horsetail (*Equisetum arvense*, *E. pratense*). Associated species also include naked miterwort (*Mitella nuda*), and three-petalled bedstraw (*Galium trifidum*) in trace amounts. A low moss cover includes mostly richer species such as leafy mosses (*Mnium*, *Rhizomnium* spp.), hook moss (*Drepanocladus* sp.) or tree-moss (*Climacium dendroides*).

The fluvial soils have a hygric to subhydric moisture regime and medium to rich nutrient status. The soils do not have permafrost and are classified as Regosols and Gleysols.

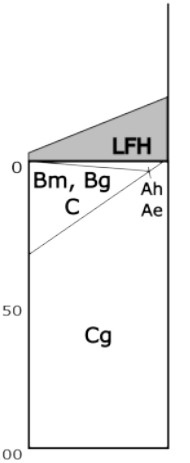
Comments

River alder occurs in the shrub layer in treed ecosites.

Site and soils

Site and soil characteristics

Plots in unit	7
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	medium to very rich (C-E)
Meso slope position	level, lower and toe slopes
Aspect	none
Slope gradient	0-3%
Surficial material	fluvial
Soil texture	silt and fine sand
Soil classification	Cumulic Regosols, Gleysols
Humus form	hydromull
Humus depth	0-11 cm
Soil drainage	imperfect to poor
Seepage/water table	fluctuating water table, flooding
Permafrost	absent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite S02.

Alin55 River alder – Willow / Horsetail
Alin56 River alder – Willow – Red-osier dogwood / Horsetail
Alin57 River alder (Willow) / Bluejoint
Sasp69 Willow – River alder / Water sedge
Sasp70 Willow – River alder / Common horsetail

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

BOLlh/S02 Vegetation table

	Vegetation association	Alin55	Alin56	Alin57	Sasp69	Sasp70	
Stratum	No. of plots	1	2	2	1	1	
Shrub layer	*Alnus incana*	■■■■■	■■■■■	■■■■■	■■■■■	■■■■	mountain alder
	Cornus sericea		■■■■■	■■	■■		red-osier dogwood
	Ribes hudsonianum		■	■		■■■	northern black currant
	Salix spp.			■■■	■■■■■	■■■■■	willows
Ground shrub layer	*Linnaea borealis*			■		■■■	twinflower
Forb layer	*Equisetum arvense / pratense*	■■■■	■■■■■	■		■■■■■	common / meadow horsetail
	Mertensia paniculata	■		■		■	tall bluebells
	Mitella nuda		■	■	■■	■■	naked mitrewort
	Rubus arcticus			■	■■	■	arctic raspberry
	Viola epipsila			■■■			northern marsh violet
Graminoid layer	*Calamagrostis canadensis*	■■■■		■■■■■		■■■	bluejoint reedgrass
	Carex aquatilis			■■■	■■■■■		water sedge
Moss layer	Bryophyta	■■	■■	■■■	■■■	■	mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/S02 River alder – Willow swamp

BOLlh/S02 - Alin56 (River alder – Willow – Red-osier dogwood / Horsetail)

no photo available

BOLlh/S02 - Alin55 (River alder – Willow/ Horsetail)

BOLlh/S02 - Alin57 (River alder (Willow) / Bluejoint)

no photo available

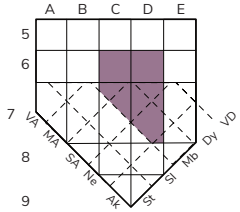
BOLlh/S02 - Sasp69 (River alder / Bluejoint)

no photo available

BOLlh/S02 - Sasp70 (Willow – River alder / Common horsetail

BOLlh/S03 Tea-leaved willow – Water sedge swamp

General description



The Tea-leaved willow – Water sedge swamp ecosite occurs along rivers, smaller creeks and at edges of ponds and lakes.

A high cover of willows (most often *Salix planifolia*) and water sedges (*Carex utriculata, c. aquatilis*) characterize these swamps. Other willows (*S. alaxensis*, *S. arbusculoides*, *S. barclayi*, *S. lasiandra*, and others) may be present or even predominate on some sites. Marsh cinquefoil (*Comarum palustre*) is often present, sometimes with high cover. The moss layer is characterized by mosses and liverworts that indicate rich soil nutrient conditions and includes various brown mosses, such as glow moss (*Aulacomnium palustre*), golden fuzzy fen moss (*Tomentypnum nitens*) or giant water moss (*Calliergon giganteum*), and leafy mosses (*Rhizomnium* spp.).

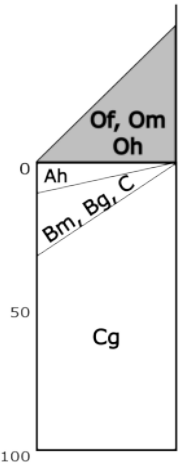
BOLlh/S03 - Sapl57
(Tea-Leaved willow / Water sedge)

These shrub swamps occur on level hygric sites with a medium to rich nutrient regime. Parent materials are fluvial or lacustrine, with a moderately to well-decomposed surface organic mat usually less than 20 centimetres thick. The poorly drained soils are usually Gleysols or Cumulic Regosols.

Site and soils

Site and soil characteristics

Plots in unit	13
Moisture regime	subhygric to subhydric (6-7)
Nutrient regime	medium to rich (C-D)
Meso slope position	level, depressional
Aspect	none
Slope gradient	0-5%
Surficial material	fluvial, lacustrine
Soil texture	fine loamy
Soil classification	Gleysols, Cumulic Regosols
Humus form	mor, moder
Humus depth	7-15 cm
Soil drainage	poor to very poor
Seepage/water table	fluctuating water table; flooding
Permafrost	absent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite S03.

Saba57 Barclay's willow / Water sedge
Sapl57 Tea-leaved willow / Water sedge
Sasp60 Willow / Water sedge

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

BOLlh/S03 Vegetation table

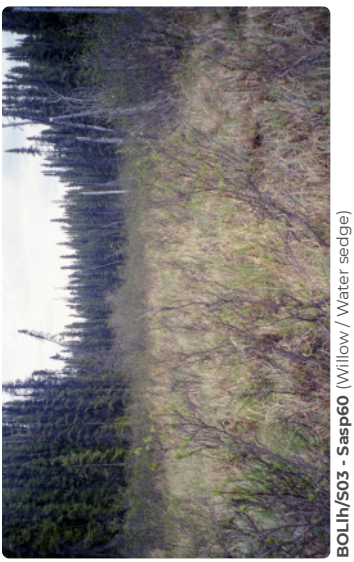
	Vegetation association	Saba57	Sapl57	Sasp60	
Stratum	No. of plots	2	9	2	
Shrub layer	*Salix barclayi*	■■■■■			Barclay's willow
	Salix planifolia	■■■	■■■■■		tea-leaved willow
	Salix spp.	■■■■	□□□	■■■■■	willows
Forb layer	*Comarum palustre*	■■	■■■	■	marsh cinquefoil
	Equisetum spp.	■■			horsetail
Graminoid layer	*Carex aquatilis*	■	□□□	■■■■■	water sedge
	Carex utriculata	■■■■	■■■■■		beaked sedge
	Carex sp.	■■■	■■	■■■■	sedge
	Poaceae	■■■■	■	■	grasses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLIh/S03 Tea-leaved willow – Water sedge swamp

BOLIh/S03 - Sapl57 (Tea-Leaved willow / Water sedge)

BOLIh/S03 - Saba57 (Barclay's willow / Water sedge)



BOLIh/S03 - Sasp60 (Willow / Water sedge)

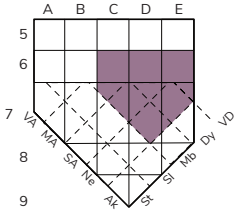
BOLlh/S04 Willow – Horsetail swamp

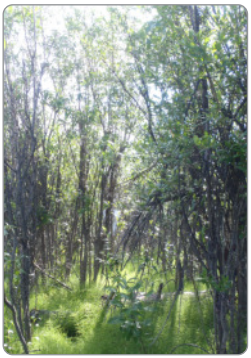
General description

The Willow – Horsetail swamp ecosite usually occurs along rivers and smaller creeks.

A high cover of willows (*Salix alaxensis*, *S. lasiandra*, *S. planifolia* among others) and a moderate to high cover of common horsetail (*Equisetum arvense*) characterize these swamps. Occasionally other horsetail species may occur, sometimes replacing common horsetail, including water horsetail (*E. fluviatile*), meadow horsetail (*E. pratense*), or variegated scouring-rush (*E. variegatum*). Reedgrass (*Calamagrostis stricta* or *C. canadensis*) is usually present, with trace or low cover. Mosses such as hook moss (*Drepanocladus* sp.) glow moss (*Aulacomnium* sp.), or tree moss (*Climacium dendroides*) are often present with low to high cover.

S04 occurs on subhygric to hygric sites with a medium to rich nutrient regime which experience subsurface seepage and occasional flooding. The imperfectly to poorly drained soils are Gleysols or Gleyed Regosols.



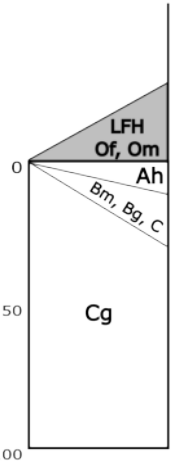


BOLlh/S04 - Saal50
(Alaska willow / Horsetail)

Site and soils

Site and soil characteristics

Plots in unit	20
Moisture regime	subhygric to subhydric (6-7)
Nutrient regime	medium to very rich (C-E)
Meso slope position	level, depressional
Aspect	none
Slope gradient	level
Surficial material	fluvial, sometimes lacustrine
Soil texture	no data
Soil classification	Gleysols
Humus form	mor
Humus depth	0-20 cm
Soil drainage	imperfect to poor
Seepage/water table	fluctuating water table close to the surface
Permafrost	abesent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite S04.

Saal50 Alaska willow / Horsetail

Sasp63 Willow / Horsetail

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

BOLlh/S04 Vegetation table

	Vegetation association	Saal50	Sasp63	
Stratum	No. of plots	12	8	
Shrub layer	*Salix alaxensis*	■■■■■		Alaska willow
	Salix spp.	□	■■■■■	willows
Forb layer	*Equisetum arvense*	■■■■■	■■■■■	common horsetail
	Petasites frigidus	■	■	arctic sweet coltsfoot
Graminoid layer	*Calamagrostis stricta*	■■	□	slim-stemmed reedgrass
	Poaceae	■	■	grasses
Moss layer	Bryophyta	■■■■	■■■■	mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

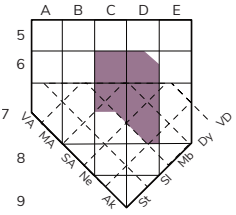
BOLlh/S04 Willow – Horsetail swamp

BOLlh/S04 - Saal50 (Alaska willow / Horsetail)

BOLlh/S04 - Sasp56 (Willow / Horsetail)

BOLlh/S06 Willow – Shrub birch – Peat moss swamp

General description



The Willow – Shrub birch – Peat moss swamp occurs rarely at higher elevations of the BOLlh.

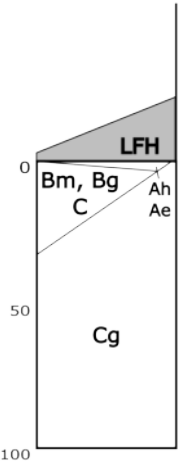
S06 is characterized by a shrub thicket dominated by shrub birch (*Betula glandulosa*), willow (*Salix* spp.), or both, with a bluejoint reedgrass (*Calamagrostis canadensis*) understorey. Willow species vary and may include tea-leaved (*S. planifolia*), grey-leaved (*S. glauca*), Alaska (*S. alaxensis*), and/or blueberry willow (*S. myrtillifolia*). Sparse white or black spruce (*Picea glauca*, *P. mariana*) less than five metres tall is also typical. A low to high cover of bluejoint reedgrass (*Calamagrostis canadensis*) is common but it may be accompanied by other grasses. Trace amounts of horsetails (*Equisetum* spp.) and other herbs are common. Peat moss (*Sphagnum* spp.) can dominate the moss layer but feathermosses (*Pleurozium* / *Hylocomium* spp.) and brown mosses (*Aulacomnium* spp.) also occur.

This medium to nutrient rich ecosite is usually associated with smaller creeks and other drainages often at the base of steep valleys. Flooding may be frequent. Soils typically consist of five to ten centimetres peaty layer over fluvial parent materials, and are usually classified as Gleysols.

Site and soils

Site and soil characteristics

Plots in unit	1
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	medium to rich (C-D)
Meso slope position	level
Aspect	variable
Slope gradient	level
Surficial material	organic over fluvial or lacustrine
Soil texture	fibric, mesic, over loam
Soil classification	Gleysols
Humus form	mor
Humus depth	5-10 cm
Soil drainage	poor
Seepage/water table	fluctuating water table close to the surface
Permafrost	absent



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite S07.

Begl63 Shrub birch – Willow / Peat moss

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

BOLlh/S06 Vegetation table

	Vegetation association	Begl63	
Stratum	No. of plots	1	
Tree layer	*Picea mariana*	■■■■	black spruce
Shrub layer	*Betual glandulosa*	■■■■■	shrub birch
	Salix spp.	■■	willows
Graminoid layer	Poaceae	■■■■■	grasses
Moss layer	*Sphagnum* spp.	■■■■■	peat mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/S06 Willow – Shrub birch – Peat moss swamp

no photo available

BOLlh/S06 - Begl63 (Shrub birch – Willow / Peat moss)

BOLlh/S07 Sb – Labrador tea – Peat moss swamp

General description

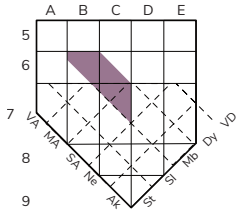
The Sb – Common Labrador Tea – Peat moss swamp ecosite occurs rarely in the BOLlh.

S07 is characterized by black spruce (*Picea mariana*) woodlands with a moderate cover of common Labrador tea (*Rhododendron groenlandicum*). Other shrubs include moderate cover of shrub birch (*Betula glandulosa*) and sometimes willow (*Salix* spp.), while ground shrubs often include lowbush cranberry (*Vaccinium vitis-idaea*). A variety of grasses (Poaceae) and sedges (*Carex* spp.) may be present. A combination of peat mosses (*Sphagnum* spp.) and other mosses dominate the groundcover.

This nutrient-poor to mesotrophic wetland occurs on level and depressional sites. Permafrost may be present, and soils are likely classified as Gleysols or Cryosols.

Comments

No soil and little site information is available for the two plots.

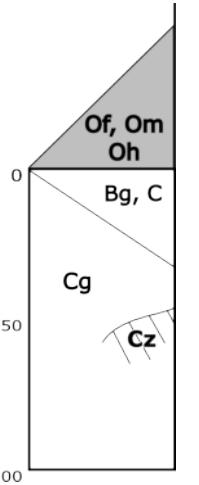


BOLlh/S07 - Sb34
(Black spruce / Common Labrador tea/ Lowbush cranberry / Feathermoss –

Site and soils

Site and soil characteristics

Plots in unit	2
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	poor to medium (B-C)
Meso slope position	level, depression
Aspect	various
Slope gradient	level
Surficial material	shallow peat over mineral
Soil texture	fibric peat over loamy soils
Soil classification	Gleysol (Cryosol)
Humus form	mor
Humus depth	less than 30cm
Soil drainage	poor
Seepage/water table	close to the surface; may be subject to flooding
Permafrost	may be present, could be at depth when not near surface



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite S07.

Sb34 Black spruce / Common Labrador tea/ Lowbush cranberry / Feathermoss – Peat moss

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

BOLlh/S07 Vegetation table

	Vegetation association	Sb34	
Stratum	No. of plots	2	
Tree layer	*Piecea mariana*	■■■■	black spruce
Shrub layer	*Betula glandulosa*	■■■■	shrub birch
	Rhododendron groenlandicum	■■■■■	common Labrador tea
	Salix spp.	■■■■	willows
	Vaccinium uliginosum	■■■■	bog blueberry
Ground shrub layer	*Vaccinium vitis-idaea*	■■	lowbush cranberry
Forb layer	*Equisetum* spp.	■■■	horsetails
Moss layer	*Aulacomnium / Tomentypnum*	■■■■	brown mosses
	Bryophyta	■■■■■	mosses
	Sphagnum spp.	■■■■	peat mosses
Lichen layer	*Cladina* spp.	■■■■	reindeer lichens

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

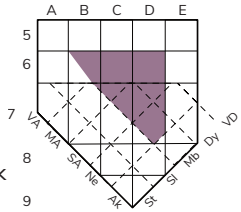
BOLlh/S07 Sb – Common Labrador tea – Peat moss swamp

no photo available

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

BOLlh/S08 SbSw – Red bearberry – Brown moss swamp

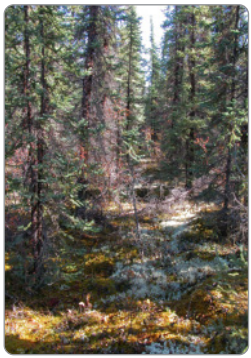
General description



The SbSw – Red bearberry – Brown moss swamp ecosite occurs on moist to wet sites on level terraces, and on cooler-aspect lower and toe slopes.

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 (*S. myrtillifolia*, *S. glauca*), common Labrador tea (*Rhododendron groenlandicum*), crowberry (*Empetrum nigrum*), lowbush cranberry (*Vaccinium vitis-idaea*), and a low cover of horsetails (*Equisetum arvense*, *E. sylvaticum*, *E. fluviatile*).

The S08 ecosite occurs on imperfect to poorly drained sites that may have permafrost. Soils are Gleysols or Gleyed subgroups of Regosols and Brunisols or Turbic or Organic Cryosols. A peaty surface horizon over the mineral soil is typical.

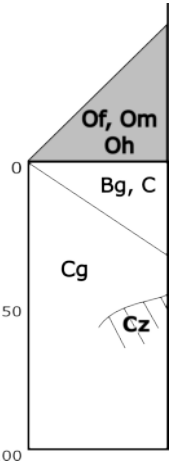


BOLlh/S08 - SbSw32
(Black spruce (White spruce) / Red bearberry / Feathermoss – Brown moss)

Site and soils

Site and soil characteristics

Plots in unit	8
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	poor to rich (B-D)
Meso slope position	lower, mid and toe slopes, depressions
Aspect	north and east, level most common
Slope gradient	0-18 cm
Surficial material	morainal, lacustrine, fluvial
Soil texture	sandy, loamy, loamy skeletal
Soil classification	Gleysol, Cryosol, Gleyed Brunisol, Gleyed Regosol
Humus form	moder, mor
Humus depth	9-36 cm
Soil drainage	imperfect to poor
Seepage/water table	close to surface, fluctuating
Permafrost	may have permafrost



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite S08.

SbSw32 Black spruce (White spruce) / Red bearberry / Feathermoss – Brown moss

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

BOLlh/S08 Vegetation table

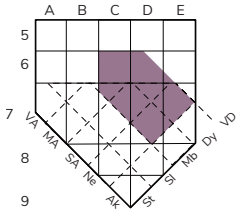
	Vegetation association	SbSw32	
Stratum	No. of plots	8	
Tree layer	*Picea mariana*	■■■■■	black spruce
Shrub layer	*Rhododendron groenlandicum*	■■■■	common Labrador tea
	Salix myrtillifolia	■■■	blueberry willow
	Salix spp.	■■■■	willows
Ground shrub layer	*Arctous rubra*	■■■	red bearberry
	Empetrum nigrum	■■	crowberry
	Vaccinium vitis-idaea	■■■	lowbush cranberry
Forb layer	*Equisetum arvense*	■■■	common horsetail
	Equisetum scirpoides	■	dwarf scouring rush
	Geocaulon lividum	■	bastard toadflax
	Mertensia paniculata	■	tall bluebells
Graminoid layer	*Carex* spp.	■■■	sedges
Moss layer	*Aulacomnium / Tomentypnum* spp.	■■■■■	brown mosses
	Hylocomium splendens	■■■■	step moss
Lichen layer	*Cladina* spp.	■■■	reindeer lichens
	Peltigera aphthosa	■■	freckle pelt lichen

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/S08 SbSw – Red bearberry – Brown moss swamp

BOLlh/S08 - SbSw32 (Black spruce (White spruce) / Red bearberry / Feathermoss – Brown moss - soil)

BOLlh/S09 Sw – Shrub birch – Grass swamp



General description

The Sw – Shrub birch – Grass swamp is uncommon in the boreal low of southeast Yukon though it is found along the Nisutlin River and tributaries in the western part of the subzone.

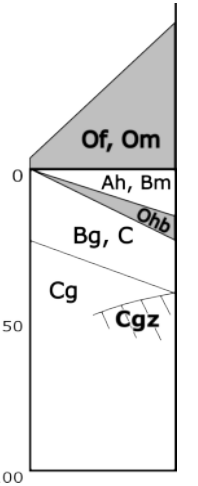
An open canopy of white spruce (*Picea glauca*), usually accompanied by black spruce (*P. mariana*), is typical, over a shrub layer of shrub birch (*Betula glandulosa*) and willows (*Salix* spp.). Other shrubs can sometimes include bog blueberry (*Vaccinium uliginosum*) and Labrador tea (*Rhododendron groenlandicum*). The groundcover is characterized by more than 10 per cent grass, which may be bluejoint reedgrass (*Calamagrostis canadensis*), Altai fescue (*Festuca altaica*), bluegrasses (*Poa* spp.), or other grasses. A low cover of step moss (*Hylocomium splendens*), red-stemmed feathermoss (*Pleurozium schreberi*), peat moss (*Sphagnum* spp.) and or golden fuzzy fen moss (*Tomentypnum nitens*) is typical of the moss layer.

S09 is associated with level lacustrine, glaciofluvial or fluvial deposits on lower and toe slopes. Soils usually consist of a peaty surface layer over mineral soil. In southeast Yukon, soils are likely Gleysols or gleyed subgroups of Brunisols. Cryosols may sometimes occur.

Site and soils

Site and soil characteristics

Plots in unit	2
Moisture regime	subhydric to hygric (7-6)
Nutrient regime	medium to very rich (C-E)
Meso slope position	level, lower to toe
Aspect	variable
Slope gradient	gentle
Surficial material	shallow organic over glaciofluvial, lacustrine, fluvial
Soil texture	fibric or mesic peat over mineral
Soil classification	Gleysol, Gleyed Brunisol, Cryosol
Humus form	mor or moder
Humus depth	5-30 cm
Soil drainage	imperfect to poor
Seepage/water table	within 30 cm of the surface
Permafrost	may sometimes be present



Vegetation summary

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

Sw56.1 White spruce / Shrub birch / Grass

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

BOLlh/S09 Vegetation table

	Vegetation association	Sw56.1	
Stratum	No. of plots	2	
Tree layer	*Picea glauca*	■■■■■	white spruce
	Picea mariana	■■■	black spruce
	Pinus contorta	■■	lodgepole pine
Shrub layer	*Betula glandulosa*	■■■■■	shrub birch
	Dasiphora fruticosa	■■■	shrubby cinquefoil
	Rhododendron groenlandicum	■■■	common Labrador tea
	Salix spp.	■■■■■	willows
Graminoid layer	Poaceae	■■■■■	grasses
Moss layer	*Hylocomium splendens*	■■■■	step moss
	Pleurozium schreberi	■■■■	red-stemmed feathermoss
Lichen layer	*Cladina* spp.	■■	reindeer lichens
	Cladonia spp.	■■	clad lichens

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

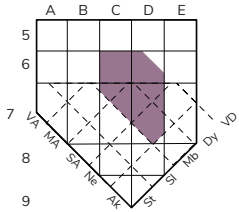
BOLlh/S09 Sw – Shrub birch – Grass swamp

no photo available

BOLlh/S09 - Sw56.1 (White spruce / Shrub birch / Grass)

BOLlh/S10 SbSw – Shrub birch – Feathermoss – Brown moss swamp

General description



The SbSw – Shrub birch – Feathermoss – Brown moss Swamp occurs mostly above 950 metres in the BOH Zone, but also occurs in the BOL of southeast Yukon.

This wetland is characterized by an open canopy of white spruce (*Picea glauca*), black spruce (*P. mariana*), or both, with an understorey of shrub birch (*Betula glandulosa*). Black spruce occurs more commonly at lower elevations. A low to moderate cover of other shrubs including Labrador tea (*Rhododendron groenlandicum*), willows (*Salix* spp.), and bog blueberry (*Vaccinium uliginosum*) accompany the shrub birch. Willows frequently include blueberry willow (*Salix myrtillifolia*). Red bearberry (*Arctous rubra*), crowberry (*Empetrum nigrum*), and lowbush cranberry (*Vaccinium vitis-idaea*) frequently occur with variable cover. The moderate to high moss cover includes golden fuzzy fen moss (*Tomentypnum nitens*), glow moss (*Aulacomnium palustre*), step moss (*Hylocomium splendens*), and red-stemmed feathermoss (*Pleurozium schreberi*). Sometimes peat moss (*Sphagnum* spp.) is present. Lichens occur frequently with trace to moderate cover.

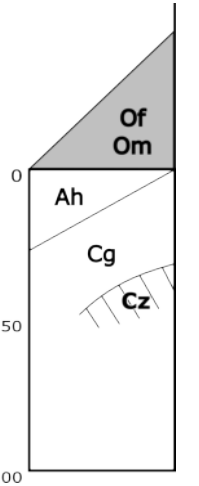
BOLlh/S10 - SbSw41
(Black spruce – White spruce / Shrub birch / Feathermoss – Brown moss)

These are colder sites than many other swamps. They are located on a range of site positions and parent materials. They may be on cool aspects or be subject to cold air drainage, frost, or wind exposure. Sites are nutrient-medium, hygric to subhydric. Seepage may be present. Soils often consist of clay and silt loams covered with 10 to 30 centimetres of peat which can make them slow to warm up during the summer, thus helping create colder site conditions. Soils are usually classified as Gleysols and Cryosols. Permafrost is likely present at depth on most sites.

Site and soils

Site and soil characteristics

Plots in unit	6
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	medium to rich (C-D)
Meso slope position	level, lower to toe (midslope)
Aspect	often northerly but can occur on other aspects
Slope gradient	level to moderate
Surficial material	organic veneer
Soil texture	fibric or mesic peat over silt, clay, sandy loam, gravel
Soil classification	Gleysol (Cryosol)
Humus form	mor, moder
Humus depth	10 – 35 cm
Soil drainage	imperfect to poor
Seepage/water table	usually evident within 20 – 40 cm of the surface
Permafrost	may be present



Vegetation summary

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

SbSw41 Black spruce – White spruce / Shrub birch / Feathermoss – Brown moss

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

BOLlh/S10 Vegetation table

	Vegetation association	SbSw41	
Stratum	No. of plots	6	
Tree layer	*Picea glauca*	■■■■	white spruce
	Picea mariana	■■■■■	black spruce
Shrub layer	*Betula glandulosa*	■■■■■	shrub birch
	Dasiphora fruticosa	■■	shrubby cinquefoil
	Rhododendron groenlandicum	■■■■■	common Labrador tea
	Salix spp.	■■■■■	willows
	Vaccinium uliginosum	■■■	bog blueberry
Ground shrub layer	*Arctous rubra*	■■■■	red bearberry
	Empetrum nigrum	■■■	crowberry
Forb layer	*Equisetum arvense / pratense*	■■■	common / meadow horsetail
Moss layer	Bryophyta	■■■■■	mosses
	Hylocomium splendens	■■■■■	step moss
Lichen layer	*Cladina* spp.	■■	reindeer lichens

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/S10 SbSw – Shrub birch – Feathermoss – Brown moss swamp

BOLlh/S10 - SbSw41 (Black spruce – White spruce / Shrub birch / Feathermoss – Brown moss)

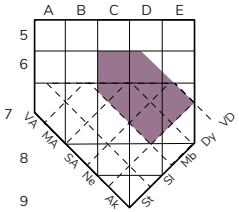
BOLlh/S12 Sweet gale – Willow swamp

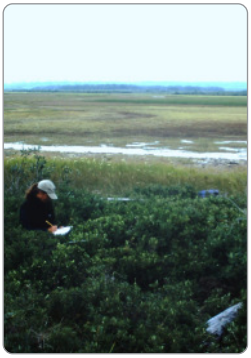
General description

The Sweet gale – Willow swamp ecosite occurs on older fluvial floodplains.

A low to high cover of sweet gale (*Myrica gale*) is diagnostic. Willows, including Athabasca willow (*Salix athabascensis*) or tea-leaved willow (*S. planifolia*) may be co-dominant. Common associated species include reedgrasses (*Calamagrostis* spp.), sedges (*Carex* spp.), horsetails (*Equisetum* spp.) and Baltic rush (*Juncus balticus*).

This is a nutrient rich, subhygric to subhydric ecosite. Sites are poorly drained, and soils are classified as Gleysols.



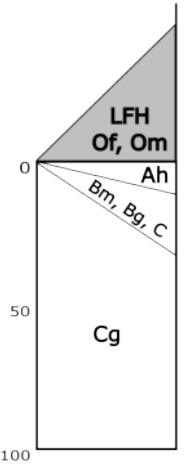


BOLlh/S12 - Myga50
(Sweet gale – Willow)

Site and soils

Site and soil characteristics

Plots in unit	3
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	medium to very rich (C-E)
Meso slope position	level, lower slope
Aspect	none
Slope gradient	level to gentle
Surficial material	fluvial
Soil texture	fine loamy
Soil classification	Gleysols
Humus form	no data
Humus depth	no data
Soil drainage	poor
Seepage/water table	near the surface, fluctuating
Permafrost	likely absent



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite S12.

Myga50 Sweet gale – Willow

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

BOLlh/S12 Vegetation table

	Vegetation association	Myga50	
Stratum	No. of plots	3	
Shrub layer	*Alnus incana*	■	river alder
	Betula glandulosa	■■	shrub birch
	Myrica gale	■■■■■	sweet gale
	Salix spp.	■■■■	willows
Forb layer	*Equisetum* spp.	■	horsetails / scouring-rush
	Galium boreale	■■■	northern bedstraw
	Rubus arcticus	■	Arctic raspberry
Graminoid layer	*Calamagrostis* spp.	■■	reedgrasses
	Carex spp.	■■	sedges
	Deschampsia cespitosa	■■	tufted hairgrass
	Juncus balticus	■■	Baltic rush

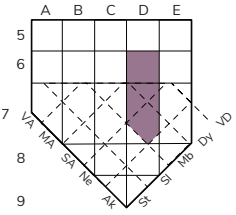
Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/S12 Sweet gale – Willow swamp

BOLlh/S12 - Myga50 (Sweet gale – Willow - soil)

BOLlh/S13 Sw – Blueberry willow – Horsetail swamp

General description



The Sw – Blueberry willow – Horsetail swamp ecosite occurs on subhydric to subhygric sites characterized by white spruce (*Picea glauca*), with willows (*Salix* spp.), horsetails (*Equisetum* spp.) and brown mosses (*Aulacomium* / *Tomentypnum* spp.).

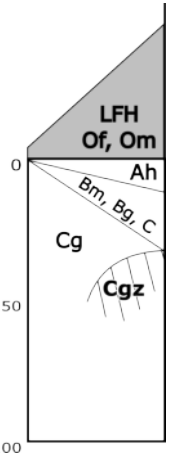
White spruce usually dominates the moderate to high tree cover, though black spruce can codominate. A moderate to high cover of willows, including blueberry willow (*Salix myrtillifolia*), is also characteristic. Other indicator species include horsetails (*Equisetum arvense, E. pratense, E. fluviatile*), brown mosses and step moss (*Hylocomium splendens*). Other common species include sedges (*Carex* spp.), tall bluebells (*Mertensia paniculata*), arctic sweet coltsfoot (*Petasites frigidus*), bearberry (*Arctous rubra*), and twinflower (*Linnea borealis*).

This ecosite usually occupies level or gently sloping sites where there is subsurface seepage. Drainage is imperfect to poor. Soils may be medium textured lacustrine, colluvial or fluvial, and are classified as Gleysols, gleyed subgroups of Brunisols or Cryosols.

Site and soils

Site and soil characteristics

Plots in unit	3
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	rich (D)
Meso slope position	level, lower slope
Aspect	none
Slope gradient	0-3%
Surficial material	variable
Soil texture	silty to sandy
Soil classification	Gleysol, Brunisol, (Cryosol)
Humus form	mor, moder
Humus depth	no data
Soil drainage	imperfect to poor
Seepage/water table	near the surface, fluctuating
Permafrost	may have permafrost



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite S13.

Sw39 White spruce / Willow / Horsetail / Brown moss

SbSw39 White spruce – Black spruce / Willow / Horsetail / Brown moss

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

BOLlh/S13 Vegetation table

	Vegetation association	Sw39	SbSw39	
Stratum	No. of plots	2	1	
Tree layer	*Picea glauca*	■■■■■	■■■■	white spruce
	Picea mariana	■■■	■■■■	black spruce
Shrub layer	*Dasiphora fruticosa*	■	■■	shrubby cinquefoil
	Salix myrtillifolia	■■■■■	■■■	blueberry willow
	Salix spp.	■■■■	■■■	willows
Ground shrub layer	*Arctous rubra*	■■	■■	red bearberry
	Empetrum nigrum	■	■■■■■	crowberry
	Linnaea borealis	■■■	■■	twinflower
	Vaccinium vitis-idaea	■■■	■■■■	lowbush cranberry
Forb layer	*Equisetum arvense / pratense*	■■■■	■■■■■	field / meadow horsetail
	Equisetum fluviatile	■■■■		water horsetail
Moss layer	*Aulacomnium palustre*	■■■	■■■	glow moss
	Dicranum spp.	■	■	broom mosses
	Hylocomium splendens	■■■■■	■■■■■	step mosses
	Sphagnum spp.	■■■■	■■■■	peat mosses
	Tomentypnum nitens	■■■■	■■■■	golden fuzzy fen moss
Lichen layer	*Peltigera aphthosa*	■■	■■	freckle pelt lichen

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/S13 Sw – Blueberry willow – Horsetail swamp

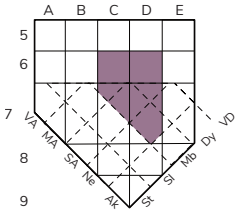
no photo available

BOLlh/S13 - Sw39 (White spruce / Willow / Horsetail / Brown moss)

no photo available

BOLlh/ S13 - SbSw39 (White spruce – Black spruce / Willow / Horsetail / Brown moss)

BOLlh/S14 SbL – Brown moss swamp



General description

The SbL – Brown moss swamp ecosite is characterized by an open larch and spruce canopy with a variable groundcover.

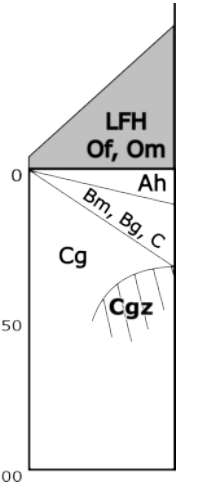
A sparse to open canopy of larch (*Larix laricina*) and black spruce (*Picea mariana*) is typical with a variety of shrubs dominated by common Labrador tea (*Rhododendron groenlandicum*) and willows (*Salix myrtilifolia, S. planifolia* and others). The moss cover is high and is usually dominated by glow moss (*Aulacomnium palustre*), golden fuzzy fen moss (*Tomentypnum nitens*) with some step moss (*Hylocomium splendens*) and peat moss (*Sphagnum* spp.). Common associates include blueberry (*Vaccinium uliginosum*), red bearberry (*Arctous rubra*), crowberry (*Empetrum nigrum*), bog cranberry (*V. oxycoccus*), and a low to trace amount of sedges, mostly water sedge (*Carex aquatilis*).

These hygric and subhydric sites are poor to very poorly drained. A high water table is characteristic with occasional flooding or periodic standing water typical due to permafrost and or slow infiltration rates. The hummocky ground surface provides a variety of microsites for many species. Soils are variable and include Cryosols and Gleysols.

Site and soils

Site and soil characteristics

Plots in unit	12
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	medium to rich (C-D)
Meso slope position	level, lower and toe slope
Aspect	level
Slope gradient	0-5%
Surficial material	organic over till, lacustrine, fluvial, colluvium or aeolian
Soil texture	fine loamy, loamy skeletal
Soil classification	Gleysols, Cryosols
Humus form	mesimor
Humus depth	10-40 cm
Soil drainage	imperfect to very poor
Seepage/water table	near the surface
Permafrost	may be present



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite S14.

SbL51 Black spruce – Larch / Labrador tea / Brown moss

SbLW51%[1] Black spruce – Larch – Alaska paper birch / Labrador tea / Brown moss

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

[1]% indicates provisional association

BOLIh/S14 Vegetation table

	Vegetation association	SbL51	SbLW51%	
Stratum	No. of plots	10	2	
Tree layer	*Betula neoalaskana / papyrifera*		■■■	Alaska / paper birch
	Larix laricina	■■■	■■■	larch
	Picea mariana	■■■■	■■■■	black spruce
Shrub layer	*Alnus* spp.		■■■■	alder
	Betula glandulosa	■■■	■■	shrub birch
	Rhododendron groenlandicum	■■■■	■■■■■	common Labrador tea
	Salix spp.	■■■■	■■■■■	willows
	Vaccinium uliginosum	■■	■■■	bog blueberry
Ground shrub layer	*Arctous rubra*	■■■		red bearberry
	Empetrum nigrum	■■■	■■	crowberry
	Linnaea borealis		■■	twinflower
	Vaccinium oxycoccos	■	■■	bog cranberry
	Vaccinium vitis-idaea	■■	■■	lowbush cranberry
Forb layer	*Cornus canadensis*		■■	bunchberry
	Equisetum spp.	■■■	■■■■	horsetails
	Rubus arcticus	■■	■■	arctic raspberry
Graminoid layer	*Calamagrostis canadensis*	■■		bluejoint reedgrass
Moss layer	*Aulacomnium palustre*	■■■■	■■■■	glow moss
	Hylocomium / Pleurozium spp.	■■■■	■■■■	feathermosses
	Tomentypnum nitens	■■■■		golden fuzzy fen moss
	Sphagnum spp.	■■■■■	■■■■■	peat mosses
Lichen layer	*Cladina* spp.	■■■	■■	reindeer lichen
	Cladonia spp.	■■	■■	clad lichens
	Peltigera aphthosa	■	■■	freckle pelt lichen

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/S14 SbL – Brown moss swamp

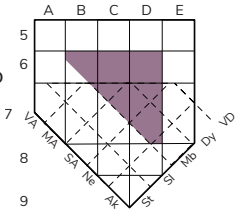
BOLlh/S14 - SbL51 (Black spruce – Larch / Labrador tea / Brown moss - soil)

no photo available

BOLlh/ F14 - SbLW51% (Black spruce – Larch – Alaska paper birch / Labrador tea / Brown moss)

BOLlh/S15 SbSw – Alder – Labrador tea – Peat moss swamp

General description



The SbSw – Alder – Labrador tea – Peat moss swamp is found occasionally on moderate to steep cool aspect slopes in the southeast Yukon.

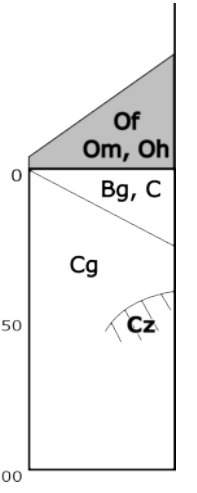
S15 is characterized by an open black (*Picea mariana*) or white spruce (*P. glauca*) canopy with green alder (*Alnus alnobetula*), Labrador tea (*Rhododendron groenlandicum*) and peat moss (*Sphagnum* spp.). The presence of Alaska paper birch (*Betula neoalaskana*) and other tree birches (*Betula* spp.) probably indicates past fire events. Willows (*Salix* spp.), bog blueberry (*Vaccinium uliginosum*), lowbush cranberry (*V. vitis-idaea*) and cloudberry (*Rubus chamaemorus*) are characteristic. Peat moss (*Sphagnum* spp.) is diagnostic of the moss layer, but feathermosses (*Hylocomium splendens, Pleurozium schreberi*) are also found.

This ecosite occurs on cool aspect, moderately to steeply sloping sites. The soils are characterized by a peaty surface layer over morainal, colluvial, or lacustrine parent materials. Soils are usually classified as Gleysols or Cryosols if permafrost is present.

Site and soils

Site and soil characteristics

Plots in unit	2
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	poor to rich (B-D)
Meso slope position	mostly lower and mid slopes
Aspect	cool north and east aspect
Slope gradient	moderate to steep
Surficial material	organic veneer over morainal, lacustrine, colluvial
Soil texture	fibric and mesic peat over loams or gravelly loams
Soil classification	Gleysol, Cryosol
Humus form	mor, moder
Humus depth	no data
Soil drainage	poor
Seepage/water table	mostly within 35-40 cm
Permafrost	may be present



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite S15.

SbW36 Black spruce – Alaska paper birch / Alder – Labrador tea / Peat moss

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

BOLlh/S15 Vegetation table

	Vegetation association	SbL51	
Stratum	No. of plots	10	
Tree layer	*Betula neoalaskana / papyrifera*	■■	Alaska / paper birch
	Picea glauca	■■■	white spruce
	Picea mariana	■■■■■	black spruce
Shrub layer	*Alnus* spp.	■■■	alders
	Rhododendron groenlandicum	■■■■■	common Labrador tea
	Salix spp.	■■■■■	willows
	Vaccinium uliginosum	■■	bog blueberry
Ground shrub layer	*Rubus chamaemorus*	■■■■	cloudberry
	Vaccinium vitis-idaea	■■■■	lowbush cranberry
Forb layer	*Arctous rubra*	■■■■	red bearberry
	Equisetum arvense	■■	horsetails
	Equisetum scirpoides	■■■■	arctic raspberry
Graminoid layer	Poaceae	■■	grasses
Moss layer	Bryophyta	■■■■■	mosses
	Sphagnum spp.	■■■■	peat mosses
Lichen layer	*Peltigera aphthosa*		freckle pelt lichen

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

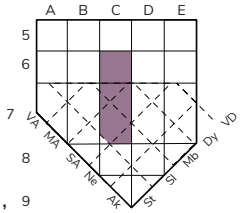
BOLlh/S15 SbSw – Alder – Labrador tea – Peat moss swamp

no photo available

BOLlh/S15 - SbW36 (Black spruce – Alaska paper birch / Alder – Labrador tea / Peat moss)

BOLlh/S18 FSw – Peat moss – Feathermoss swamp

General description



Though the FSw – Peat moss – Feathermoss swamp is more typical of higher elevations in central and southern Yukon, it is found in the BOLlh above 850 metres.

S18 is characterized by an open canopy of fir (*Abies lasiocarpa*) and white spruce (*Picea glauca*), with a low cover of shrubs including willows (*Salix* spp.) and Labrador tea (*Rhododendron groenlandicum*), and a well-developed moss layer. Ground shrubs can include crowberry (*Empetrum nigrum*), lowbush cranberry (*Vaccinium vitis-idaea*), and twinflower (*Linnea borealis*). Various horsetails (*Equisetum* spp.) are common in the understorey, as well as an assortment of herbs. Mosses can include feathermosses (*Hylocomium splendens, Pleurozium schreberi, Ptilium crista-castrensis*), golden fuzzy fen moss (*Tomentypnum nitens*) and peat mosses (*Sphagnum* spp.)

This nutrient-medium ecosite is usually found on gentle to moderate northerly or easterly slopes with subsurface seepage but may also be found on level sites. The medium textured gravelly morainal or colluvial soils have peat at the surface. Soils are classified as Organic, Gleysol or Cryosol.

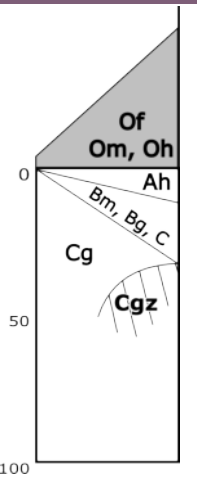
Comments

This ecosite is represented by only one plot in this area of the boreal low.

Site and soils

Site and soil characteristics

Plots in unit	1
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	medium (C)
Meso slope position	lower to mid slopes
Aspect	mostly north or east
Slope gradient	level to moderate
Surficial material	organic over till or colluvium
Soil texture	variable
Soil classification	Organic
Humus form	moder
Humus depth	up to 40 cm
Soil drainage	poor to very poor
Seepage/water table	within 60 cm of the surface
Permafrost	may be present



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite S18.

FSw35 Fir – White spruce / Shrub birch – Labrador tea / Step moss – Peat moss

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

BOLlh/S18 Vegetation table

	Vegetation association	FSw35	
Stratum	No. of plots	1	
Tree layer	*Betula neoalaskana / papyrifera*	■■■	Alaska / paper birch
	Picea glauca	■■■■	white spruce
	Picea mariana	■■■	black spruce
Shrub layer	*Rhododendron groenlandicum*	■	common Labrador tea
	Salix spp.	■■■	willows
Ground shrub layer	*Empetrum nigrum*	■■■	crowberry
	Linnaea borealis	■■■■	twinflower
	Vaccinium vitis-idaea	■■■■	lowbush cranberry
Forb layer	*Cornus canadensis*	■■	bunchberry
	Equisetum sylvaticum	■■■■■	wood horsetail
	Mitella nuda	■■	naked mitrewort
Moss layer	*Hylocomium splendens*	■■■■■	step moss
	Pleurozium schreberi	■■■■	red-stemmed feathermoss
	Ptilium crista-castrensis	■■■	knight's plume
	Tomentypnum nitens	■■■■	golden fuzzy fen moss
Lichen layer	*Peltigera aphthosa*	■■	freckle pelt lichen

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

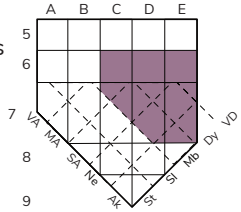
BOLlh/S18 FSw – Peat moss – Feathermoss swamp

no photo available

BOLlh/S18 - FSw35 (Fir – White spruce / Shrub birch – Labrador tea / Step moss – Peat moss)

BOLlh/M01 Beaked sedge – Water sedge marsh

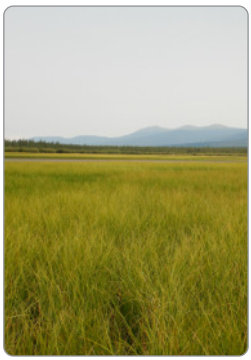
General description



The Beaked sedge – Water sedge marsh ecosite is dominated by beaked sedge (*Carex utriculata*) or water sedge (*Carex aquatilis*) or both. This ecosite is one of the most common marsh ecosites.

Though water sedge and beaked sedge dominate the ecosite, russet sedge (*Carex saxatilis*) is a common associate. Other species such as water horsetail (*Equisetum fluviatile*), creeping spike-rush (*Eleocharis palustris*), marsh cinquefoil (*Comarum palustre*) or reedgrass (*Calamagrostis* spp.) may be present with low cover. A very low cover to trace amounts of shrubs, e.g., willow (*Salix* spp.) are frequent. Mosses are sometimes present, but with a low cover as a result of the frequent flood regime causing regular erosion and deposition.

M01 is subject to fluctuating water levels and frequent flooding. Soils are poor or very poorly drained on fluvial parent materials. Soils are classified as Gleysols.



BOLlh/M01 - Caut57
(Beaked sedge)

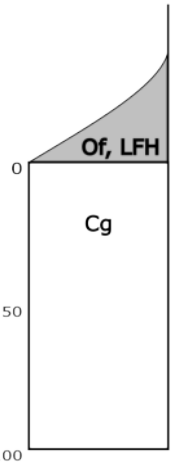
Comments

Equivalent to Wm01 in BC (MacKenzie and Moran 2004).

Site and soils

Site and soil characteristics

Plots in unit	20
Moisture regime	hygric to hydric (6-8)
Nutrient regime	medium to very rich (C-E)
Meso slope position	level
Aspect	none
Slope gradient	0-2%
Surficial material	fluvial
Soil texture	loamy, silty
Soil classification	Fibric Organic Cryosol, Fibrisol
Humus form	mor
Humus depth	0-10 cm
Soil drainage	poor to very poor
Seepage/water table	at or within 50 cm of the surface
Permafrost	absent



Vegetation summary

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

Caaq57 Water sedge – Moss
Caut56 Beaked sedge – Water sedge
Caut57 Beaked sedge

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

BOLlh/M01 Vegetation table

	Vegetation association	Caaq57	Caut56	Caut57	
Stratum	No. of plots	2	6	12	
Forb layer	*Equisetum fluviatile*			■■	water horsetail
Graminoid layer	*Carex aquatilis*	■■■■■	■■■■■		water sedge
	Carex utriculata	■■■	■■■■	■■■■■	beaked sedge
Moss layer	Bryophyta	□	■■	□□	mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/M01 Beaked sedge – Water sedge marsh

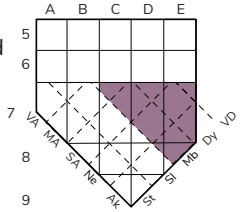
BOLlh/M01 - Caut56 (Beaked sedge – Water sedge)

BOLlh/M01 - Caaq57 (Water sedge – Moss)

BOLlh/M01 - Caut57 (Beaked sedge)

BOLlh/M02 Water horsetail marsh

General description



The Water horsetail marsh ecosite is characterized by a significant cover of water horsetail (*Equisetum fluviatile*).

Water horsetail (*Equisetum fluviatile*) generally dominates the groundcover, however, sometimes sedge cover can equal or even exceed that of the horsetail. Beaked sedge (*Carex utriculata*) is the most common associate, but occasionally other sedges (*Carex* spp.) may occur. Other horsetails (*E. palustre*, *E. arvense*, *E. pratense*) can occur and sometimes dominate. Western dock (*Rumex occidentalis*), common water-parsnip (*Sium suave*), mare's tail (*Hippuris vulgaris*, *H. lanceolata*), buttercup (*Ranunculus* spp.) and pondweed (*Potamogeton* spp.) are frequent associates that occur with a low to moderate cover.

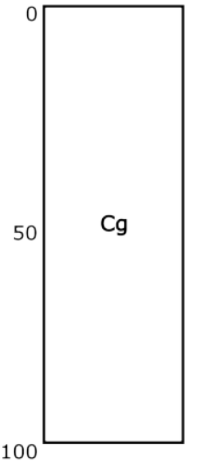
BOLlh/M02 - Eqfl55
(Water horsetail – Water sedge)

Frequent flooding, erosion and deposition are characteristic of this ecosite. It is usually slightly wetter that the M01 ecosite, with a slightly higher water table and is flooded for slightly longer. The very poor to poorly drained soils are most often classified as Rego Gleysols.

Site and soils

Site and soil characteristics

Plots in unit	30
Moisture regime	subhydric to hydric (7-8)
Nutrient regime	medium to very rich (C-E)
Meso slope position	level, (depressional)
Aspect	none
Slope gradient	0 (-20%)
Surficial material	usually fluvial
Soil texture	often fine loamy
Soil classification	Gleysols
Humus form	fibrimor
Humus depth	usually 0
Soil drainage	poor to very poor
Seepage/water table	at or near surface, flooding
Permafrost	absent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite M02.

Eqfl55 Water horsetail – Water sedge
Eqfl56 Water horsetail – Beaked sedge
Eqfl59 Water horsetail

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

BOLlh/M02 Vegetation table

	Vegetation association	Eqfl55	Eqfl56	Eqfl59	
Stratum	No. of plots	3	20	7	
Forb layer	*Equisetum fluviatile*	■■■■	■■■■■	■■■■■	water horsetail
	Hippuris vulgaris			■■■■	common mare's tail
	Potamogeton spp.			□□□	pondweeds
	Ranunculus spp.	□		■■■■	buttercups
	Rumex spp.		■■■		docks
	Sium suave		■■■		common water parsnip
Graminoid layer	*Carex aquatilis*	■■■■			water sedge
	Carex utriculata	□□	■■■■■		beaked sedge
	Poaceae		□□		grasses
Moss layer	*Bryophyta*	■■■	■■■		mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/M02 Water horsetail marsh

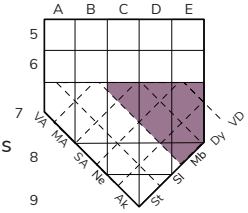
no photo available

BOLlh/M02 - Eqfl56 (Water horsetail – Beaked sedge)

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

BOLlh/M02 - Eqfl59 (Water horsetail)

BOLlh/M05 Creeping spike-rush marsh



General description

The Creeping spike-rush marsh ecosite is characterized by creeping spike-rush (*Eleocharis palustris*).

A moderate to high cover of creeping spike-rush is diagnostic. If cover of all species is low, creeping spike-rush may also be of low cover. Water sedges (*Carex utriculata, C. aquatilis*) and horsetails (*Equisetum variegatum, E. fluviatile*) may be codominant or occur with lower cover. Various grasses may be present, including slim-stemmed reedgrass (*Calamagrostis stricta*), little meadow-foxtail (*Alopecurus aequalis*), bluegrass (*Poa* spp.), or tufted hairgrass (*Deschampsia cespitosa*), with trace to moderate cover. Other common associated species include lesser spearwort (*Ranunculus flammula*) and common mare's-tail (*Hippuris vulgaris*). Bryophytes may be present with a low to moderate cover.

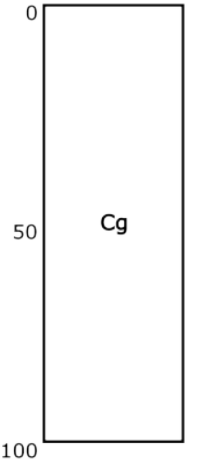
Sites are flooded regularly and may be submerged for extended periods. They are subhydric to hydric nutrient medium to rich sites. Soils are classified as Gleysols.

BOLlh/M05 - Elpa55
(Creeping spike-rush – Tufted hairgrass)

Site and soils

Site and soil characteristics

Plots in unit	11
Moisture regime	subhydric to hydric (7-8)
Nutrient regime	medium to very rich (C-E)
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	fluvial
Soil texture	no data
Soil classification	Gleysols
Humus form	no data
Humus depth	no data
Soil drainage	poor to very poor
Seepage/water table	at or near the surface, flooding
Permafrost	absent



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite M05.

Elpa55 Creeping spike-rush – Tufted hairgrass

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

BOLlh/M05 Vegetation table

	Vegetation association	Elpa55	
Stratum	No. of plots	11	
Forb layer	*Equisetum fluviatile / variegatum*	■■■	water / variegated horsetail
	Hippuris vulgaris	■■	common mare's-tail
	Potamogeton spp.	■	pondweeds
	Ranunculus flammula	■■■	creeping spearwort
Graminoid layer	*Eleocharis palustris*	■■■■	creeping spike-rush
	Carex aquatilis / utriculata		water / beaked sedge
	Poaceae (*Deschampsia, Poa, Calamagrostis, Alopecurus*)	■■■■	grasses
Moss layer	Bryophyta	■■■■■	mosses

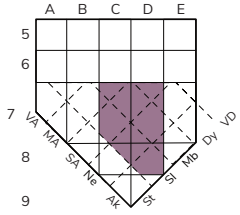
Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/M05 Creeping spike-rush marsh

BOLlh/M05 - Elpa55 (Creeping spike-rush – Tufted hairgrass)

BOLlh/M06 Mannagrass marsh

General description



The Mannagrass marsh ecosite is an uncommon ecosite characterized by a moderate to high cover of mannagrass.

Boreal mannagrass (*Glyceria borealis*) or fowl mannagrass (*G. striata*) is a dominant component of the vegetation cover. Other grasses (Poaceae), beaked sedge (*Carex utriculata*) and forbs may occur with low to moderate cover. Moss cover is usually low or absent.

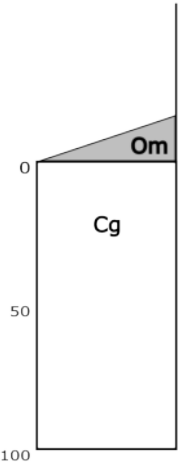
This ecosite occurs on hygric to hydric sites with a medium to rich nutrient regime. The poorly drained soils are classified as Gleysols.

BOLlh/M06 - Glst58
(Fowl mannagrass)

Site and soils

Site and soil characteristics

Plots in unit	3
Moisture regime	hygric to hydric (6-8)
Nutrient regime	medium to rich (C-D)
Meso slope position	depressional, level
Aspect	none
Slope gradient	level
Surficial material	fluvial, lacustrine
Soil texture	often fine loamy
Soil classification	Gleysols
Humus form	hydromull
Humus depth	0-20 cm
Soil drainage	poor to very poor
Seepage/water table	at or near the surface, flooding
Permafrost	absent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite M06.

Glbo56 Boreal mannagrass

Glst58 Fowl mannagrass

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

BOLlh/M06 Vegetation table

	Vegetation association	Glbo56	Glst58	
Stratum	No. of plots	2	1	
Graminoid layer	*Glyceria borealis*	■■■■■		boreal mannagrass
	Glyceria striata		■■■■■	fowl mannagrass
	Carex utriculata		■■■■	beaked sedge
	Poaceae	■■■■	■■■	grasses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/M06 Mannagrass marsh

BOLlh/M06 - Glbo56 (Boreal mannagrass)

BOLlh/M06 - Glst58 (Fowl mannagrass)

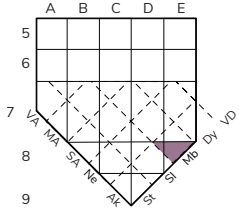
BOLlh/M07 Least spike-rush marsh

General description

The Least spike-rush marsh ecosite is characterized by the presence of least spike-rush (*Eleocharis acicularis*).

Least spike-rush is the major component of the herbaceous layer. Creeping spike rush (*E. palustris*), common mare's-tail (*Hippuris vulgaris*), northern arrowhead (*Sagittaria cuneata*), white water buttercup (*Ranunculus aquatilis*) and pondweeds (*Potamogeton, Stuckenia* spp.) are commonly associated species. Grasses are sometimes present, including alpine bluegrass (*Poa alpina*), Kentucky bluegrass (*P. pratensis*), or tufted hairgrass (*Deschampsia cespitosa*). The moss layer is usually absent or low in cover.

M07 is usually a nutrient rich to very rich site. The site is usually saturated, with a high water table and is subject to periodic flooding. The poor to very poorly drained soils are classified as Gleysols.

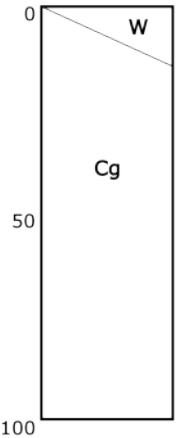


BOLlh/M07 - Elac57
(Least spike-rush – Mare's-tail)

Site and soils

Site and soil characteristics

Plots in unit	9
Moisture regime	usually hydric (8)
Nutrient regime	rich to very rich (D-E)
Meso slope position	level and depressional
Aspect	none
Slope gradient	0 (-12 %)
Surficial material	fluvial
Soil texture	usually fine loamy
Soil classification	Gleysols
Humus form	mor
Humus depth	greater than 30 – 40 cm
Soil drainage	poor to very poor
Seepage/water table	at or near surface, flooding
Permafrost	absent



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite M07.

Elac57 Least spike-rush – Mare's-tail

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

BOLlh/M07 Vegetation table

	Vegetation association	Elac57	
Stratum	No. of plots	9	
Forb layer	*Hippuris vulgaris*	■■	common mare's-tail
	Potamogeton spp.	■■■	pondweeds
	Ranunculus aquatilis	■	white water buttercup
	Sagittaria cuneata	■■■	northern arrowhead
Graminoid layer	*Eleocharis acicularis*	■■■■■	least spike-rush
	Eleocharis palustris	■■■	creeping spike-rush
	Poaceae	■■■	grasses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

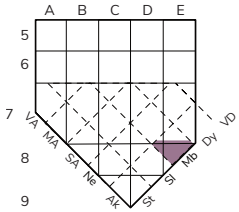
BOLlh/M07 Least spike-rush marsh

BOLlh/M07 - Elac57 (Least spike-rush – Mare's-tail)

BOLlh/M09 Bulrush marsh

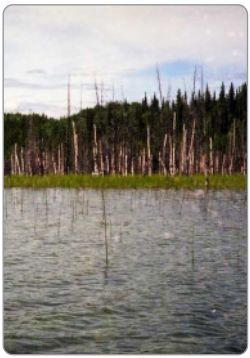
General description

The Bulrush marsh is an uncommon wetland in the Yukon. It is represented by one plot in the BOLlh with a low cover of hard-stem bulrush (*Schoenoplectus acutus*). Soft stemmed bulrush (*Schoenoplectus tabernaimontani*) does occur elsewhere in Yukon.



Comments

No soils information and little site data is available to describe the ecosite. The Scac58 association is similar to Wm06 in BC as described by Mackenzie and Moran (2004).

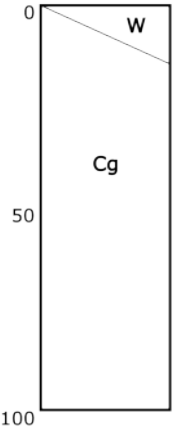


BOLlh/M09 - Scac58%
(Hard-stem bulrush)

Site and soils

Site and soil characteristics

Plots in unit	1
Moisture regime	hydric (8)
Nutrient regime	rich to very rich (D - E)
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	fluvial
Soil texture	variable
Soil classification	Gleysols
Humus form	no data
Humus depth	no data
Soil drainage	very poor
Seepage/water table	at or above the surface
Permafrost	absent



Vegetation summary

The following vegetation associations characterizes the variation in species composition for Ecosite M09.

Scac58%[1] Hard-stem bulrush

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

[1]% indicates provisional vegetation association.

BOLlh/M09 Vegetation table

	Vegetation association	Scac58%	
Stratum	No. of plots	1	
Grass layer	Schoenoplectus acutus	■■■	hard-stem bulrush

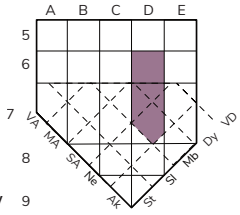
Frequency of occurrence: ■ = 70–100% ▪ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%
[1]% indicates provisional vegetation association.

BOLlh/M09 Bulrush marsh

BOLlh/M09 - Scac58% (Hard-stem bulrush)

BOLlh/M10 Bluejoint marsh

General description



The Reedgrass marsh ecosite develops on rich, poorly drained loamy and sandy fluvial or lacustrine deposits.

Bluejoint reedgrass (*Calamagrostis canadensis*) dominates the ecosite, although a significant amount of water sedge (*Carex aquatilis*) and a low cover of other sedges and herbs can also occur. A variable moss cover can include peat moss (*Sphagnum* spp.) or other mosses.

Soils are classified as Gleysols. These wetlands typically have a fluctuating water table.

Comments

Though a common ecosite in other parts of the Yukon only, one plot was recorded in BOLlh.

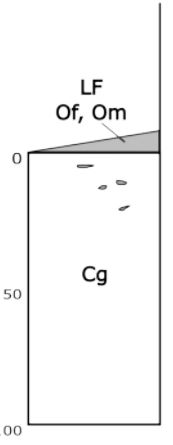
Bluejoint reedgrasses is common in swamps of the BOLlh.

Disturbance may be a factor in the distribution of this ecosite.

Site and soils

Site and soil characteristics

Plots in unit	1
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	rich (D)
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	fluvial
Soil texture	fine loamy
Soil classification	Gleysols
Humus form	fibrimor
Humus depth	10 cm (could vary from 0-30)
Soil drainage	poor
Seepage/water table	water near surface
Permafrost	absent



Vegetation summary

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

Caca54 Bluejoint reedgrass

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

BOLlh/M10 Vegetation table

	Vegetation association	Caca54	
Stratum	No. of plots	1	
Graminoid layer	*Calamagrostis canadensis*	■■■■■	bluejoint reedgrass
	Carex aquatilis	■■	water sedge
	Carex canescens	■■	silvery sedge
	Carex spp.	■■	sedges
Moss layer	*Polytrichum strictum*	■■■■	bog haircap moss
	Sphagnum spp.	■■■■■	peat mosses

Frequency of occurrence: ■ = 70–100% ▪ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

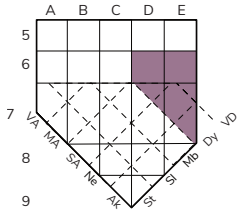
BOLlh/M10 Reedgrass marsh

no photo available

BOLlh/M10 - Caca54 (Bluejoint reedgrass)

BOLlh/M11 Tufted hairgrass marsh

General description



The Tufted hairgrass marsh ecosite occurs on frequently flooded river bars.

A moderate to high cover of tufted hairgrass (*Deschampsia cespitosa*) is diagnostic of the ecosite. Common associated species of the tufted hairgrass marsh include creeping spike-rush (*Eleocharis palustris*), horsetails (likely *Equisetum arvense* or *E. variegatum*), pondweeds (*Potamogeton* spp., *Stuckenia filiformis*), lesser spearwort (*Ranunculus flammula*), russet sedge (*Carex saxatilis*) and common mare's-tail (*Hippuris vulgaris*). Moss cover is very low to absent.

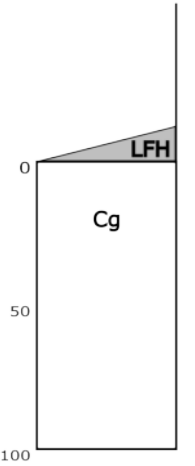
These nutrient rich to very rich sites are common on the Nisutlin Delta. The imperfect to very poorly drained soils are classified as Gleysols or Regosols.

BOLlh/M11 - Dece53
(Tufted hairgrass – Creeping spike-rush – Horsetail)

Site and soils

Site and soil characteristics

Plots in unit	14
Moisture regime	hygric to hydric (6-8)
Nutrient regime	rich to very rich (D-E)
Meso slope position	level
Aspect	none
Slope gradient	0-3%
Surficial material	fluvial
Soil texture	fine loamy
Soil classification	Gleysols
Humus form	mor
Humus depth	usually absent, may be some humus
Soil drainage	imperfect to very poor
Seepage/water table	at or near surface, flooding
Permafrost	absent



Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite M11.

Dece50 Tufted hairgrass

Dece53 Tufted hairgrass – Creeping spike-rush – Horsetail

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

BOLlh/M11 Vegetation table

	Vegetation association	Dece50	Dece53	
Stratum	No. of plots	7	7	
Shrub layer	*Salix* spp.		■	willows
Forb layer	*Equisetum* sp.		■■■■■	horsetail
	Hippuris vulgaris	□	■	common mare's-tail
	Potamogeton spp.		■■	pondweeds
	Ranunculus flammula	□□	■■	creeping spearwort
Graminoid layer	*Carex saxatilis*	□□□	■	russet sedge
	Deschampsia cespitosa	■■■■■	■■■■■	tufted hairgrass
	Eleocharis palustris		■■■■■	creeping spike-rush

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

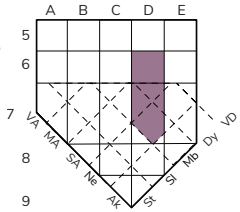
BOLlh/M11 Tufted hairgrass marsh

BOLlh/M11 - Dece50 (Tufted hairgrass)

BOLlh/M11 - Dece53 (Tufted hairgrass – Creeping spike-rush – Horsetail)

BOLlh/M12 Russet sedge – Water horsetail marsh

General description



The Russet sedge – Water horsetail marsh ecosite occurs on imperfect to poorly drained floodplain sites.

Four species characterize the vegetation of this ecosite: russet sedge (*Carex saxatilis*), beaked sedge (*Carex utriculata*), water horsetail (*Equisetum fluviatile*) and least spike-rush (*Eleocharis palustris*). The cover of each and therefore site dominance/co-dominance varies – any can be the dominant species. Common associates include water sedge (*C. aquatilis*), arctic sweet coltsfoot (*Petasites frigidus*), Canadian mint (*Mentha arvensis*), common water-parsnip (*Sium suave*), and western dock (*Rumex occidentalis*). Moss cover is very low to absent.

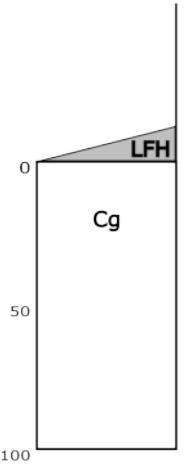
M12 sites are hygric to subhydric and nutrient rich. The soils are classified as Gleysols or sometimes Regosols.

BOLlh/M12 - Casa54
(Russet sedge – Water horsetail)

Site and soils

Site and soil characteristics

Plots in unit	20
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	rich (D)
Meso slope position	level
Aspect	none
Slope gradient	level
Surficial material	fluvial
Soil texture	fine loamy
Soil classification	Gleysols
Humus form	no data
Humus depth	no data
Soil drainage	poor
Seepage/water table	near surface
Permafrost	absent



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite M12.

Casa54 Russet sedge – Water horsetail

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

BOLlh/M12 Vegetation table

	Vegetation association	Casa54	
Stratum	No. of plots	20	
Forb layer	*Equisetum fluviatile*	■■■■■	water horsetail
	Mentha arvensis	□□	Canadian mint
	Petasites frigidus	□□□	arctic sweet coltsfoot
	Ranunculus spp.	■	buttercups
	Rumex occidentalis	■■	western dock
	Sium suave	■■	common water-parsnip
	Stellaria spp.	□	starworts
Graminoid layer	*Calamagrostis* spp.	■■■	reedgrasses
	Carex aquatilis	□□□	water sedge
	Carex saxatilis	■■■■	russet sedge
	Carex utriculata	■■■■■	beaked sedge
	Eleocharis palustris	■■■■	creeping spike-rush

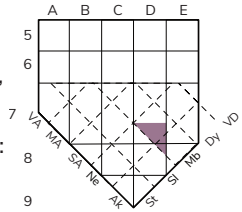
Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/M12 Russet sedge – Water horsetail marsh

BOLlh/M12 - Casa54 (Russet sedge – Water horsetail)

BOLlh/M13 Bluegrass – Northern arrowhead marsh

General description



The Bluegrass – Northern arrowhead marsh ecosite occurs on frequently flooded, nutrient-rich, floodplain sites.

Two species of bluegrass characterize this ecosite: alpine bluegrass (*Poa alpina*) and Kentucky bluegrass (*Poa pratensis*), with one or the other dominating the grass cover. A low to moderate cover of northern arrowhead (*Sagittaria cuneata*) is also diagnostic. Several pondweeds can occur in low to moderate cover, including sago pondweed (*Stuckenia pectinata*), Richardson's pondweed (*Potamogeton richardsonii*), grassy pondweed (*P. gramineus*) or northern pondweed (*P. alpinus*). Other frequent associates include common mare's-tail (*Hippuris vulgaris*) and various *Ranunculus* species: white water buttercup (*R. aquatilis*), lesser water buttercup (*R. flammula*), or arctic buttercup (*R. hyperboreus*). A variety of other forbs may also be found. The moss cover is variable.

BOLlh/M13 - Posp56
(Bluegrass – Northern arrowhead)

These nutrient-rich sites are usually very poorly drained, and the saturated soils are classified as Gleysols.

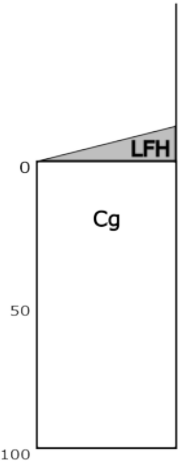
Comments

The sites recorded occur on the Nisutlin Delta.

Site and soils

Site and soil characteristics

Plots in unit	3
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	poor to very poor (A-B)
Meso slope position	level
Aspect	none (to variable)
Slope gradient	level
Surficial material	organic
Soil texture	fibric
Soil classification	peaty Gleysols or Organic Cryosols
Humus form	fibrimor
Humus depth	greater than 30 – 40 cm
Soil drainage	poor to very poor
Seepage/water table	water may occasionally pool on top of permafrost
Permafrost	present



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite M13.

Posp56 Bluegrass – Northern arrowhead

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

BOLlh/M13 Vegetation table

	Vegetation association	Posp56	
Stratum	No. of plots	7	
Forb layer	*Hippuris vulgaris*	■■■■	common mare's-tail
	Potamogeton / Stuckenia	■■■■	pondweeds
	Ranunculus spp.	■■■	buttercups
	Sagittaria cuneata	■■■	northern arrowhead
Graminoid layer	*Eleocharis* spp.	■■	spike-rushes
	Poa spp.	■■■■■	bluegrasses
Moss layer	Bryophyta	□□□	mosses

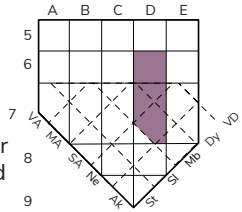
Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/M13 Bluegrass – Northern arrowhead marsh

BOLlh/M13 - Posp56 (Bluegrass – Northern arrowhead)

BOLlh/M16 Least spike-rush marsh

General description



The Least spike-rush marsh occurs in the BOLlh subzone on poorly drained fluvial or lacustrine deposits.

The M16 ecosite has vegetation dominated by hair bentgrass (*Agrostis scabra*). Other plants vary and can include a low cover of sedges (such as *Carex viridula*), spike-rushes (*Eleocharis acicularis*, *E. palustris*), water buttercups (*Ranunculus aquatilis*, *R. flammula*), and water horsetail (*Equisetum fluviatile*). Mosses are of low to moderate cover.

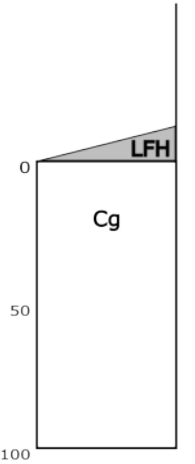
These wetlands typically have a dynamic fluctuating water table. Soils are classified as Gleysols.

BOLlh/M16 - Agsc55
(Hair bentgrass)

Site and soils

Site and soil characteristics

Plots in unit	2
Moisture regime	hygric to subhydric (6-7)
Nutrient regime	rich (D)
Meso slope position	level or depression
Aspect	none
Slope gradient	level
Surficial material	fluvial or lacustrine
Soil texture	sandy loam to clay loam
Soil classification	Gleysol or Humic Gleysol
Humus form	mor
Humus depth	up to 40 cm
Soil drainage	poor
Seepage/water table	within 50 cm of the surface
Permafrost	absent
Open Water	sometimes present



Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite M16.

Agsc55 Hair bentgrass

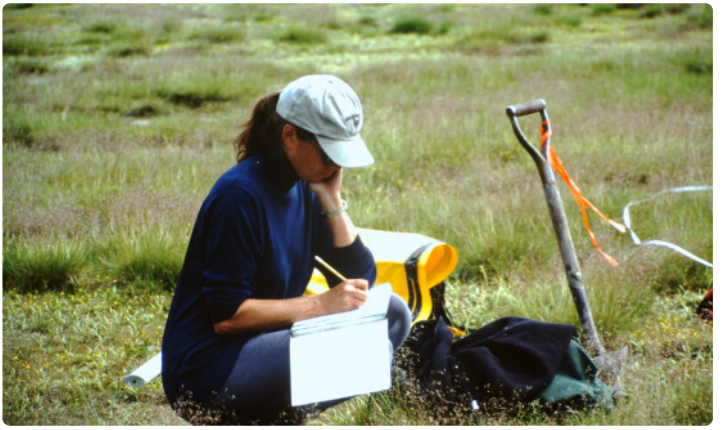
The frequency and abundance of species for this association are shown in the following vegetation table.

BOLlh/M16 Vegetation table

	Vegetation association	Agsc55	
Stratum	No. of plots	2	
Graminoid layer	*Agrostis scabra*	■■■■■	hair bentgrass
Moss layer	Bryophyta	■■■■	mosses

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

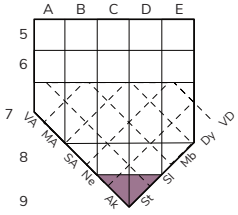
BOLlh/M16 Least spike-rush marsh



BOLlh/M16 - Agsc55 (Hair bentgrass)

SHALLOW OPEN WATER ECOSITES

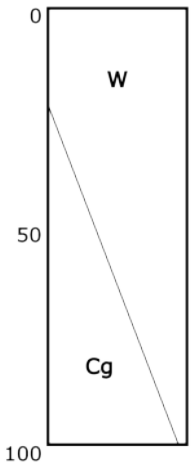
The following nine shallow water ecosites are recognized in this subzone. Fact sheets for each ecosite follow. As no information on soils or water depth is available, a general edatopic grid, site and soils table and soil profile are shown first which refer to all ecosites. A detailed vegetation table is shown on each ecosite fact sheet.



Site and soils

Site and soil characteristics

Plots in unit	49
Moisture regime	aqueous (9)
Nutrient regime	rich to very rich (D-E)
Meso slope position	level or depression
Aspect	none
Slope gradient	level
Surficial material	fluvial or lacustrine
Soil texture	sandy loam to clay loam
Soil classification	Gleysol or Humic Gleysol
Humus form	unknown
Humus depth	up to 30 cm
Soil drainage	very poor
Seepage/water table	water table above the surface; <2 metres standing or slow moving water
Permafrost	absent



BOLlh/W02 Sago pondweed shallow water

General description

The W02 is a nutrient-rich, shallow water ecosite that occurs on the Nisutlin River Delta. The ecosite is dominated by a high cover of sago pondweed (*Stuckenia pectinata*). Richardson's pondweed (*Potamogeton richardsonii*) is a common associate with a low to moderate cover. Other associated species include the pondweeds *P. obtusifolius* and *P. zosteriformis*, northern arrowhead (*Sagittaria cuneata*) and sometimes buttercups (*Ranunculus* spp.).

BOLlh/W02 - Stpe72 (Sago pondweed – Pondweeds)

Comments

Sago pondweed can be an important food source for waterfowl which then helps to disperse the plant.

Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite W02.

Stpe72 Sago pondweed – Pondweeds

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

BOLlh/W02 Vegetation table

	Vegetation association	Stpe72	
Stratum	No. of plots	5	
Aquatic	*Potamogeton obtusifolius*	□□	blunt-leaved pondweed
	Potamogeton richardsonii	■■■	Richardson's pondweed
	Potamogeton zosteriformis	□□□	flat-stemmed pondweed
	Sagittaria cuneata	□	northern arrowhead
	Stuckenia pectinata	■■■■■	sago pondweed

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/W02 - Stpe72 (Sago pondweed – Pondweeds)

BOLlh/W04 Mare's-tail shallow water

General description

The dominance of common mare's-tail (*Hippuris vulgaris*) characterizes W04. It is common in the Nisutlin River Delta and on mud flats along larger rivers. There may be a high cover of open water. Pondweeds (*Potamogeton* spp., *Stuckenia* spp.) are common associates with a low to moderate cover. Water or actic buttercup (*Ranunculus aquatilis*, *R. hyperboreus*) may be present with sparse to low cover on some sites. Wetland mosses such as (*Drepanocladus aduncus*, *Calliergon giganteum*) also sometimes occur.

BOLlh/W04 - Hivu72
(Mare's-tail – Sago pondweed)

Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite W04.

Hivu71 Mare's-tail – Pondweed

Hivu72 Mare's-tail – Sago pondweed

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

BOLlh/W04 Vegetation table

	Vegetation association	Hivu71	Hivu72	
Stratum	No. of plots	6	3	
Aquatic	*Hippuris vulgaris*	■■■■■	■■■■■	common mare's-tail
	Potamogeton richardsonii	■■■	■■	Richardson's pondweed
	Potamogeton spp.	■■■	■■■	pondweeds
	Ranunculus spp.	□	■	buttercups
	Stuckenia pectinata		■■■■	sago pondweed

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/W04 - Hivu71 (Mare's-tail – Pondweed)

BOLlh/W04 - Hivu72 (Mare's-tail – Sago pondweed)

BOLlh/W05 Northern arrowhead shallow water

General description

W05 is uncommon on the landscape and is characterized by a moderate cover of northern arrowhead (*Sagittaria cuneata*). Thread-leaved water buttercup (*Ranunculus aquatilis*) and other buttercups are associated species.

Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite W05.

Sacu70 Northern arrowhead

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

BOLlh/W05 Vegetation table

	Vegetation association	Sacu70	
Stratum	No. of plots	1	
Forb layer	*Ranunculus aquatilis*	■	Thread-leaved water buttercup
	Ranunculus sp.	■■	buttercup
Aquatic	*Sagittaria cuneata*	■■■■■	northern arrowhead

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/W05 - Sacu70 (Northern arrowhead)

BOLlh/W06 Pondweed shallow Water

General description

Pondweeds (*Potamogeton* spp.) dominate the W06 ecosite. In this subzone, Richardson's pondweed (*P. richardsonii*) is the most frequent pondweed and often has the highest cover, but other pondweeds (*P. alpinus*, *P. obtusifolius*, *P. zosteriformis*) occur and may dominate. Sago pondweed (*Stuckenia pectinata*) is a common associate. Other species on W06 can include water milfoil (*Myriophyllum* sp.), water buttercup (*Ranunculus aquatilis*), northern arrowhead (*Sagittaria cuneata*) or bluegrasses (*Poa* spp.).

BOLlh/W06 - Pori72
(Richardson's pondweed – Sago pondweed)

Vegetation summary

The following vegetation associations characterize the variation in species composition for Ecosite W06.

Posp70 Pondweed

Pori72 Richardson's pondweed – Sago pondweed

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

BOLlh/W06 Vegetation table

	Vegetation association	Pori72	Posp70	
Stratum	No. of plots	9	6	
Aquatic	*Potamogeton richardsonii*	■■■■■	□□	Richardson's pondweed
	Potamogeton spp.	■■■	■■■■■	pondweeds
	Ranunculus spp.	□		buttercups
	Stuckenia pectinata	■■■■	□	sago pondweed

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/W06 - Posp70 (Pondweed)

BOLlh/W06 - Pori72 (Richardson's pondweed – Sago pondweed)

BOLlh/W07 Hornwort shallow water

General description

W07 is a shallow water ecosite characterized by a moderate to high cover of common hornwort (*Ceratophyllum demersum*). A low to moderate cover of northern pondweed (*Potamogeton alpinus*) is usually co-dominant, as is a macroalgae, likely (*Chara* spp.).

Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite W07.

Cede70 Hornwort

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

BOLlh/W07 Vegetation table

	Vegetation association	Cede70	
Stratum	No. of plots	4	
Algae	*Chara* spp.	■■■■■	muskgrass
Aquatic	*Ceratophyllum demersum*	■■■■■	common hornwort
	Potamogeton alpinus	■■■■	northern pondweed

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

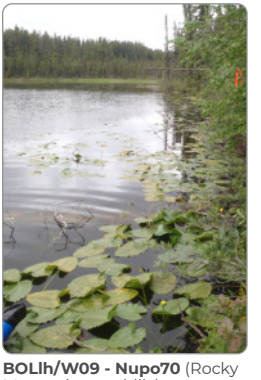
no photo available

BOLlh/W07 - Cede70 (Hornwort pondweed)

BOLlh/W09 Pond-lily shallow water

General description

The W09 ecosite is dominated by Rocky Mountain pond-lily (*Nuphar polysepala*), the cover of which is moderate to high. Bog buckbean (*Menyanthes trifoliata*) may be co-dominant on some sites. Horsetail (*Equisetum* sp.) is commonly present with a trace to low cover.



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

Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite W09.

Nupo70 Rocky Mountain pond-lily

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

BOLlh/W09 Vegetation table

	Vegetation association	Nupo70	
Stratum	No. of plots	5	
Shrub layer	*Betula glandulosa*	□□	shrub birch
Forb layer	*Comarum palustre*	□	marsh cinquefoil
	Equisetum pratense	■	meadow horsetail
	Menyanthes trifoliata	■■■	bog buckbean
	Parnassia palustris	□	marsh grass-of-parnassus
Graminoid layer	*Carex* spp.	□□	sedge
Aquatic	*Nuphar polysepala*	■■■■■	Rocky Mountain pond-lily

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

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

BOLlh/W10 Water-milfoil shallow water

General description

W10 occurs uncommonly in the BOLlh. It is characterized by water milfoil (*Myriophyllum* sp.). Pondweeds (*Potamogeton* spp., *Stuckenia pectinata*) and bladderworts (*Utricularia* spp.) are common associate species. The Water-milfoil shallow water ecosite is found in muddy shallow ponds and sluggish streams.

BOLlh/W10 - Mysp70
(Water-milfoil – Bladderwort)

Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite W10.

Mysp70 Water-milfoil – Bladderwort

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

BOLlh/M10 Vegetation table

	Vegetation association	Mysp70	
Stratum	No. of plots	1	
Aquatic	*Myriophyllum* spp.	■■■■■	water-milfoils
	Potamogeton spp.	■■■	pondweeds
	Stuckenia pectinata	■■	sago pondweed

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/W10 - Mysp70 (Water-milfoil – Bladderwort)

BOLlh/W11 Burreed shallow water

General description

W11 is characterized by the presence of burreed (*Sparganium* spp.). This wetland is known only from southern Yukon (all plots are from same pond near Watson Lake) but may occur elsewhere, as burreed is wide ranging.

Comments

All four plots occur in the same wetland.

Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite W11.

Spsp70 Burreed

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

BOLlh/M11 Vegetation table

	Vegetation association	Spsp70	
Stratum	No. of plots	4	
Aquatic	*Sparganium* spp.	■■■■	burreeds

Frequency of occurrence: ■ = 70–100% ■ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

no photo available

BOLlh/W11 - Spsp70 (Burreed)

BOLlh/W12 Giant water moss shallow water

General description

The W12 is found in southeast Yukon. This ecosite is dominated by a high cover of giant water moss (*Calliergon giganteum*). Vascular plants are generally absent but there may be a few scattered plants present.

BOLlh/W12 - Cagi75 (Giant water moss)

Comments

All five plots occur in the same wetland.

Vegetation summary

The following vegetation association characterizes the variation in species composition for Ecosite W12.

Cagi75 Giant water moss

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

BOLlh/M12 Vegetation table

	Vegetation association	Cagi75	
Stratum	No. of plots	5	
Moss layer	*Calliergon giganteum*	■■■■■	giant water moss

Frequency of occurrence: ■ = 70–100% ▪ = 50–70% □ = 25–50%
Abundance (average per cent cover): ■■■■■ = >25% ■■■■ = 10–25% ■■■ = 3–10% ■■ = 1–3% ■ = <1%

BOLlh/W12 - Cagi75 (Giant water moss)

References

Environment Yukon. 2026. Wetland Ecosites of the Yukon. Department of Environment, Government of Yukon, Whitehorse.

Flynn, N. and K. McKenna. 2015. Chapter 6. Subzones of the Boreal Low Zone. In: A field guide to ecosite identification for Boreal Low of Yukon. Department of Environment, Yukon Territory, Policy, Planning & Aboriginal Branch, ELC Program, Whitehorse, Yukon Territory. pp. 49-56.

McKenna, K. and N. Flynn. 2015. Chapter 5. The Boreal Low in Yukon. In: A field guide to ecosite identification for Boreal Low of Yukon. Department of Environment, Yukon Territory, Policy, Planning & Aboriginal Branch, ELC Program, Whitehorse, Yukon Territory. pp. 57-67.

McKenna, K., S. Elwell, D. Meidinger, and M. Heynen. 2019. Klondike Plateau Boreal Low Subzone (BOLkp): A Field Guide to Ecosite Identification. Part 3, Boreal Low Zone Series. Department of Environment, Government of Yukon, Whitehorse, Yukon.

Oswald E.T. 1979. Forest Resource Assessment of the Nisutlin Test Area. Environment Canada Canadian Forestry Service, Pacific Forestry Center Victoria B.C. File Report.

Oswald E.T. and B.N. Brown. 1986. Forest Communities in Lake Laberge Ecoregion. Environment Canada Canadian Forestry Service, Pacific Forestry Center Victoria B.C.

Oswald, E.T. and J. Senyk. 1977. Ecoregions of Yukon Territory. Environment Canada, Canadian Forestry Service, Pacific Forest Research Centre, Victoria, BC. Information Report BC-X-164. 115 p.

Smith, C.A.S. 2004. Soils. Yukon Plateau – Central. pp. 35-38. In: Ecoregions of the Yukon Territory: Biophysical Properties of Yukon landscapes, C.A.S. Smith, J.C. Meikle and C.F. Roots (eds.), Agriculture and Agri-Food Canada, PARC Technical Bulletin No. 04-01, Summerland, British Columbia.

Strong, W.L. 2009. Populus tremuloides Michx. postfire stand dynamics in the northern boreal cordilleran ecoclimatic region of central Yukon Territory, Canada. Forest Ecology and Management 258: 1110–1120.

Strong, W.L. 2014. Northernmost North American *Pinus contorta* var. *latifolia* (lodgepole pine) sociations and vegetation diversity relative to its central range east of the Rocky Mountains. Nordic Journal of Botany 32: 222–232.

Strong, W.L. 2015. High-latitude Yukon boreal-cordilleran grassland plant communities. Arctic 68(1):69-78.

Yukon Ecoregions Working Group (YEWG). 2004. Yukon Plateau – Central. pp. 187-196. In: Ecoregions of the Yukon Territory: Biophysical Properties of Yukon landscapes, C.A.S. Smith, J.C. Meikle and C.F. Roots (eds.), Agriculture and Agri-Food Canada, PARC Technical Bulletin No. 04-01, Summerland, British Columbia.

Contents, appendices

Appendix 1

Appendix 2

Appendix 3

Table A1-1. Terms used in the guide

Term	Definition
BOL	Boreal Low
BOH	Boreal High
BOS	Boreal Subalpine
SUW	Subarctic Woodland
SUS	Subarctic Subaline
BOLsl	Southern Lakes BOL
BOLkp	Klondike Plateau BOL
BOLlh	Liard Hyland BOL
BOLyc	Yukon Plateau Central BOL
BOLyn	Yukon Plateau North BOL
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 & 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.
Average soil texture	Soil texture class occupying majority of the upper 50 cm of the mineral soil or to bedrock contact, or 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 ≤ 50% volume of coarse fragments; or fine-textured soils with ≥20% coarse fragments.

Table A1-1. (continued)

Term	Definition
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 Color 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.
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 Color 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.

Table A1-1. (continued)

Term	Definition
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.

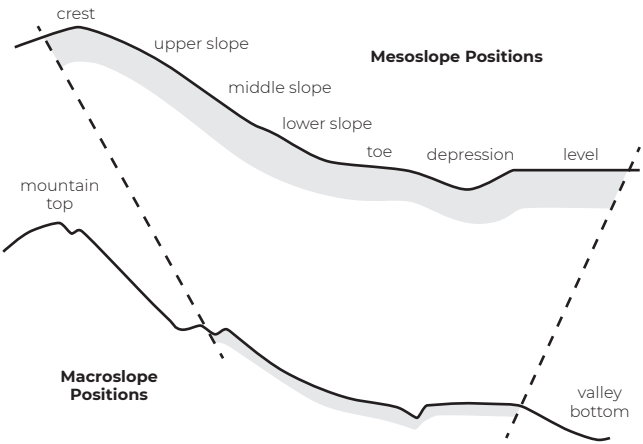


Figure A1-1. Mesoslope position

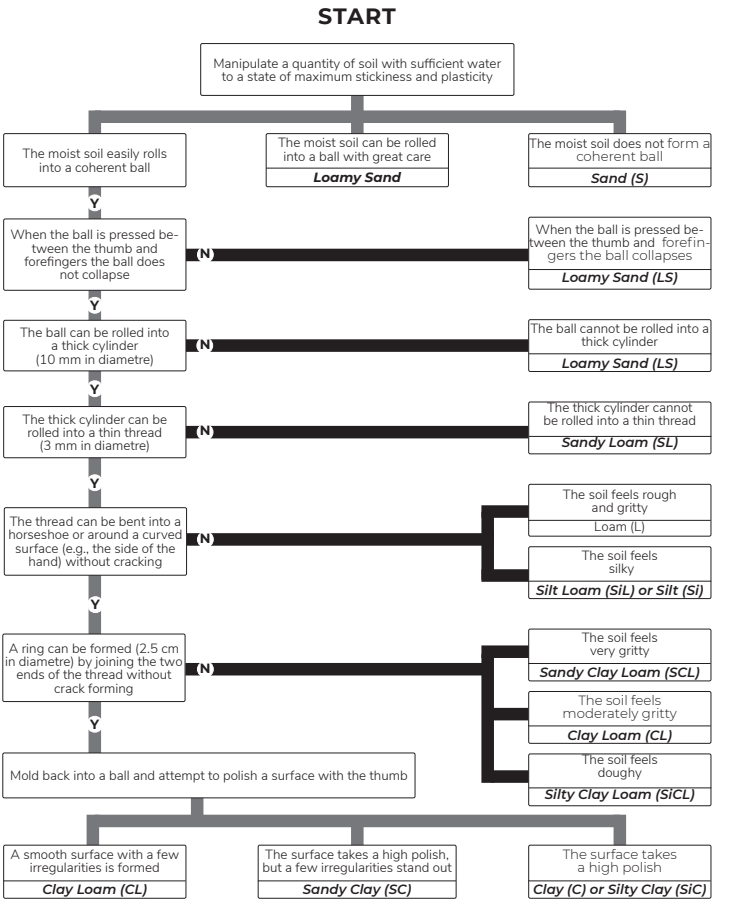


Figure A1-2. Soil texturing flow chart using the ball test

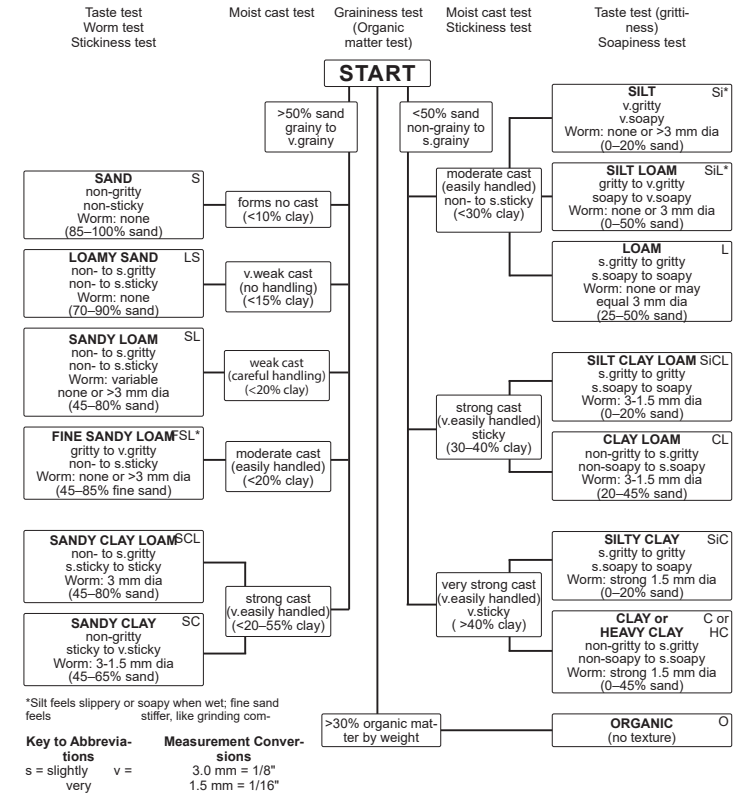


Figure A1-3. Soil texturing flow chart using the graininess test

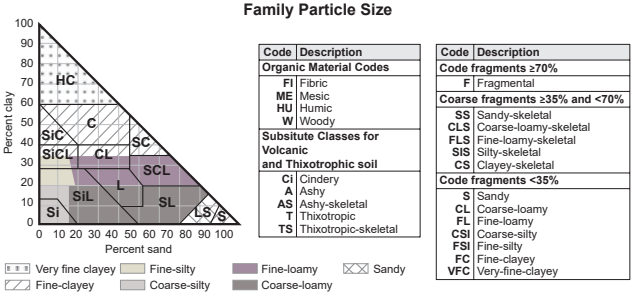


Figure A1-4. Soil texture classes

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 A1-2. 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 ≥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 ≤ 35% of organic matter volume in humus form profile.

5a. F horizon >50% of thickness of F and H horizon ..... **Hemimor (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 ≤ 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 ≥2cm and combined thickness of F and H horizons ≥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 ≥2cm ..... **MULLS (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 ≥2 cm.

12a. Thickness of F and H horizons ≥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 ≥2 ..... **Hydromoder (YD)**

12b. Combined thickness of O horizons greater than F and H horizons.

14a. O horizons ≤ 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 A1-3. 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	**Subhydric**	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	**Hydric**	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

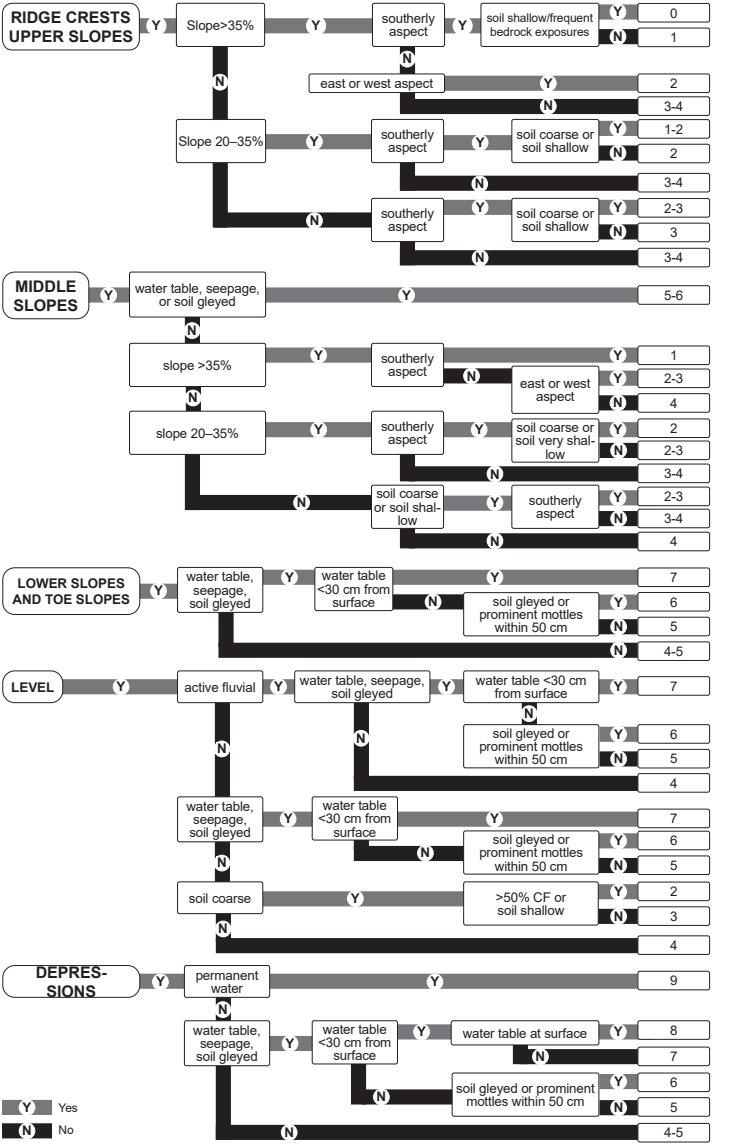


Figure A1-5. Soil Moisture Regime (SMR) flow chart

Site factors	Factors that reduce available moisture			Intermediate moisture	Factors that increase available moisture								
Site position	Cres	Upper		Middle or	Lowe	To	Depres-						
Slope gradient		>60%	35-	5-	0-5%								
SELECT ONE													
Aspect – Gentle slopes ≤ 20%		S SW	SE	E	N								
Aspect – Moderate slopes 20 -35%	S	SW	W	NW		N							
Aspect – Steep slopes >35%	S	SW	W	NW		N							
Soil texture	S	LS,	S	SiL	Si, SCL,		SC, SiC,	Or-ganic					
Coarse fragment content	>90%	70-90%	50-	35-	10-	0-							
Soil depth/brx (cm)	0-25	25-50	50-	>100									
SELECT ONE													
Depth to water table				Ab-	100-	75-	50-75	30-50	<30	at surface	Permanent water >50		
Depth to prominent mottles (cm)				Ab-	100-	50-	25-50	<25					
Depth to faint or distinct mottles (cm)				>100	50-	<50							

Adapted from Lloyd et al. 1990

Soil moisture regime classes and codes	Very Xeric	Xeri c	Subx-eric	Sub-mesic	Mesi c	Subhy-gric	Hygric 6	Subhy-dric	Hy-dric	Aquati c
Class ranges	<-32	-32 to -21	-20 to -11	-10 to -5	-4 to +4	+5 to +39	+40 to +70	70-99	99-119	+120

Figure A1-6. Soil Moisture Regime (SMR) additive chart

Table A1-4. Soil nutrient regime (SNR) factors and relationship of factors

	Oligotrophic	Submesotrophic	Mesotrophic	Permesotrophic	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 minerology	**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**		

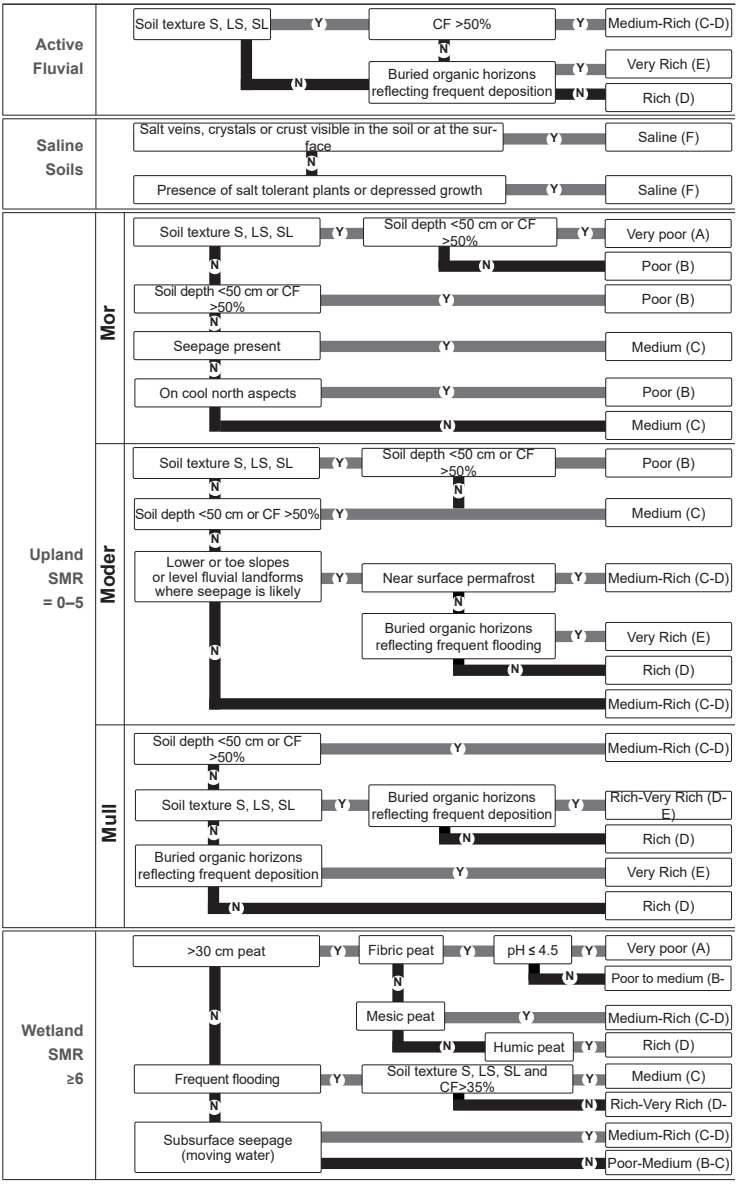


Figure A1-7. Soil Nutrient Regime (SNR) flow chart

*Site factors	Factors that reduce available nutrients			Intermediate nutrients	Factors that increase available nutrients			
Site position		Cres	Upper slope,	Level or mid	Lower	Toe, Flu-		
Soil depth (cm)	<10	10-	25-50	>50				
Soil texture	S,L	fS,S		SiL, L,	SCL,CL,	SC, SiC,	Or-	
Coarse fragment content	>70%		35-	10-	0-			
Humus form	Mor; Fm or	Mor; Fm or Of 10-24	Mor; Fm or			Moder	Mull	
A horizon		Ae >3	Ae 1-3	Thin or Ab-	Ah 1-5	Ah >5		
pH of rooting zone		Acid <4.5	Med acid	Neutral pH 5-7.5	Slightly alkaline 6.5-7.4		Alkaline ≥7.5	*See calcareous or saline soil*
Calcareous or saline soil		Calcare-ous at sur-	Calcareous within rooting zone	Calcareous below rooting zone			Salts present within 50 cm	
Water table within 50 cm				Ab-	Temporary seep-	Continuous seep-	Allu-	
Coarse fragment geology	Light colour	Coarse crys-	Hard	Mediu	Soft, fine	Dar		

*Totalling the values for each site factor gives an estimate of soil nutrient regime

Nutrient regime classes and codes	Very Poor	Poo r	Medium C	Ric h	Very Rich	Salin e
Class ranges	≤ -13	-12 to -6	-5 to +5	+6 to +12	+13 to +16	≥+17

Figure A1-8. Soil nutrient regime (SNR) for upland soils additive chart

Figure A1-9. Soil nutrient regime (SNR) for wetland soils additive chart

Table A1-5. 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

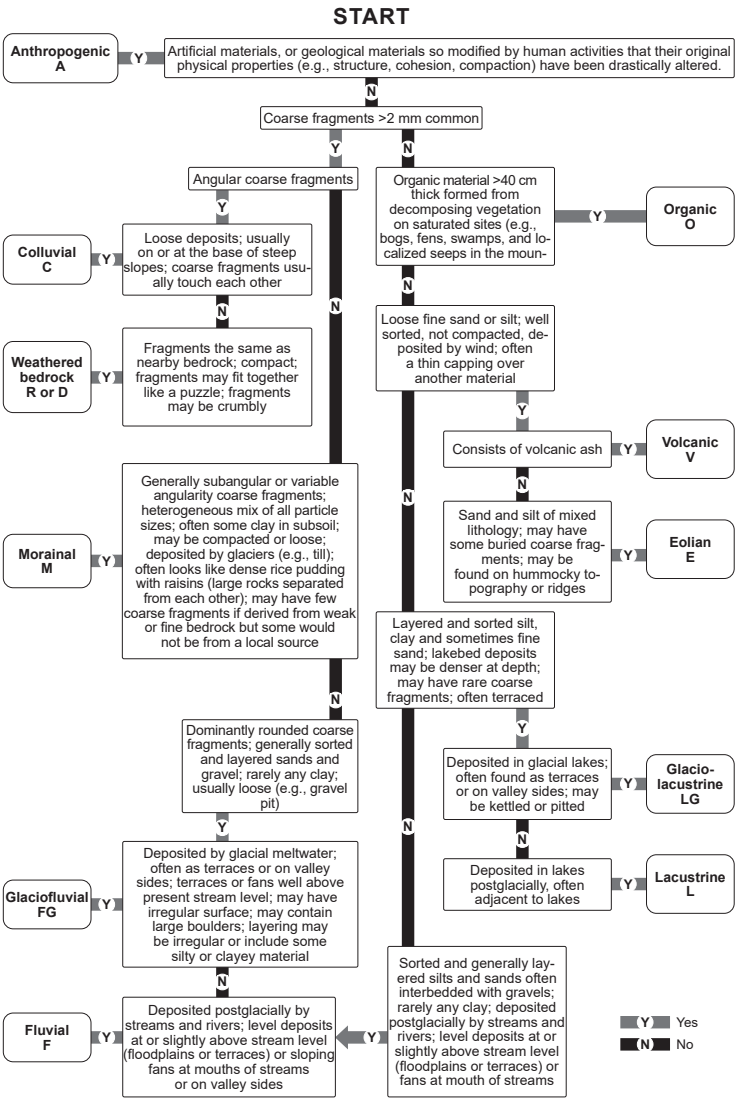


Figure A1-10. Guide to parent material

Source: Adapted from B.C. Ministry of Environment and B.C. Ministry of Forests and Range (2010); Braumandl and Curran (1992); and Lloyd et al. (1990).

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 per cent cover of vegetation has established.

2. **Sparse/cryptogram**
   Either the initial stages of primary succession or a cryptogram 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

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 >2m and ≤7 cm dbh
   - **4b Low shrub** – dominated by woody plants <2m

5. **Treed: pole/sapling**
   Trees >5 m tall and >7 cm dbh, typically densely stocked. Self-thinning and vertical structure are not yet evident in the canopy. Younger stands are vigorous (usually >15–20 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.

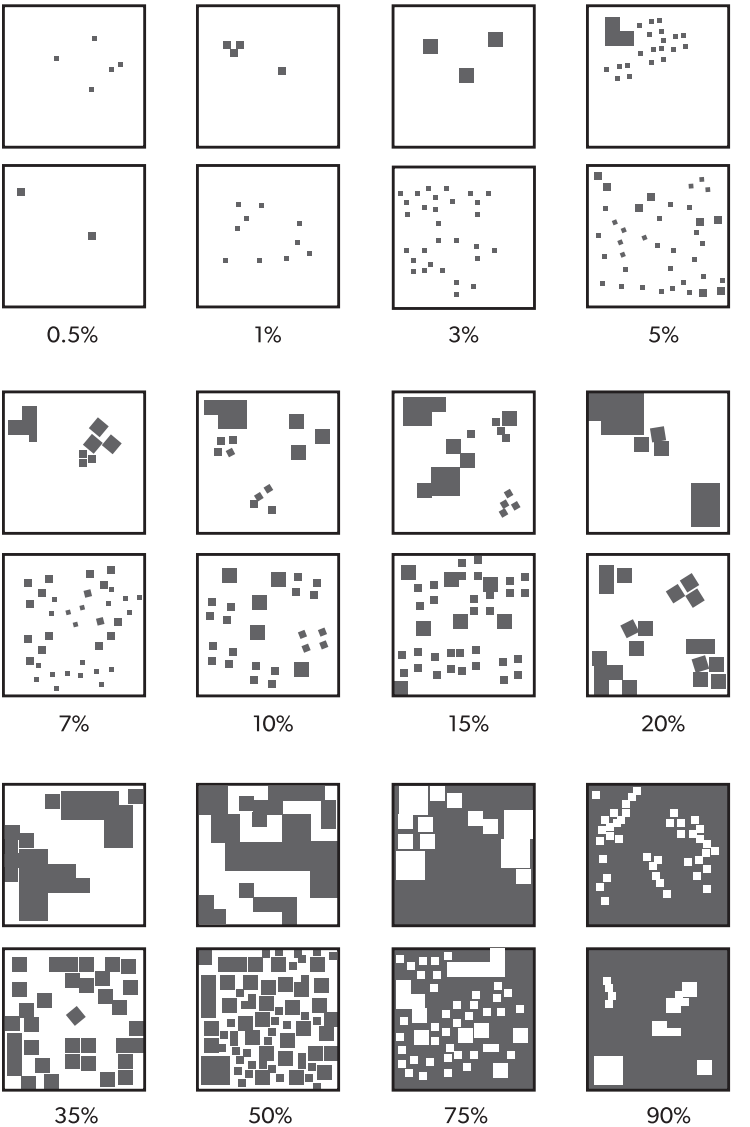


Figure A1-11. Visual aid for determining per cent cover of plant species

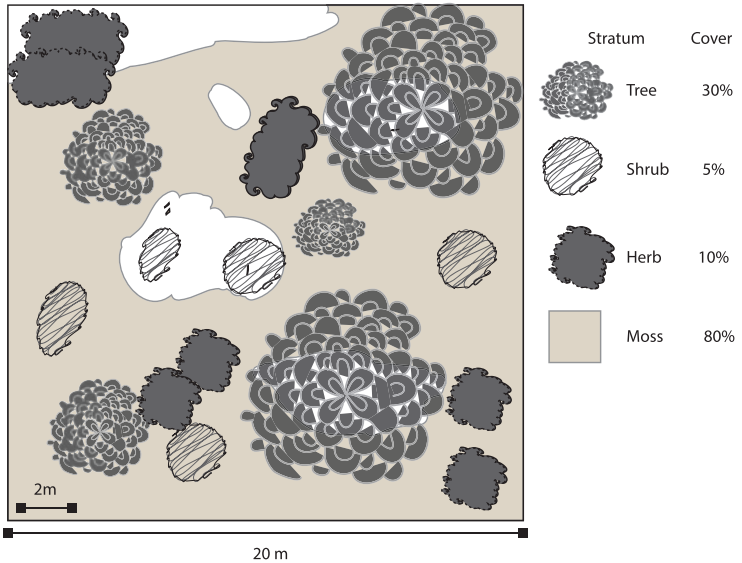


Figure A1-12. Determining per cent cover of plant species: example

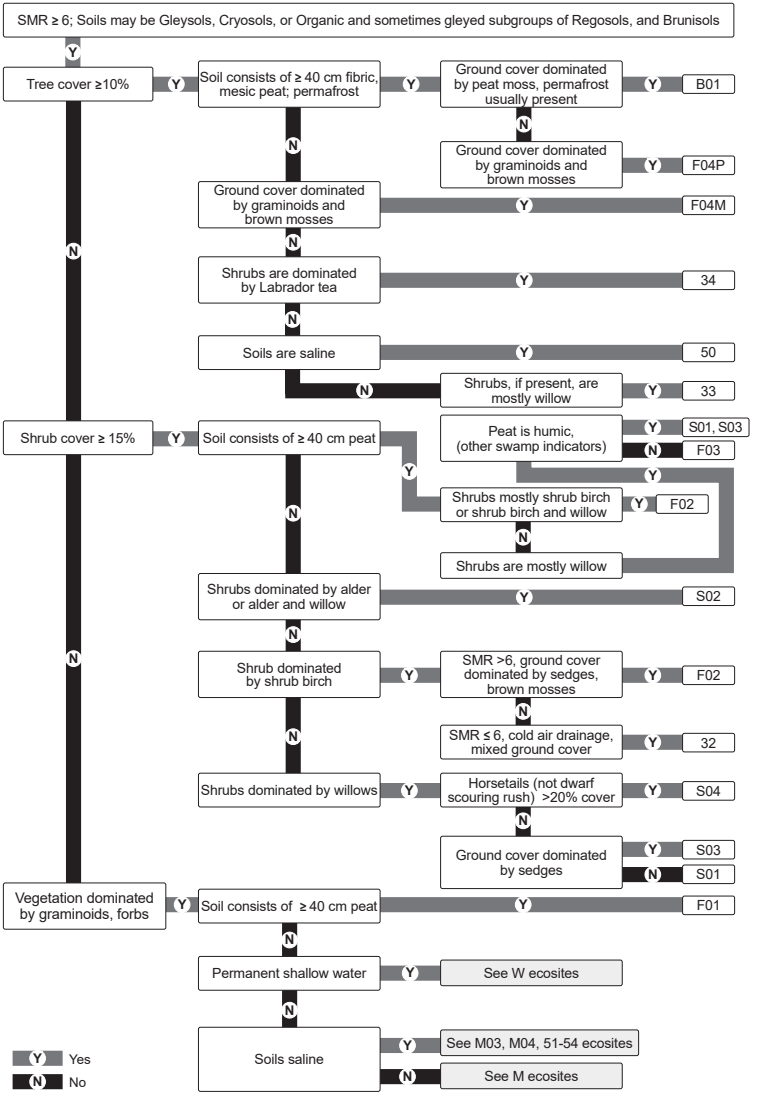


Figure A2-1. Flow chart: identifying BOLlh wetland and near-wetland ecosites

Table A2-1. Species list for ecosites, Southern Lakes Boreal Low Subzone – Compiled from vegetation tables and descriptions

Scientific name	YT ELC common name	Cody synonym
Achillea millefolium	common yarrow	
Aconitum delphiniifolium	monkshood	
Alnus alnobetula	green alder	
Alnus alnobetula / incana	green / river alder	
Alnus incana	river alder	
Alopecurus aequalis	short-awned foxtail	
Alyssum obovatum	obovate-leaved alyssum	
Amblystegiaceae (mostly)	brown mosses	
Andromeda polifolia	bog rosemary	
Anemone parviflora	northern anemone	
Anemone parviflora	small-flowered anemone	
Anemone spp.	anemones	
Antennaria rosea	rosy pussytoes	
Anticlea elegans	mountain death-camas	
Arctostaphylos uva-ursi	kinnikinnick	
Arctous rubra	red bearberry	
Artemisia frigida	pasture sage	
Artemisia tilesii	Aleutian mugwort	
Astragalus americanus	American milk-vetch	
Betula glandulosa	shrub birch	
Betula neoalaskana	Alaska birch	
Betula occidentalis	water birch	
Boechera retrofracta	reflexed rockcress	
Bupleurum americanum	American thorough-wax	
Calamagrostis canadensis	bluejoint reedgrass	
Calamagrostis purpurascens	purple reedgrass	
Calamagrostis spp.	reedgrasses	
Calamagrostis stricta	slim-stemmed reedgrass	
Calla palustris	wild calla	
Calliergon giganteum	giant water moss	
Callitriche hermaphroditica	northern water-starwort	
Carex aquatilis	water sedge	
Carex atherodes	awned sedge	
Carex bigelowii ssp. *lugens*	spruce muskeg sedge	
Carex concinna	low northern sedge	
Carex limosa	mud sedge	
Carex rupestris	curly sedge	
Carex spp.	sedges	
Carex utriculata	beaked sedge	

Table A2-1. Species List (continued)

Scientific name	YT ELC common name	Cody synonym
Castilleja pallescens	palish paintbrush	
Cetraria spp.	Iceland lichens	
Chamaedaphne calyculata	leatherleaf	
Chamaenerion angustifolium	fireweed	*Epilobium angustifolium*
Cicuta bulbifera	bulbous water-hemlock	
Cladina spp.	reindeer lichens	
Cladonia spp.	cladonia lichens	
Comarum palustre	marsh cinquefoil	*Potentilla palustris*
Cornus canadensis	bunchberry	
Cornus stolonifera	red-osier dogwood	
Cypripedium passerinum	sparrow's-egg lady's-slipper	
Dasiphora fruticosa	shrubby cinquefoil	*Potentilla fruticosa*
Deschampsia cespitosa	tufted hairgrass	
Dicranum sp.	heron's-bill moss	
Dicranum spp.	heron's-bill mosses	
Drosera anglica	English sundew	
Empetrum nigrum	crowberry	
Equisetum arvense	common horsetail	
Equisetum fluviatile	water horsetail	
Equisetum pratense	meadow horsetail	
Equisetum scirpoides	dwarf scouring-rush	
Equisetum sylvaticum	woodland horsetail	
Erigeron caespitosus	tufted fleabane	
Eriophorum brachyantherum	close-sheathed cottongrass	
Eriophorum russeolum	russet cottongrass	
Eriophorum vaginatum	tussock cotton-grass	
Eriophorum vaginatum	tussock cottongrass	
Eurybia sibirica	Siberian aster	*Aster sibiricus*
Festuca saximontana	Rocky Mountain fescue	
Flavocetraria nivalis	crinkled snow lichen	
Fragaria virginiana	wild strawberry	
Galium boreale	northern bedstraw	
Geocaulon lividum	bastard toadflax	
Geum triflorum	old man's whiskers avens	
Hedysarum alpinum	alpine hedysarum	
Hippuris vulgaris	common mare's-tail	
Hylocomium splendens	step moss	
Juncus balticus	Baltic rush	
Juniperus horizontalis	creeping juniper	

Table A2-1. Species List (continued)

Scientific name	YT ELC common name	Cody synonym
Linnaea borealis	twinflower	
Linum lewisii	perennial blue flax	
Lupinus arcticus	arctic lupine	
Macroalgae	slimy macroalgae	
Menyanthes trifoliata	buckbean	
Mertensia paniculata	tall bluebells	
Mitella nuda	common mitrewort	
Nestotus macleanii	Yukon goldenweed	
Nuphar polysepala	Rocky Mountain pond-lily	
Nuphar variegata	variegated pond-lily	
Orthilia secunda	one-sided wintergreen	
Oxytropis splendens	showy locoweed	
Pedicularis sp.	lousewort	
Peltigera aphthosa	freckle pelt lichen	
Peltigera spp.	pelt lichens	
Penstemon gormanii	Gorman's penstemon	
Penstemon procerus	small-flowered beardtongue	
Persicaria amphibia	water smartweed	*Polygonum amphibium*
Petasites frigidus	arctic sweet coltsfoot	
Petasites frigidus var. *palmatus*	palmate coltsfoot	
Picea glauca	white spruce	
Picea mariana	black spruce	
Pinus contorta	pine	
Platanthera obtusata	one-leaved rein orchid	
Pleurozium schreberi	red-stemmed feathermoss	
Poa glauca	glaucous bluegrass	
Polytrichum juniperinum	juniper haircap moss	
Populus balsamifera	balsam poplar	
Populus tremuloides	trembling aspen	
Potamogeton spp.	pondweeds	
Potentilla arenosa	bluff cinquefoil	
Potentilla pensylvanica	Pennsylvania cinquefoil	
Pseudoroegneria spicata	bluebunch wheatgrass	
Ptilium crista-castrensis	knight's plume	
Pulsatilla nuttalliana	prairie pasqueflower	
Pyrola asarifolia	pink wintergreen	
Pyrola spp.	wintergreens	
Ranunculus aquatilis	white water buttercup	
Ranunculus spp.	buttercups	

Table A2-1. Species List (continued)

Scientific name	YT ELC common name	Cody synonym
Rhododendron groenlandicum	common Labrador tea	*Ledum groenlandicum*
Rhododendron spp.	Labrador teas	
Rhododendron tomentosum	northern Labrador tea	
Rosa acicularis	prickly rose	
Rubus arcticus	arctic raspberry	
Rubus chamaemorus	cloudberry	
Sagittaria cuneata	northern arrowhead	
Salix barclayi	Barclay's willow	
Salix bebbiana	Bebb's willow	
Salix glauca	grey-leaved willow	
Salix myrtillifolia	blueberry willow	
Salix planifolia	tea-leaved willow	
Salix pulchra	diamond-leaved willow	
Salix sp.	willow	
Salix spp.	willows	
Sanionia uncinata	sickle-moss	
Saxifraga tricuspidata	prickly saxifrage	
Scheuchzeria palustris	marsh scheuchzeria	
Schoenoplectus acutus	hard-stemmed bulrush	
Schoenoplectus tabernaemontani	soft-stemmed bulrush	
Senecio sp.	groundsel	
Shepherdia canadensis	soapberry	
Solidago glutinosa	spikelike goldenrod	
Solidago simplex	sticky goldenrod	
Solidago spp.	goldenrod	
Sparganium spp.	burreeds	
Sphagnum spp.	peat mosses	
Sphagnum spp.	peat moss	
Sphagnum spp.	other mosses	
Stereocaulon spp.	foam lichens	
Stereocaulon tomentosum	eyed foam lichen	
Stereocaulon tomentosum	wooly foam lichen	
Stuckenia pectinata	sago pondweed	*Potamogeton pectinatus*
Thuidium sp.	moss	
Thuidium spp.	tamarisk mosses	
Tofieldia pusilla	small tofieldia	
Utricularia vulgaris	common bladderwort	

Table A2-1. Species List (continued)

Scientific name	YT ELC common name	Cody synonym
Vaccinium oxycoccos	bog cranberry	
Vaccinium uliginosum	blueberry	
Vaccinium vitis-idaea	lowbush cranberry	
Viburnum edule	highbush cranberry	

Plant species combinations

In most vegetation tables in this guide, some species were combined for presentation purposes; these are presented in Table A1-1. 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; 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 A3-1. Plant species list for the Boreal Low Zone

Combined name	Component species	Common name
Betula neoalaskana	*Betula neoalaskana*	Alaska paper birch
	Betula papyrifera	paper birch
***Salix* spp.**	*Salix alaxensis*	Alaska willow
	Salix arbusculoides	little-tree willow
	Salix athabascensis	Athabasca willow
	Salix barclayi	Barclay's willow
	Salix bebbiana	Bebb's willow
	Salix brachycarpa	short-fruited willow
	Salix commutata	under-green willow
	Salix discolor	pussy willow
	Salix glauca	grey-leaved willow
	Salix maccalliana	MacCalla's willow
	Salix planifolia	plane-leaved willow
	Salix pseudomonticola	serviceberry willow
	Salix pulchra	diamond-leaved willow
	Salix richardsonii	Richardson's willow
	Salix scouleriana	Scouler's willow
	Salix sp.	willow
Poaceae	*Agropyron* sp.	wheatgrass
	Arctagrostis latifolia	polargrass
	Bromus ciliatus	fringed brome
	Bromus inermis	smooth brome
	Bromus pumpellianus	Pumpelly brome
	Bromus sp.	brome
	Calamagrostis canadensis	bluejoint reedgrass
	Calamagrostis lapponica	Lapland reedgrass
	Calamagrostis purpurascens	purple reedgrass
	Calamagrostis sp.	reedgrass
	Calamagrostis stricta	slimstem reedgrass
	Elymus lanceolatus	thickspike wildrye

Table A3-1. (continued)

Combined name	Component species	Common name
Poaceae continued	*Elymus trachycaulus*	slender wheatgrass
	Festuca altaica	Altai fescue
	Festuca brachyphylla	alpine fescue
	Festuca brevissima	Alaska fescue
	Festuca saximontana	Rocky Mountain fescue
	Festuca sp.	fescue
	Festuca trachyphylla	hard fescue
	Hesperostipa comata	needle-and-thread grass
	Leymus innovatus	fuzzy-spiked wildrye
	Poa arctica	arctic bluegrass
	Poa glauca	glaucous bluegrass
	Poa nemoralis	wood bluegrass
	Poa palustris	fowl bluegrass
	Poa pratensis	Kentucky bluegrass
	Poa secunda	Sandberg's bluegrass
	Poa sp.	bluegrass
	Trisetum sp.	trisetum
	Trisetum spicatum	spike trisetum
***Arctous* spp.**	*Arctous alpinus*	alpine bearberry
	Arctous ruber	red bearberry
***Cetraria* spp.**	*Cetraria cucullatta*	furled paperdoll
	Cetraria ericetorum	icelandmoss
	Cetraria islandica	Iceland lichen
	Cetraria nivalis	ragged paperdoll
	Cetraria sp.	Iceland lichen
***Cladina* spp.**	*Cladina mitis*	green reindeer lichen
	Cladina rangiferina	grey reindeer lichen
	Cladina sp.	reindeer lichens
	Cladina stellaris	star reindeer lichen
***Cladonia* spp.**	*Cladonia acuminata*	branching pebblehorn
	Cladonia amaurocraea	quill clad
	Cladonia bellidiflora	toy soldiers
	Cladonia borealis	boreal pixie-cup
	Cladonia cariosa	peg-leg soldiers
	Cladonia cenotea	miner's funnel
	Cladonia chlorophaea	mealy pixie-cup
	Cladonia coccifera	madame's pixie-cup
	Cladonia cornuta	bighorn pixie-cup
	Cladonia crispata	organpipe lichen
	Cladonia deformis	lesser sulphur-cup
	Cladonia ecmocyna	orange-footed pixie-cup
	Cladonia gracilis	smooth clad
	Cladonia multiformis	slotted clad
	Cladonia phyllophora	greater felt-soldiers
	Cladonia pleurota	mind-altering pixie-cup

Table A3-1. (continued)

Combined name	Component species	Common name
***Cladonia* spp.** continued	*Cladonia pyxidata*	pebbled pixie-cup
	Cladonia sp.	clad lichens
	Cladonia squamosa	dragon funnel
	Cladonia subulata	antlered powderhorn
	Cladonia sulphurina	greater sulphur-cup
	Cladonia uncialis	thorn clad
***Dicranum* spp.**	*Dicranum acutifolium*	sharp-leaved broom moss
	Dicranum brevifolium	short-leaved broom moss
	Dicranum fuscescens	curly heron's-bill moss
	Dicranum sp.	heron's-bill moss
***Peltigera* spp.**	*Peltigera aphthosa*	freckle pelt lichen
	Peltigera canina	dog lichen
	Peltigera evansiana	peppered pelt
	Peltigera lepidophora	butterfly pelt
	Peltigera leucophlebia	freckle plet
	Peltigera malacea	apple pelt
	Peltigera neopolydactyla	greater frog pelt
	Peltigera ponojensis	felt pelt
	Peltigera retifoveata	sponge pelt
	Peltigera rufescens	felt peltigera
	Peltigera scabrosa	toad pelt
	Peltigera sp.	pelt lichens
***Polytrichum* spp.**	*Polytrichum commune*	common haircap moss
	Polytrichum juniperinum	juniper haircap moss
	Polytrichum piliferum	awned haircap moss
	Polytrichum sp.	haircap moss
	Polytrichum strictum	bog haircap moss
***Sphagnum* spp.**	*Sphagnum rubellum*	red peat moss
	Sphagnum sp.	peat moss
***Stereocaulon* spp.**	*Stereocaulon alpinum*	alpine foam
	Stereocaulon paschale	cottontail foam
	Stereocaulon spp.	foam lichens
	Stereocaulon tomentosum	woolly foam lichen
Bryophyta		unknown mosses

Table A3-2. 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 (CSSC 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 A3-2. (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

Luvisolic order (L)

Gray Luvisol GL
Orthic O.GL
Brunisolic BR.GL
Gleyed GL.GL
Gleyed Brunisolic 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
Luvisolic 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 A3-3. Soil horizon codes and modifiers

These are soil codes and modifiers used in this manual and in the keys. A complete list of soil horizons is available in the *Field Manual for Describing Yukon Ecosystems* (2016) and Soil Classification Working Group (1998).

Codes	Major soil horizons and modifiers
L	An upland horizon consisting of relatively fresh organic residues that are readily identifiable as to origin.
F	An upland horizon comprised of partly decomposed plant residues in which fragmented plant structures are generally recognizable as to origin. **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. **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). **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.
H	An upland horizon comprised of well-decomposed plant residues in which plant structures are generally not recognizable. **Hh**–H horizon dominated by fine substances with few, if any, recognizable plant residues. **Hr**–H horizon dominated by fine substances but that also contains recognizable fine roots, wood or bark or other plant residues. **Hz**–H horizon dominated by fine substances with very few, if any, recognizable plant residues; faunal droppings constitute most of the fabric.
O	A wetland organic horizon comprised of materials in varying degrees of decomposition. **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. **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. **Oh**–O horizon that consists of humic material at an advanced stage of decomposition. Rubbed fibre content is <10%. VP= 7-10.
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 A3-3. (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 that 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: 1. Evidence of one of or more of the following: • 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. 2. Illuviation too slight to meet requirements of a Bt or podzolic B. 3. 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.

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 A3-4 for reference.

Table A3-4. 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

Table A3-5. Selected annual and derived climate variables, 1971–2000, summarized by Bioclimate

CLIMATE CHARACTERISTICS BY BIOCLIMATE ZONE		Boreal Low	Boreal High	Boreal Subalpine	Subarctic Woodland	Subarctic Subalpine	Arctic Tundra Low Shrub	Arctic Tundra Dwarf Shrub	Boreal Alpine	Subarctic Alpine	Pacific Maritime Glacierized
Mean annual precipitation (mm)	Mean	370	432	626	346	518	209	304	838	707	3632
	95% CI	359–381	418–447	588–665	338–354	508–527	203–215	295–314	794–881	693–721	3,394–3,870
	SD	98	128	343	71	83	53	83	384	127	2102
Mean growing season (May to September) precipitation (mm)	Mean	213	250	340	213	302	129	183	442	405	1474
	95% CI	207–218	243–256	324–356	208–218	297–307	125–133	178–188	423–460	398–413	1,397–1,552
	SD	50	59	141	44	42	33	48	167	67	684
Mean precip. as snow (mm) between August (previous year) and July	Mean	161	202	340	157	268	102	152	507	400	3104
	95% CI	154–167	193–212	310–369	153–161	261–274	100–105	147–157	471–544	388–411	2,902–3,306
	SD	56	86	259	36	60	22	43	320	98	1787
Mean annual temp. (°C)	Mean	–2.4	–3.5	–4.2	–6.5	–6.3	–8.6	–7.9	–5.2	–6.9	–10.0
	95% CI	–2.5 to –2.3	–3.6 to –3.4	–4.3 to –4.0	–6.7 to –6.4	–6.4 to –6.2	–8.8 to –8.5	–8.0 to –7.8	–5.4 to –5.0	–7.0 to –6.8	–10.3 to –9.6
	SD	0.9	1.1	1.4	1.2	1.0	1.0	1.1	1.8	0.9	3.1
Degree-days below 0°C	Mean	2491	2687	2660	3686	3337	4090	3850	2,806	3,364	3,843
	95% CI	2,451–2,531	2,645–2,730	2,616–2,704	3,641–3,730	3,301–3,373	4,067–4,113	3,824–3876	2,751–2,862	3,337–3,392	3,750–3,936
	SD	351	374	390	394	317	204	228	489	240	825
Degree-days above 5°C	Mean	856	703	499	720	493	441	455	347	351	76
	95% CI	843–870	688–718	485–512	709–731	480–505	427–455	438–473	334–360	338–363	67–86
	SD	118	132	123	99	108	121	151	118	109	84
No. of frost-free days	Mean	120	109	93	107	88	96	96	73	67	20
	95% CI	120–121	108–110	91–95	106–108	86–89	95–96	95–98	70–75	65–69	17–22
	SD	8	10	16	9	15	8	10	23	20	25
Frost-free period	Mean	73	67	54	79	61	70	70	46	50	124
	95% CI	72–74	66–68	53–56	78–80	60–63	69–71	69–71	44–48	48–51	114–134
	SD	9	10	12	8	11	6	8	16	10	87

Source: Climate normals for the period 1971–2000 were generated from 300 random points for each bioclimate zone using Climate WNA
SD: Standard Deviation; 95% CI: 95% Confidence Interval

Table A3-6. Selected annual and derived climate variables, 1971–2000, summarized by Bioclimate Subzone

BOREAL LOW SUBZONES		BOLal	BOLkp	BOLlb	BOLmp	BOLrr	BOLsl	BOLyc	BOLyn
Mean annual precipitation (mm)	Mean	754	291	451	549	309	308	298	328
	95% CI	713–794	286–296	445–458	543–554	306–312	302–314	294–301	323–333
	SD	356	45	60	48	27	55	32	45
Mean growing season (May-September) precipitation (mm)	Mean	348	178	241	357	215	179	186	199
	95% CI	331–366	174–181	237–245	353–360	213–217	176–181	184–188	196–202
	SD	155	28	37	31	21	24	17	26
Mean precipitation as snow (mm) between August (previous year) and July	Mean	387	119	213	183	109	132	116	134
	95% CI	366–408	116–122	210–217	181–186	108–110	128–136	114–118	131–136
	SD	186	25	32	24	9	39	18	21
Mean annual temperature (°C)	Mean	–1.1	–4.0	–2.3	–0.9	–3.5	–1.7	–2.6	–3.1
	95% CI	1.2 to –1.0	–4.0 to –3.9	–2.4 to –2.3	–0.9	–3.5	–1.8 to –1.6	–2.7 to –2.5	–3.2 to –3.1
	SD	0.9	0.4	0.7	0.3	0.3	0.7	0.6	0.5
Degree-days below 0°C	Mean	1949	3200	2442	2142	2692	2178	2593	2865
	95% CI	1,921–1,977	3,187–3,213	2,418–2,466	2,129–2,154	2,678–2,707	2,155–2,201	2,572–2,613	2,844–2,887
	SD	247	112	214	109	126	206	181	191
Degree-days above 5°C	Mean	772	1004	822	1005	696	791	878	957
	95% CI	765–780	998–1009	812–831	992–1018	691– 700	782–800	869–886	947–966
	SD	67	50	84	113	41	78	74	80
Number of frost-free days	Mean	122	123	120	134	107	118	119	122
	95% CI	121–124	122–123	119–121	134–135	106–107	117–119	118–120	121–123
	SD	11	3	7	5	2	7	6	5
Frost-free period	Mean	73	83	73	92	57	66	70	75
	95% CI	72–75	83–84	73–74	91–93	57–58	65–67	69–70	75–76
	SD	13	5	7	6	4	7	7	7

Source: Climate normals for the period 1971–2000 were generated from 60 random points for each bioclimatic subzone, using ClimateWNA (Hamann et al. 2013)
SD: Standard Deviation; 95% CI: 95% Confidence Interval