Guide Book for

Uncommon Plant Communities on Hinton Wood Products' Forest Management Area

Hinton Wood Products

A division of West Fraser Mills Ltd.

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Acknowledgements

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Introduction

Plant communities are distinct assemblages of plant species that are adapted to site specific characteristics, such as soil moisture and nutrient levels. Rare plant communities occur infrequently because the site specific environmental conditions required for their development (i.e. climate, soil moisture, soil nutrients) are generally in short supply across the landbase. The management and conservation of rare plant communities is important because these communities often provide uncommon habitats for rare plants and wildlife. Rare plant communities also contribute to genetic, species, and ecosystem diversity which results in a heterogeneous environment that is better adapted and resilient to natural disturbance events.

Uncommon plant communities are defined as a unique combination of natural region, ecosite, and ecosite phase in the Field Guide to Ecosites of West-central Alberta (Beckingham, et al. 1996). There are a total of 28 uncommon plant communities (ecosite phases) in the Hinton Wood Products (HWP) Forest Management Area (FMA); all of which are distributed throughout the FMA and occur in the Lower Foothills, Upper Foothills, Montane, and Subalpine Natural Regions. These plant communities have been designated "uncommon" because they each make up less than 1000 ha in the Lower foothills, Upper Foothills, and Subalpine Subregions and less than 225 ha in the Montane Subregion. Combined these uncommon plant communities make up 7,469 hectares, or approximately 0.8% of the Hinton Wood Products FMA.

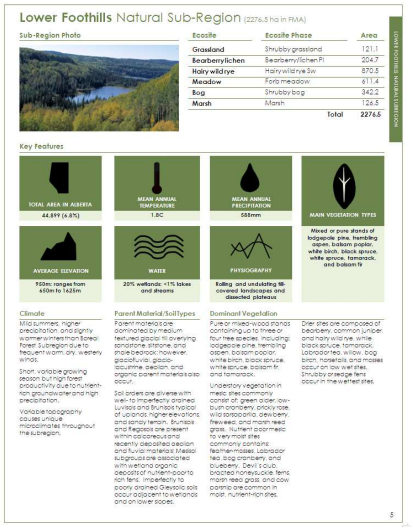
In order to contribute to the conservation of biological diversity on the FMA, Hinton Wood Products intends to conserve uncommon plant communities in 100% of their known and encountered occurrences over a 200 year planning horizon. This document, along with subsequent operations and management decisions will form the basis for the conservation of these plant communities. By conserving uncommon plant communities which occur on the FMA, Hinton Wood Products will be better able to manage for ecosystem diversity that is beneficial to both plants and wildlife.

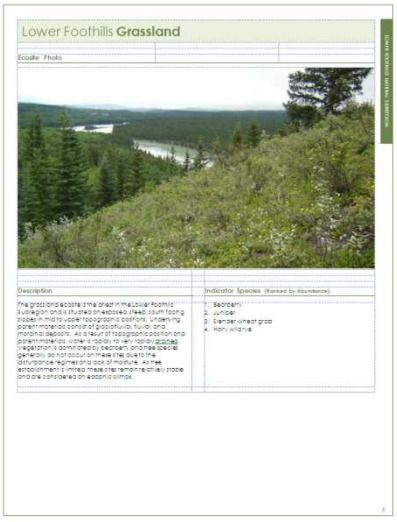
Use of this Reference Product

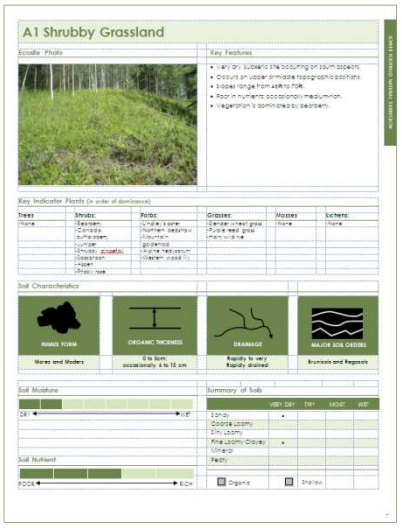
This document is a tool that is intended to assist forest managers in the recognition and understanding of uncommon plant communities that occur in the FMA. In addition to forestry planners, this document will serve as a tool to educate the public, consultants, contractors, and summer students about uncommon plant community identification and stewardship.

This document is organized in a hierarchical fashion, with general information and key features presented for each of the Natural Subregions in which uncommon plant communities are found on the FMA (i.e. Lower Foothills). Within each of the Natural Subregions, a general description is given for each ecosite occurring within that Natural Subregion (i.e. grassland). Ecosites are generally described and identified by their key features, including plant composition and soil moisture. Within each ecosite, a more detailed description of each ecosite phase (i.e. shrubby grassland) is given, including: key features, characteristic plants listed in order of dominance, and a summary of soils (humus forms, organic thickness, drainage, soil orders, moisture, and nutrients). An Appendix with photos and a description of each of the characteristics plants noted in this document has been included to assist with plant identification.

Information describing Natural Subregions, ecosites, and ecosite phases contained in this document was largely based on the Field Guide to Ecosites of West-central Alberta (Beckingham et al. 1996). Additional information describing Natural Subregions was taken from Natural Regions and Subregions of Alberta (Natural Resource Committee 2006).







Natural Sub-Region → Ecosite → Ecosite Phase

Limitations

This document attempts to provide an overview of the general characteristics of each Natural Subregion, ecosite, and ecosite phase. Soil moisture and nutrient regimes, plant community composition, and other important indicators of community type are not covered in sufficient detail to allow for definitive field identification. As well, moisture, nutrient, soil, topography, and other identifying features where summarized, as many of the characteristics of the ecosites and ecosite phases have a range of variance due to ecotones (ecosites and ecosite phases grading into one another). Where possible, when there was variance in the descriptions of the ecosites and ecosite phases, the frequency of occurrence was noted. Finally, The Field Gide to Ecosites of West-central Alberta (Beckinham et al. 1996) further breaks down ecosite phases into "plant communities". It should be noted that the term "plant communities" in this document does not correlate to the term "plant communities" used in Beckingham et al. (1996). The maximum resolution of the ecological land classification data in the West Fraser FMA is to ecosite phase, and therefore plant communities, as defined by Beckingham et al. (1996) are not discussed in this document

Lower Foothills Natural Sub-Region (2276.5 ha in FMA)

Sub-Region Photo

Ecosite	Ecosite Phase	Area
Grassland	Shrubby grassland	113.7
Bearberry lichen	Bearberry/lichen Pl	185.9
Hairy wild rye	Hairy wild rye Sw	826.4
Meadow	Forb meadow	599.3
Bog	Shrubby bog	248.1
Marsh	Marsh	114.3
	Total	**2,087.8**

Key Features

TOTAL AREA IN ALBERTA

44,899 (6.8%)

MEAN ANNUAL TEMPERATURE

1.8C

MEAN ANNUAL PRECIPITATION

588mm

MAIN VEGETATION TYPES

Mixed or pure stands of lodgepole pine, trembling aspen, balsam poplar, white birch, black spruce, white spruce, tamarack, and balsam fir

AVERAGE ELEVATION

950m: ranges from 650m to 1625m

WATER

20% wetlands; <1% lakes and streams

PHYSIOGRAPHY

Rolling and undulating till-covered landscapes and dissected plateaus

Climate

Mild summers, higher precipitation, and slightly warmer winters than Boreal Forest Subregion due to frequent warm, dry, westerly winds.

Short, variable growing season but high forest productivity due to nutrient-rich groundwater and high precipitation.

Variable topography causes unique microclimates throughout the subregion.

Parent Material/Soil Types

Parent materials are dominated by medium textured glacial till overlying sandstone, siltstone, and shale bedrock; however, glaciofluvial, glacio-lacustrine, aeolian, and organic parent materials also occur.

Soil orders are diverse with well- to imperfectly drained Luvisols and Brunisols typical of uplands, higher elevations, and sandy terrain. Brunisols and Regosols are present within calcareous and recently deposited aeolian and fluvial materials; Mesisol subgroups are associated with wetland organic deposits of nutrient-poor to rich fens. Imperfectly to poorly drained Gleysolic soils occur adjacent to wetlands and on lower slopes.

Dominant Vegetation

Pure or mixed-wood stands containing up to three or four tree species, including: lodgepole pine, trembling aspen, balsam poplar, white birch, black spruce, white spruce, balsam fir, and tamarack.

Understory vegetation in mesic sites commonly consist of: green alder, low-bush cranberry, prickly rose, wild sarsaparilla, dewberry, fireweed, and marsh reed grass. Nutrient poor mesic to very moist sites commonly contains: feather-mosses, Labrador tea, bog cranberry, and blueberry. Devil's club, bracted honeysuckle, ferns, marsh reed grass, and cow parsnip are common in moist, nutrient-rich sites.

Drier sites are composed of bearberry, common juniper, and hairy wild rye, while black spruce, tamarack, Labrador tea, willow, bog birch, horsetails, and mosses occur on low wet sites. Shrubby or sedge fens occur in the wettest sites.

Lower Foothills **Grassland**

Ecosite Photo

Description

The grassland ecosite is the driest in the Lower Foothills Subregion and is situated on exposed, steep, south facing slopes in mid to upper topographic positions. Underlying parent materials consist of glaciolfluvial, fluvial, and morainal deposits. As a result of topographic position and parent materials, water is rapidly to very rapidly drained. Vegetation is dominated by bearberry and tree species generally do not occur on these sites due to the disturbance regimes and lack of moisture. As tree establishment is limited, these sites remain relatively stable and are considered an edaphic climax.

Indicator Species (Ranked by Abundance):

1. Bearberry
2. Juniper
3. Slender wheat grass
4. Hairy wild rye

A1 Shrubby Grassland

Ecosite Photo

Key Features

- Very dry, subxeric site occurring on south aspects.
- Occurs on upper or middle topographic positions.
- Slopes range from 46% to 70%.
- Poor in nutrients; occasionally medium-rich.
- Vegetation is dominated by bearberry.

Key Indicator Plants (in order of dominance)

Trees
-None

Shrubs:
-Bearberry
-Canada buffaloberry
-Juniper
-Shrubby cinqefoil
-Saskatoon
-Aspen
-Prickly rose

Forbs:
-Lindley's aster
-Northern bedstraw
-Mountain goldenrod
-Alpine hedysarum
-Western wood lily

Grasses:
-Slender wheat grass
-Purple reed grass
-Hairy wild rye

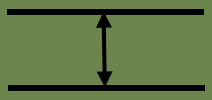
Mosses
-None

Lichens:
-None

Soil Characteristics

HUMUS FORM

Mores and Moders



ORGANIC THICKNESS

0 to 5cm; occasionally 6 to 15 cm

DRAINAGE

Rapidly to very Rapidly drained

MAJOR SOIL ORDERS

Brunisols and Regosols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy		•		
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey		•		
Mineral				
Peaty				

☐ Organic ☐ Shallow

Lower Foothills **Bearberry/Lichen**

Ecosite Photo

Description

Topographic position and underlying parent materials contribute to the very dry nature of this ecosite. Soils are dry, acidic, relatively nutrient poor, and rapidly drained due to the occurrence of this ecosites on upper slopes and in crest positions. Parent materials underlying the soils include: coarse-textured glaciofluvial, fluvial, and aeolian deposits. Succession from lodgepole pine to black spruce occurs very slowly and is often slower than the fire return interval. The bearberry/lichen ecosite is considered an edaphic climax community.

Indicator Species (Ranked by Abundance):

1. Lodgepole pine
2. Bearberry
3. Blueberry
4. Bog cranberry
5. Lichen

B1 Bearberry/Lichen Pl

Ecosite Photo

Key Features

- Very dry, subxeric to xeric site.
- Occurs in crest, level, and upper slope topographic positions.
- Slopes range from 0% to 15%.
- Nutrient-poor; occasionally medium-rich.
- Overstory dominated by lodgepole pine with few black spruce.
- Understory is dominated by bog cranberry, Schreber's moss, knight's plum moss, and reindeer lichens.

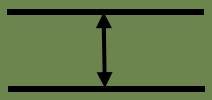
Key Indicator Plants (in order of dominance)

Trees	Shrubs:	Forbs:	Grasses:	Mosses	Lichens:
-Lodgepole pine -Black spruce	-Bog cranberry -Blueberry -Bearberry -Black spruce -Twin-flower -Prickly rose -Labrador tea	-Bunchberry	-None	-Schreber's moss -Knight's plume moss -Stair-step moss	-Reindeer lichen -Studded leather lichen -Woolly coral

Soil Characteristics

HUMUS FORM

Mores



ORGANIC THICKNESS

0 to 5cm; occasionally 6 to 15 cm

DRAINAGE

Well to rapidly drained

MAJOR SOIL ORDERS

Brunisols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy	•	•		
Coarse Loamy	•			
Silty Loamy	•			
Fine Loamy Clayey	•			
Mineral				
Peaty				

☐ Organic ☐ Shallow

Lower Foothills **Hairy Wild Rye**

Ecosite Photo

Description

Topography, southerly aspects, and well-drained parent materials (coarse-textured glaciofluvial and aeolian deposits) all contribute to the range of moisture available in this ecosite. Moisture regimes range from subxeric to mesic, while the nutrient regime varies from poor to rich. As a result, the species composition in this ecosite is similar to the bearberry/lichen and low-bush cranberry ecosites. Succession is very slow due to dry conditions; forested stands climax as white spruce.

Indicator Species (Ranked by Abundance):

1. Canada buffalo-berry
2. Blueberry
3. Bearberry
4. Labrador tea
5. Hairy wild rye

C4 Hairy Wild Rye-Sw

Ecosite Photo

Key Features

- Submesic site occurring on level, south, north, and west aspects in middle slope topographic positions.
- Slopes are between 0% and 15%.
- Medium nutrient status.
- Overstory dominated by white spruce with few aspen.
- Understory is dominated by hairy wild rye, stair-step moss, wiry fern moss, and prickly rose.

Key Indicator Plants (in order of dominance)

Trees
-White spruce
-Aspen

Shrubs:
-Prickly rose
-Twin-flower
-Willow
-Canada buffaloberry
-Bearberry

Forbs:
-Bunchberry
-Showy aster
-Tall lungwort
-Fireweed
-Cream-coloured vetchling

Grasses:
-Hairy wild rye

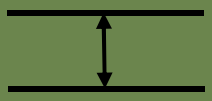
Mosses
-Stair-step moss
-Wiry fern moss
-Knight's plume moss

Lichens:
-None

Soil Characteristics

HUMUS FORM

- No data -



ORGANIC THICKNESS

6 to 25 cm

DRAINAGE

Well to moderately Well-drained

MAJOR SOIL ORDERS

Brunisols, Gleysols, and Luvisols

Soil Moisture

Soil Nutrient

Summary of Soils

Sandy	
Coarse Loamy	
Silty Loamy	
Fine Loamy Clayey	•
Mineral	
Peaty	

☐ Organic ☐ Shallow

Lower Foothills **Meadow**

Ecosite Photo

Description

Moist, nutrient-rich conditions dominate this ecosite due to the water receiving nature of the topography and poor drainage associated with the fluvial and colluvial parent materials. Soils are loamy and have thick Ah horizons. Tree establishment is inhibited by competition from the many shrubs, forbs, and grasses which occur on these sites. Disturbance, frost, and drainage also reduce the likelihood of tree species becoming established. Where trees do become established, they occur on rich, moist, loamy soils which allow for rapid growth. Successionally, this ecosite is stable.

Indicator Species (Ranked by Abundance):

1. Willow
2. Cow parsnip
3. Veiny meadow rue
4. Tall lungwort
5. Long-stalked chickweed
6. Avens
7. Marsh reed grass
8. Fringed brome

G2 Forb Meadow

Ecosite Photo

Key Features

- Moist, subhydric to mesic site occurring predominantly on level aspects in level topographic positions; occurs less frequently on south and east aspects.
- Slopes typically level; less frequently located on slopes between 2% and 5%.
- Nutrient-rich and occasionally very rich.
- Vegetation is dominated by long-stalked chickweed and grasses such as fringed brome

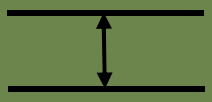
Key Indicator Plants (in order of dominance)

Trees	Shrubs:	Forbs:	Grasses:	Mosses	Lichens:
-None	-None	-Long-stalked chickweed -Veiny meadow rue -Cow parsnip -Common nettle -Common yarrow -Common dandelion -Large northern aster -Tall lungwort -Wild vetch -Yellow avens -Cream-coloured vetchling -Northern bedstraw -Tall larkspur	-Fringed brome -Marsh reed grass -Awnless brome -Sedge	-None	-None

Soil Characteristics

HUMUS FORM

- Mor and Mulls -



ORGANIC THICKNESS

6 to 15 cm; less frequently 0 to 5 cm

DRAINAGE

Imperfectly to Well-drained

MAJOR SOIL ORDERS

Regosols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy			•	
Fine Loamy Clayey			•	
Mineral				
Peaty				

☐ Organic ☐ Shallow

Lower Foothills **Bog**

Ecosite Photo

Description

This ecosite is poorly to very poorly drained as a consequence of occurring in level and depressional topographic positions. Water is generally stagnant and impeded, allowing for the accumulation of decaying organic matter. These conditions create the poor to very poor organic soils that are characteristic of this ecosite. Black spruce occurs in treed phases of this ecosite; however, they are stunted and canopy cover is sparse. The bog ecosite is considered an edaphic climax as a result of the high water table, despite the fact that hydrarch succession is very slow.

Indicator Species (Ranked by Abundance):

1. Black spruce
2. Labrador tea
3. Bog cranberry
4. Small bog cranberry
5. Cloudberry
6. Peat moss

K2 Shrubby Bog

Ecosite Photo

Key Features

- Wet, hygric site occurring on level aspects in level or depressional topographic positions.
- Nutrient-poor; less frequently very poor.
- Vegetation dominated by Labrador tea, bog cranberry, blueberry, peat moss, and common hair-cap moss

Key Indicator Plants (in order of dominance)

Trees
-None

Shrubs:
-Labrador tea
-Bog cranberry
-Blueberry
-Black spruce
-Lodgepole pine
-Dwarf birch
-Small bog cranberry

Forbs:
-Cloudberry

Grasses:
-None

Mosses
-Peat moss
-Common hair-cap
-Schreber's moss
-Slender hair-cap moss

Lichens:
-Reindeer lichens
-Spraypaint lichen

Soil Characteristics

HUMUS FORM	ORGANIC THICKNESS	DRAINAGE	MAJOR SOIL ORDERS
- No data -	26 to 39 cm	Very poor to imperfectly drained	Mesisol and Gleysols

Soil Moisture

DRY ◄——► WET

Soil Nutrient

POOR ◄——► RICH

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey				
Mineral				
Peaty				•

☒ Organic ☐ Shallow

Lower Foothills **Marsh**

Ecosite Photo

Description

The marsh ecosite occurs around shorelines and riparian areas in the Lower Foothills Natural Subregion. Drainage is very poor leading to soil saturation above the rooting depth for at least part of the growing season. Consequently, vegetation is comprised largely of hydrophytic species such as sedges and rushes. Hydrarch succession is in the early stages, but this ecosite is often successionally stable and most changes in the plant community are due to disturbance.

Indicator Species (Ranked by Abundance):

1. Common cattail
2. Rush
3. Sedge
4. Bulrush

N1 Marsh

Ecosite Photo

Key Features

- Wet, hydric or occasionally subhydric site occurring on level aspects in level and depressional topographic positions.
- Rich in nutrients.
- Vegetation dominated by common cattails, sedges, and bulrush.

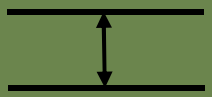
Key Indicator Plants (in order of dominance)

Trees	Shrubs:	Forbs:	Grasses:	Mosses	Lichens:
-None	-None	-Common cattail -Northern willowherb	-Sedge -Bulrush -Marsh reed grass -Rush -Fowl bluegrass	-None	-None

Soil Characteristics

HUMUS FORM

Peatymors



ORGANIC THICKNESS

0 to 5 cm; occasionally between 26 and 39 cm

DRAINAGE

Very poor to poorly drained

MAJOR SOIL ORDERS

Gleysols and Fibrisols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey				
Mineral				•
Peaty				

Organic

Shallow

Upper Foothills Natural Sub-Region (1497.0 ha in FMA)

Sub-Region Photo

Ecosite	Ecosite Phase	Area
Grassland	Shrubby grassland	252.9
Bearberry lichen	Bearberry/lichen Pl	870.7
Labrador tea/horsetail	Labrador tea/horsetail Sb-Sw	0.0
Bog	Shrubby bog	203.0
	Total	1,326.6

Key Features

TOTAL AREA IN ALBERTA

21,537 km2 (3.3%)

MEAN ANNUAL TEMPERATURE

1.3 °C

MEAN ANNUAL PRECIPITATION

632 mm

MAIN VEGETATION TYPES

Even-aged fire-origin lodgepole pine with black spruce understory

AVERAGE ELEVATION

1300 m; ranges from 950 to 1750 m

WATER

10% wetlands; <1% lakes and streams

PHYSIOGRAPHY

Rolling foothills with dissected plateaus

Climate

Climate is cool year-round with a short growing season; summers are cooler and winters are slightly warmer than other subregions.

Most precipitation falls in July during the growing season.

Parent Material/Soil Types

Parent material is largely comprised of medium-sized, glacial till veneers and blankets over sandstone and mudstones; other parent materials include colluvium and exposed bedrock.

Well- to imperfectly draining Luvisols dominate the upper foothills; other major soil orders include Luvisols in moderately well-drained sites and Brunisols on less stable slopes.

In wetlands, soils are a matrix of Mesisols and Gleysols.

Dominant Vegetation

Forest stands are dominated by even-aged, fire-origin lodgepole pine with Labrador tea, tall bilberry, and dwarf bramble in the understory.

White spruce occurs on lower slopes and in river valleys while deciduous and mixed-wood stands occur only on warm south and west facing slopes.

White-flowered rhododendron, false azalea, and crowberry are common in higher elevations on north facing slopes.

Drier sites are dominated by common juniper, bearberry, and hairy wild rye; shrubby grasslands occur in the driest sites.

Aspen and/or lodgepole pine and white spruce occur more frequently with increasing moisture.

Wet areas are dominated by tamarack, black, and white spruce with understories comprised of Labrador tea, bog birch, willows, horsetails, and various mosses; shrubby sedge fens occur in the wettest areas.

Upper Foothills **Grassland**

Ecosite Photo

Description

Rapidly drained soils, steep slopes, exposed topography, and south facing aspects contribute to the very dry nature of this ecosite. Parent materials are typically glaciofluvial or colluvial deposits. Moisture deficits and disturbances limit trees from becoming established; therefore, this ecosite is considered an edaphic climax community.

Indicator Species (Ranked by Abundance):

1. Bearberry
2. Saskatoon
3. Prickly rose
4. Pasture sagewort
5. Hairy wild rye
6. Sedge

A1 Shrubby Grassland

Ecosite Photo

Key Features

- Very dry, xeric to subxeric site occurring on south, west, and east aspects in upper or middle slope topographic positions.
- Slopes vary between 31% and 100%.
- Poor to medium nutrient levels.
- Vegetation is dominated by bearberry.

Key Indicator Plants (in order of dominance)

Trees
-None

Shrubs:
-Bearberry
-Saskatoon
-Prickly rose
-Canada buffaloberry
-Aspen
-Snowberry
-Juniper

Forbs:
-Pasture sagewort
-Wild bergamot
-Mountain goldenrod
-Northern bedstraw
-Harebell
-Woodland strawberry
-Showy loco-weed

Grasses:
-Hairy wild rye
-Western porcupine grass
-Sedge
-Slender wheat grass

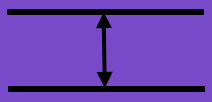
Mosses
-None

Lichens:
-Dog lichen

Soil Characteristics

HUMUS FORM

Mors

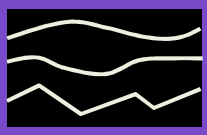


ORGANIC THICKNESS

0 to 5 cm

DRAINAGE

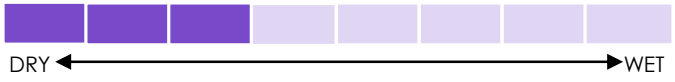
Rapidly to very rapidly drained



MAJOR SOIL ORDERS

Brunisols

Soil Moisture



Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy		•		
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey		•		
Mineral				
Peaty				

☐ Organic ☐ Shallow

Upper Foothills **Bearberry/Lichen**

Ecosite Photo

Description

The very dry, acidic, and nutrient poor nature of this ecosite is largely due to rapidly drained soils and coarse-textured glaciofluvial, morainal, and fluvial deposits. Nutrient-poor, acidic-tolerant, indicator species such as: bearberry, small bog cranberry, lichen and blueberry are common. Lodgepole pine typically dominates the canopy; however, black spruce can occasionally co-dominate in some areas. In climax communities, black spruce will form the canopy; however, succession to black spruce is generally slower than the fire return interval. Consequently, this edaphic climax community is dominated by lodgepole pine for long periods of time.

Indicator Species (Ranked by Abundance):

1. Lodgepole pine
2. Lichen
3. Bearberry
4. Blueberry
5. Bog cranberry
6. Awned hair-cap

B1 Bearberry/Lichen Pl

Ecosite Photo

Key Features

- Very dry, subxeric to xeric site occurring on all aspects in level, upper slope, and middle slope topographic positions.
- Slopes range between 0% and 45%.
- Nutrient levels are poor; occasionally medium or rich.
- Overstory dominated by lodgepole pine with few black spruce.
- Understory is dominated by Labrador tea, bog cranberry, Schreber's moss, and reindeer lichen.

Key Indicator Plants (in order of dominance)

Trees
-Lodgepole pine
-Black spruce

Shrubs:
-Labrador tea
-Bog cranberry
-Blueberry
-Bearberry
-Twin-flower
-Black spruce
-Dwarf bilberry
-Lodgepole pine

Forbs:
-Bunchberry

Grasses:
-Hairy wild rye

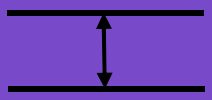
Mosses
-Schreber's moss
-Stair-step moss
-Knight's plume moss
-Juniper hair-cap
-Awned hair-cap

Lichens:
-Reindeer lichen
-Woolly coral
-Studded leather lichen
-Brown-foot cladonia

Soil Characteristics

HUMUS FORM

Mors



ORGANIC THICKNESS

0 to 5 cm

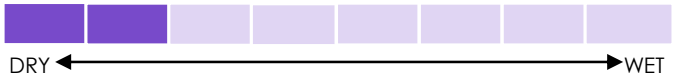
DRAINAGE

Well to rapidly drained

MAJOR SOIL ORDERS

Brunisols and Luvisols

Soil Moisture



Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy		•		
Coarse Loamy		•		
Silty Loamy		•		
Fine Loamy Clayey		•		
Mineral				
Peaty				

☐ Organic ☐ Shallow

Upper Foothills **Bog**

Ecosite Photo

Description

The level and depressional topographic positions characteristic of this ecosite lead to poor to very poor drainage, resulting in very wet conditions. Water here is generally stagnant and impeded, allowing for the accumulation of decaying organic matter. This decaying matter creates characteristic organic soils which are very poor to medium in nutrients. However, this ecosite has a higher nutrient status than bog ecosites in the Lower Foothills, due to better drainage that results from higher relief. Black spruce occurs in some areas of this ecosite but is stunted and canopy cover is sparse. Hydrarch succession to the bog ecosite occurs very slowly and as a result, the ecosite is considered an edaphic climax due to the high water table.

Indicator Species (Ranked by Abundance):

1. Black spruce
2. Labrador tea
3. Bog cranberry
4. Cloudberry
5. Peat moss

K2 Shrubby Bog

Ecosite Photo

Key Features

- Wet hydric site.
- Little information has been collected on aspect, slope, topographic position, or soil characteristics.
- Vegetation is dominated by peat moss, Labrador tea, and three-leaved Solomon's seal.

Key Indicator Plants (in order of dominance)

Trees
-None

Shrubs:
-Labrador tea
-Bog rosemary
-Bog cranberry
-Small bog cranberry
-Black spruce
-Leatherleaf

Forbs:
-Three-leaved Solomon's seal
-Cloudberry

Grasses:
-Sedge
-Russet cotton grass

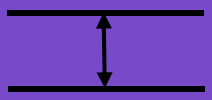
Mosses
-Peat moss
-Brown moss
-Slender hair-cap

Lichens:
-None

Soil Characteristics

HUMUS FORM

-no data-

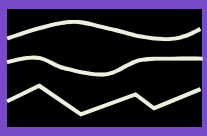


ORGANIC THICKNESS

-no data-

DRAINAGE

Very poor

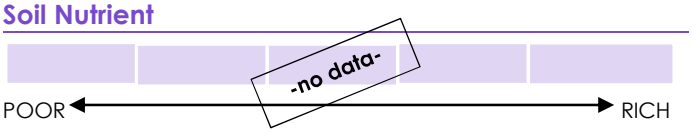


MAJOR SOIL ORDERS

-no data-

Soil Moisture

Soil Nutrient



Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey				
Mineral				
Peaty				

-no data-

☐ Organic ☐ Shallow

Montane Natural Sub-Region (1286.8 ha in FMA)

Sub-Region Photo

Ecosite	Ecosite Phase	Area
Grassland	Shrubby grassland	122.6
Grassland	Graminoid grassland	148.2
Bearberry	Bearberry Fd	0.3
Bearberry	Bearberry Pl	91.9
Hairy wild rye	Hairy wild rye Fd	4.3
Meadow	Shrubby meadow	72.4
Meadow	Forb meadow	33.1
Horsetail	Horsetail Pb-Aw	181.0
Fen	Shrubby fen	141.7
Fen	Graminoid fen	216.5
Marsh	Marsh	2.9
	Total	**1,014.8**

Key Features

TOTAL AREA IN ALBERTA

8768 km2 (1.3%)

MEAN ANNUAL TEMPERATURE

2.3 °C

MEAN ANNUAL PRECIPITATION

589 mm

MAIN VEGETATION TYPES

Mixed or pure trembling aspen, lodgepole pine, Douglas-fir, and white spruce forests; grasslands

AVERAGE ELEVATION

1400 m; ranges from 825 to 1850 m

WATER

2% wetlands; 1% lakes and streams

PHYSIOGRAPHY

Valleys and foothills

Climate

Cool summers and warm winters with frequent Chinook winds and high temperatures; prevailing winds from the Pacific Ocean bring warm, moist air. Peak precipitation occurs in the summer.

Unique microclimates created due to variable topography throughout the region.

North and east facing slopes are cool and moist because they receive less sunlight and are protected from the drying, prevailing westerly winds. South and west facing slopes are warmer and drier, receiving large amounts of sunlight and exposure to the dry westerly winds

Parent Material/Soil Types

Parent material is largely comprised of calcareous aeolian deposits on top of glacial till; fluvial and glaciofluvial parent materials are common in river valleys.

Soil orders in forested areas include Brunisols and Luvisols. Brunisols and Regosols are common in grassland areas of the subregion.

Dominant Vegetation

Forest stands are typified by lodgepole pine, trembling aspen, or white spruce.

Understory in zonal sites is dominated by hairy wild rye, Canada buffaloberry, and a diversity of forbs and feather mosses.

Dry exposed sites are dominated by bearberry, Canada buffaloberry, common juniper, silverberry, pasture sagewort, hairy wild rye, and June grass.

Trembling aspen, balsam poplar, red-osier dogwood, rose, and willow occur in nutrient-rich, moist sites. White spruce, willow, and horsetails occur on imperfectly to poorly drained, nutrient-rich sites. The wettest sites (fens) are dominated by white and black spruce, tamarack, willow, bog birch, sedges, and mosses.

Montane **Grassland**

Ecosite Photo

Description

The grassland ecosite is the driest in the Montane subregion as a result of its exposure to dry westerly winds. Soils are shallow and overlie bedrock, and water is well-drained to rapidly drained as a result of steep, south or east facing slopes in mid to upper topographic positions. Tree species are generally absent due to limited moisture and vegetation is dominated by a well-developed grass layer; therefore, succession on these sites is relatively stable.

Indicator Species (Ranked by Abundance):

1. Bearberry
2. Silver-berry
3. Prickly rose
4. Hairy wild rye
5. Juniper
6. Saskatoon
7. Pasture sagewort
8. June grass
9. Quack grass
10. Kentucky bluegrass
11. Northern wheat grass

A1 Shrubby Grassland

Ecosite Photo

Key Features

- Dry site occurring on south or west facing, steep slopes, in middle to upper topographic positions.
- Slopes most often between 46% and 70%; however, can range from 0% to 70%.
- Soil is well-drained, dry, and shallow with underlying bedrock close to the surface.
- Medium nutrient regime; occasionally ranges from rich to very rich in nutrients.
- Vegetative community with well-developed grass and shrub layers; no trees and few forbs.

Key Indicator Plants (in order of dominance)

Trees
-None

Shrubs:
-Bearberry
-Prickly rose
-Silver-berry
-Aspen
-Willow
-Juniper
-Canada buffalo-berry
-Shrubby cinquefoil

Forbs:
-Northern bedstraw

Grasses:
-Hairy wild rye
-Kentucky bluegrass
-Quack grass
-Sedge
-Awnless brome

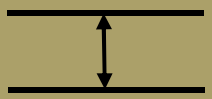
Mosses
-None

Lichens:
-None

Soil Characteristics

HUMUS FORM

Mulls



ORGANIC THICKNESS

0 to 5 cm; occasionally 6 to 15 cm

DRAINAGE

Well to rapidly drained

MAJOR SOIL ORDERS

Regosols, Brunisols and Luvisols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy		•		
Silty Loamy		•		
Fine Loamy Clayey		•		
Mineral				
Peaty				

Organic

Shallow

A2 Graminoid Grassland

Ecosite Photo

Key Features

- Dry site, occurring primarily on south or east facing steep slopes in upper topographic positions.
- Occurs most frequently on slopes between 31% and 45%; however, can range from 0% to 70%.
- Medium nutrient status.
- Vegetative community with well-developed grass and forb layers; no trees and few shrubs.

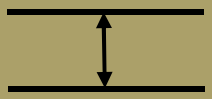
Key Indicator Plants (in order of dominance)

Trees	Shrubs:	Forbs:	Grasses:	Mosses	Lichens:
-None	-Saskatoon -Prickly rose	-Pasture sagewort -Wild blue flax -Small-leaved pussytoes -Northern bedstraw -Pale comandra	-June grass -Northern wheatgrass -Kentucky bluegrass -Purple reed grass -Sedge -June grass	-None	-None

Soil Characteristics

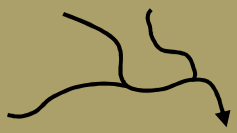
HUMUS FORM

Mulls



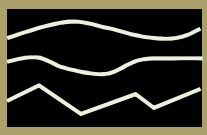
ORGANIC THICKNESS

0 to 5 cm



DRAINAGE

Well to rapidly drained



MAJOR SOIL ORDERS

Regosols, Brunisols, Podzols, and Luvisols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey		•		
Mineral				
Peaty				

Organic

Shallow

Montane **Bearberry**

Ecosite Photo

Description

The Montane bearberry ecosite is characteristically dry as a result of its well-drained coarse-textured soils, steep south facing aspects, and upper slope positions. Bearberry and juniper dominate the vegetative community and are indicators of dry soil conditions. Pure or mixed tree stands are comprised of lodgepole pine, Douglas-fir, aspen, and white spruce. These stands are fire successional, eventually climaxing as white spruce stands. Succession tends to be slow due to dry soil conditions.

Indicator Species (Ranked by Abundance):

1. Bearberry
2. Juniper
3. Canada buffaloberry
4. Spreading dogbane
5. Hairy wild rye
6. Wiry fern moss

B1 Bearberry Fd

Ecosite Photo

Key Features

- Dry, subxeric site occurring on west aspects.
- Occurs on relatively steep slopes ranging from 16% to 30%.
- Information on site and soil characteristics is generally lacking for this ecophase.
- Vegetative community with a well-developed tree and shrub layer with some forbs, grasses, mosses, and lichen.

Key Indicator Plants (in order of dominance)

Trees
-Douglas-fir
-Lodgepole pine
-White spruce

Shrubs:
-Bearberry
-Juniper
-Canada buffaloberry
-Prickly rose
-White spruce
-Saskatoon
-Douglas-fir

Forbs:
-Spreading dogbane
-Cut-leaved anemone

Grasses:
-Hairy wild rye
-Sedge

Mosses
-Wiry fern moss

Lichens:
-Brown pixie cup

Soil Characteristics

HUMUS FORM	ORGANIC THICKNESS	DRAINAGE	MAJOR SOIL ORDERS
-no data-	-no data-	Rapidly drained	Regosols

Soil Moisture

DRY ◄——► WET

Soil Nutrient

POOR ◄——► RICH

-no data-

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey				
Mineral				
Peaty				

-no data-

☐ Organic ☐ Shallow

B2 Bearberry Pl

Ecosite Photo

Key Features

- Dry site, occurring on south or east facing aspects on upper and occasionally toe positions.
- Slopes range from 0% to 70%.
- Poor nutrient status.
- Vegetative community is dominated by lodgepole pine and bearberry

Key Indicator Plants (in order of dominance)

Trees	Shrubs:	Forbs:	Grasses:	Mosses	Lichens:
-Lodgepole pine -Douglas-fir -White spruce	-Bearberry -Canada buffaloberry -Juniper -Twin-flower -Prickly rose -Lodgepole pine -White spruce -White meadowsweet	-Showy aster -Wild strawberry -Northern bedstraw -One-sided wintergreen -White camas -Mountain goldenrod	-Hairy wild rye -Sedge	-None	-None

Soil Characteristics

HUMUS FORM	ORGANIC THICKNESS	DRAINAGE	MAJOR SOIL ORDERS
Mors	0 to 5 cm	Rapidly to well-drained	Brunisols and Luvisols

Soil Moisture

DRY ◄——► WET

Soil Nutrient

POOR ◄——► RICH

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy		•		
Coarse Loamy		•		
Silty Loamy		•		
Fine Loamy Clayey				
Mineral				
Peaty				

☐ Organic ☐ Shallow

Montane **Hairy Wild Rye**

Ecosite Photo

Description

The hairy wild rye ecosite is mesic with a medium nutrient regime. This well-drained ecosite occurs on fluvial material, calcareous aeolian deposits overlying glacial till, or directly on glacial till parent materials. Lodgepole pine and aspen form pure or mixed stands which climax as white spruce; however, succession is slow due to a lack of moisture. Balsam poplar and white birch also grow within aspen stands in this ecosite, but are less common.

Indicator Species (Ranked by Abundance):

1. Hairy wild rye
2. Canada buffaloberry
3. Showy aster
4. Wiry fern moss

C1 Hairy Wild Rye Fd

Ecosite Photo

Key Features

- Mesic site, occurring predominantly on south aspects; occasionally on north and east aspects.
- Occurs on slopes ranging from 6% to 100%.
- Little information available for soil characteristics.
- Overstory dominated by Douglas-fir, with few white spruce, lodgepole pine, and aspen.
- Understory is dominated by hairy wild rye and mosses.

Key Indicator Plants (in order of dominance)

Trees
-Douglas-fir
-White spruce
-Lodgepole pine
-Aspen

Shrubs:
-Twin-flower
-Canada buffaloberry
-Snowberry
-Bearberry
-Prickly rose
-Juniper
-White meadowsweet

Forbs:
-Showy aster
-Wild strawberry
-One-sided wintergreen
-Purple clematis
-Cream-coloured vetchling
-Wild vetch

Grasses:
-Hairy wild rye

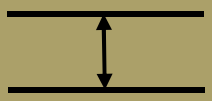
Mosses
-Wiry fern moss
-Stair-step moss
- Schreber's moss

Lichens:
- None

Soil Characteristics

HUMUS FORM

-no data-

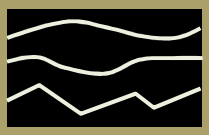


ORGANIC THICKNESS

-no data-

DRAINAGE

-no data-



MAJOR SOIL ORDERS

Brunisols and Regosols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey				
Mineral				
Peaty				

-no data-

☐ Organic ☐ Shallow

Montane **Meadow**

Ecosite Photo

Description

Very nutrient rich, moist, subhygric soils characterize the Montane meadow ecosite. This ecosite typically occurs in depressions or on toe and lower slope topographic positions where moisture collects and results in flooding or high water tables. Soils are loamy with thick Ah horizons, overlying fluvial parent materials. Establishment of trees is slow due to disturbance, cold air, and competition with a high diversity of shrubs, forbs, and grasses. As such, this ecosite remains generally stable in terms of succession. If trees do become established, growth is rapid due to the nutrient rich, moist, loamy soils.

Indicator Species (Ranked by Abundance):

1. Willow
2. Cow parsnip
3. Veiny meadow rue
4. Chickweed
5. Avens
6. Marsh reed grass
7. Horsetail

E1 Shrubby Meadow

Ecosite Photo

Key Features

- Wet, hygric to subhydric site occurring on level ground; occasionally occurs on south aspects.
- Occurs in level, depression, and toe positions.
- Slopes range from 0% to 5%.
- Nutrient rich; occasionally medium-rich.
- Vegetation is dominated by willows and marsh reed grass.

Key Indicator Plants (in order of dominance)

Trees
-None

Shrubs:
-Willow
-Dwarf birch
-Currant
-River alder

Forbs:
-Cow parsnip
-Veiny meadow rue
-Tall lungwort
-Fireweed
-Common dandelion
-Common yarrow
-Tall larkspur
-Three-flowered avens
-Marsh hedge-nettle
-Wild vetch
-Large northern aster
-Large-leaved yellow avens
-Northern bedstraw
-Yellow avens
-Purple avens

Grasses:
-Marsh reed grass
-Sedge
-Slender wheat grass

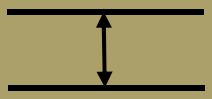
Mosses
-Tufted moss

Lichens:
-None

Soil Characteristics

HUMUS FORM

Mulls, Mors, and Raw Moders

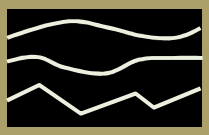


ORGANIC THICKNESS

6 to 15 cm; occasionally 0 to 5 cm

DRAINAGE

Imperfectly to poorly drained



MAJOR SOIL ORDERS

Gleysols and Regosols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey			•	
Mineral				•
Peaty				•

☐ Organic ☐ Shallow

E2 Forb Meadow

Ecosite Photo

Key Features

- Subhydric to mesic site occurring on level ground; occasionally occurs on south or east aspects.
- Occurs in level topographic positions.
- Slopes range from 0% to 5%
- Nutrient rich; less frequently very rich.
- Vegetation is dominated by forbs such as long-stalked chickweed and grasses such as fringed brome

Key Indicator Plants (in order of dominance)

Trees
-None

Shrubs:
-None

Forbs:
-Long-stalked chickweed
-Veiny meadow rue
-Cow parsnip
-Common nettle
-Common yarrow
-Common dandelion
-Large northern aster
-Tall lungwort
-Wild vetch
-Yellow avens
-Cream-coloured vetchling
-Northern bedstraw
-Tall larkspur

Grasses:
-Fringed brome
-Marsh reed grass
-Awnless brome
-Sedge

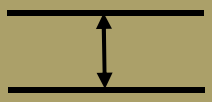
Mosses
-Tufted moss

Lichens:
-None

Soil Characteristics

HUMUS FORM

Mors and Mulls



ORGANIC THICKNESS

6 to 15 cm; less frequently 0 to 5 cm

DRAINAGE

Well- to imperfectly drained

MAJOR SOIL ORDERS

Regosols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy			•	
Fine Loamy Clayey			•	
Mineral				
Peaty				

☐ Organic ☐ Shallow

Montane **Horsetail**

Ecosite Photo

Description

The Montane horsetail ecosite occurs on fluvial parent materials in areas where flooding is common, such as the toe and lower slope topographic positions. Consequently, this ecosite is typically wet and nutrient-rich. Horsetails are key indicator species of this ecosite and are the dominant vegetative cover. Balsam poplar also occurs here and is a pioneer species during early succession. Due to high competition from other species, succession to the white spruce climax state is usually very slow.

Indicator Species (Ranked by Abundance):

1. Meadow horsetail
2. Common horsetail

F1 Horsetail Pb-Aw

Ecosite Photo

Key Features

- Subhygric to hygric site occurring on east aspects.
- Slopes between 2% and 5%.
- Information is lacking on topographic position, nutrient status, and soil characteristics.
- Overstory dominated by balsam poplar with occasional white spruce.
- Understory vegetation is dominated by horsetails.

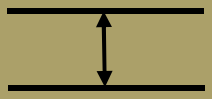
Key Indicator Plants (in order of dominance)

Trees	Shrubs:	Forbs:	Grasses:	Mosses	Lichens:
-Balsam poplar -White spruce	-Balsam poplar -Snowberry -Low-bush cranberry -Prickly rose -White spruce -Dogwood -Currant	-Meadow horsetail -Common horsetail -Tall lungwort -Dewberry -Cream-coloured vetchling -Palmate-leaved coltsfoot -Sweet-scented bedstraw -Wild vetch	-None	-None	-None

Soil Characteristics

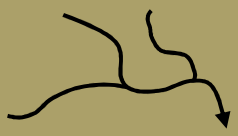
HUMUS FORM

-no data-



ORGANIC THICKNESS

-no data-



DRAINAGE

-no data-

MAJOR SOIL ORDERS

Regosols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey				
Mineral				
Peaty				

-no data-

☐ Organic ☐ Shallow

Montane **Fen**

Ecosite Photo

Description

The Montane fen ecosite occurs in level, lower slope, and depressional areas where water collects and is slow to drain, allowing for the accumulation of decaying organic matter. Water in the fen ecosites is flowing, oxygenated, alkaline, and nutrient-rich. Spruce and tamarack dominate the canopy in treed sites; however, the canopy is sparse and trees are generally stunted. Willows and dwarf birch dominate shrubby sites, while sedges dominate the graminoid phase. Fens and other wetlands are slow to recover from disturbance and succession climaxes as black or white spruce dominated stands. Species composition and the rate of succession are largely dependent on hydrological processes.

Indicator Species (Ranked by Abundance):

1. Black spruce
2. Tamarack
3. Willow
4. Labrador tea
5. Dwarf birch
6. Horsetail
7. Sedge
8. Golden moss
9. Brown moss
10. Tufted moss

G2 Shrubby Fen

Ecosite Photo

Key Features

- Subhydric to hydric site occurring on level aspects or depressional topographic positions.
- Rich in nutrients; occasionally very rich.
- Vegetation is dominated by willows and sedges.

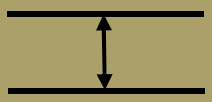
Key Indicator Plants (in order of dominance)

Trees	Shrubs:	Forbs:	Grasses:	Mosses	Lichens:
-None	-Willow -Dwarf birch	-Swamp horsetail -Marsh violet -Marsh aster -Common horsetail -Seaside arrow-grass	-Sedge -Bluegrass -Rush	-Brown moss -Golden moss -Yellow star	-None

Soil Characteristics

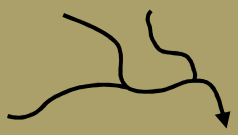
HUMUS FORM

Peatymors and Mors



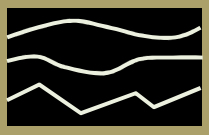
ORGANIC THICKNESS

80 cm; occasionally between 60 and 79 cm



DRAINAGE

Very poor to poorly drained



MAJOR SOIL ORDERS

Fibrisols, Gleysols and Mesisols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey				
Mineral				
Peaty				

 Organic

 Shallow

G3 Graminoid Fen

Ecosite Photo

Key Features

- Hydric site occurring on level topographic positions.
- Nutrient-rich.
- Vegetative community is dominated by sedges.

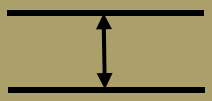
Key Indicator Plants (in order of dominance)

Trees	Shrubs:	Forbs:	Grasses:	Mosses	Lichens:
-None	-Willow	-None	-Sedge	-Brown moss -Yellow star moss	-None

Soil Characteristics

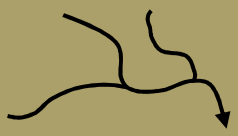
HUMUS FORM

Peatymors



ORGANIC THICKNESS

≥80 cm



DRAINAGE

Very poor

MAJOR SOIL ORDERS

Mesisols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey				
Mineral				
Peaty				

 Organic

 Shallow

Montane **Marsh**

Ecosite Photo

Description

The Montane marsh ecosite occurs in level and depression areas where water levels are above the rooting zone for at least part of the growing season, such as shorelines and riparian areas. Plant communities are dominated by hydrophilic species that are characteristic of the type of disturbance regime influencing the site. The marsh ecosite is in the early stages of hydrarch succession and is considered to be successionally stable.

Indicator Species (Ranked by Abundance):

1. Common cattail
2. Bulrush
3. Sedge

H1 Marsh

Ecosite Photo

Key Features

- Hydric or subhydric site occurring on level topographic positions.
- Nutrient rich.
- Vegetation is dominated by common cattails.

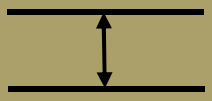
Key Indicator Plants (in order of dominance)

Trees	Shrubs:	Forbs:	Grasses:	Mosses	Lichens:
-None	-None	-Common cattail	-Sedge -Bulrush -Slough grass -Marsh reed grass	-Greville's fork moss	-None

Soil Characteristics

HUMUS FORM

Peatymors or no humus



ORGANIC THICKNESS

0 to 5 cm; occasionally 26 to 39 cm

DRAINAGE

Very poor to poorly drained

MAJOR SOIL ORDERS

Gleysols and Fibrisols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey				
Mineral				•
Peaty				


Organic


Shallow

Subalpine Natural Sub-Region (2408.8 ha in FMA)

Sub-Region Photo

Ecosite	Ecosite Phase	Area
Grassland	Shrubby grassland	242.9
Grassland	Graminoid grassland	109.9
Hairy Wild Rye	Hairy wild rye Pl-Aw	358.5
Meadow	Forb meadow	265.2
Bog	Treed bog	588.8
Bog	Shrubby bog	2.9
Fen	Graminoid fen	689.4
	Total	**2,257.7**

Key Features

TOTAL AREA IN ALBERTA

25,218 km2 (3.8%)

MEAN ANNUAL TEMPERATURE

-0.1 °C.

MEAN ANNUAL PRECIPITATION

755 mm

MAIN VEGETATION TYPES

Open Engelmann spruce and subalpine fir stands at higher elevations; closed canopy lodgepole pine at lower elevations

AVERAGE ELEVATION

1750m; ranges from 1300 to 2300 m

WATER

2% wetlands; 1% lakes and streams

PHYSIOGRAPHY

Rolling and inclined bedrock.

Climate

This subregion has cool, wet summers with a short growing season; winters are long and cold with heavy snowfalls.

The Subalpine subregion receives one of the highest amounts of precipitation in Alberta, second to only the Alpine subregion.

Variable topography creates unique microclimates; aspect, elevation, and wind exposure all create high temperature ranges.

At higher elevations the growing season is short, which leads to widely spaced, stunted trees.

Parent Material/Soil Types

Parent material is predominantly morainal deposits overlying limestone and dolomite bedrock.

Colluvium occurs on steep slopes, fluvial and glacio-fluvial materials are common along rivers, and exposed bedrock occurs frequently throughout the subregion.

Soils are dominated by Brunisols, Regosols, and non-soils (exposed bedrock and parent material).

In less pronounced terrain with more developed soils, Luvisols are common. Gleysols and Organic soils are common in wetlands.

Dominant Vegetation

Within the Hinton FMA, forest stands at lower elevations in this subregion are typified by closed canopy lodgepole pine which undergoes fire succession and climax as Engelmann spruce and subalpine fir stands.

At higher elevations, open stands of Engelmann spruce and subalpine fir occur.

Understory communities on zonal sites are typified by false azalea, white-flowered rhododendron, Labrador tea, dwarf bramble, and tall bilberry.

Other common species in the subregion include black spruce, tamarack, and bog cranberry; willow is found in valley bottoms and hairy wild rye is found in grasslands.

Subalpine **Grassland**

Ecosite Photo

Description

The dry nature of this ecosite is largely due to its occurrence on steep south facing slopes. The grassland plant community resembles the meadow ecosite; however, conditions in the grassland ecosite are drier and steeper. Successionally, this ecosite is an edaphic climax and dry conditions and disturbance regimes prevent tree species from becoming established. Many of the sites in the subalpine grassland may be undergoing early succession due to the presence of colluvial and fluvial parent materials, harsh climate, and frequent disturbance.

Indicator Species (Ranked by Abundance):

1. Bearberry
2. Willow
3. Dwarf birch
4. Hairy wild rye
5. Bellard's kobresia
6. June grass
7. Sedge

A1 Shrubby Grassland

Ecosite Photo

Key Features

- Dry, subxeric site most frequently occurring on south aspects in middle slope topographic positions; occasionally found on east aspects.
- Slopes most frequently between 46% and 70%; can range between 16% and 70%.
- Medium-rich to rich in nutrients.
- Vegetative community is dominated by bearberry with a well-developed grass and forb layer.

Key Indicator Plants (in order of dominance)

Trees
-None

Shrubs:
-Bearberry
-Willow
-Dwarf birch
-Shrubby cinquefoil
-Juniper
-Dryad

Forbs:
-Wild strawberry
-Alpine hedysarum
-Fireweed
-Common yarrow

Grasses:
-Hairy wild rye
-Bellard's kobresia
-Sedge
-Awnless brome
-Fescue
-June grass
-Bluegrass
-Spike trisetum
-Rocky Mountain fescue

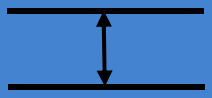
Mosses
-Wiry fern moss
-Hairy screw moss

Lichens:
-None

Soil Characteristics

HUMUS FORM

Raw moders and Mors

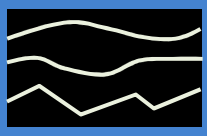


ORGANIC THICKNESS

0 to 5 cm

DRAINAGE

Well- to rapidly drained



MAJOR SOIL ORDERS

Brunisols and Regosols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey		•		
Mineral				
Peaty				

☐ Organic ☐ Shallow

A2 Graminoid Grassland

Ecosite Photo

Key Features

- Very dry, subxeric site occurring on east, west, and south aspects. Topographic position is understudied.
- Slopes range from 6% to 70%
- Medium nutrient levels.
- Vegetation is dominated by grasses, and in particular Bellard's kobresia and hairy wild rye.

Key Indicator Plants (in order of dominance)

Trees
-None

Shrubs:
-Dryad
-Dwarf birch
-Shrubby cinquefoil

Forbs:
-Northern hedysarum
-Showy loco-weed
-Alpine bistort
-Alpine hedysarum
-Sweet-flowered androsace

Grasses:
-Bellard's kobresia
-Hairy wild rye
-June grass
-Sedge
-Bog muhly
-Alpine bluegrass
-Bluegrass
-Northern wheat grass
-Awnless brome

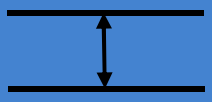
Mosses
-Pipecleaner moss
-Thread moss
-Hairy screw moss

Lichens:
-Flattened snow lichen

Soil Characteristics

HUMUS FORM

-No data-

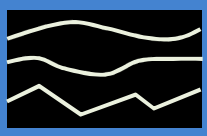


ORGANIC THICKNESS

-No data-

DRAINAGE

Well- to rapidly drained



MAJOR SOIL ORDERS

Brunisols and Regosols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey				
Mineral				
Peaty				

-no data-

☐ Organic ☐ Shallow

Subalpine **Hairy Wild Rye**

Ecosite Photo

Description

The dry nature of this ecosite is largely due to its occurrence on steep, south facing slopes, coarse-textured substrates, and well- to rapidly drained morainal parent materials. Nutrient status ranges from poor to rich, with a greater abundance of hairy wild rye and deciduous trees occurring on the more productive sites. Pine and aspen stands in this ecosite undergo succession into Engelmann spruce or fir-dominated stands. Succession is slow due to dry conditions and the fact that the fire interval is generally shorter than the time required for Engelmann spruce to become dominant.

Indicator Species (Ranked by Abundance):

1. Aspen
2. Canada buffaloberry
3. Hairy wild rye
4. Juniper
5. Bearberry

C2 Hairy Wild Rye Pl-Aw

Ecosite Photo

Key Features

- Subxeric to mesic site occurring on south aspects. Topographic position is understudied.
- Slopes range from 6% to 100%
- Medium nutrient levels.
- Overstory dominated by aspen and lodgepole pine.
- Understory is dominated by hairy wild rye and regenerating aspen.

Key Indicator Plants (in order of dominance)

Trees
-Aspen
-Lodgepole pine

Shrubs:
-Aspen
-Lodgepole pine
-Engelmann spruce
-Willow
-Green alder
-Bearberry
-Prickly rose
-Canada buffaloberry
-White meadowsweet
-Juniper

Forbs:
-Heart-leaved arnica
-Felwort

Grasses:
-Hairy wild rye

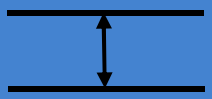
Mosses
-Brown moss
-Schreber's moss

Lichens:
-Powdered sunshine

Soil Characteristics

HUMUS FORM

-No data-

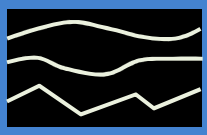


ORGANIC THICKNESS

0 to 5 cm

DRAINAGE

Moderately well to rapidly drained



MAJOR SOIL ORDERS

Brunisols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy		•		
Silty Loamy				
Fine Loamy Clayey				
Mineral				
Peaty				

☐ Organic ☐ Shallow

Subalpine **Meadow**

Ecosite Photo

Description

The wet nature of the Subalpine meadow ecosite is largely due to its occurrence on gentle slopes in water-receiving topography. This ecosite generally occurs on nutrient-rich soils and plant communities are similar to those occurring in the Subalpine grassland. However, meadow ecosites occur on gentler slopes and have considerably higher moisture levels than grassland ecosites. The meadow ecosite is considered an edaphic climax community, as fluvial parent materials and frequent disturbances keep this community at an early successional stage. Although some areas in the ecosite may be successionally stable, cold air drainage, frost, and persistence of snow late into summer prevent tree development.

Indicator Species (Ranked by Abundance):

1. Willow
2. Dwarf birch
3. Shrubby cinquefoil
4. Meadow rue
5. Tall larkspur
6. Common yarrow
7. Hairy wild rye
8. Sedge

E2 Forb Meadow

Ecosite Photo

Key Features

- Subxeric to mesic site occurring on south aspects. Topographic position is understudied.
- Slopes range from 6% to 100%
- Medium nutrient levels.
- Overstory dominated by aspen and lodgepole pine.
- Understory is dominated by hairy wild rye and regenerating aspen.

Key Indicator Plants (in order of dominance)

Trees
-None

Shrubs:
-None

Forbs:
-Meadow rue
-Common yarrow
-Tall larkspur
-Wild strawberry
-Wandering daisy
-Tall lungwort
-Northern bedstraw
-Showy loco-weed
-Arrow-leaved coltsfoot

Grasses:
-Hairy wild rye
-Tufted hair grass
-Sedge
-Bellard's kobresia
-Slender wheat grass
-Mountain timothy
-June grass
-Bluegrass

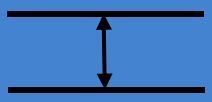
Mosses
-Hairy screw moss

Lichens:
-None

Soil Characteristics

HUMUS FORM

Raw Moders and Moders



ORGANIC THICKNESS

6 to 15 cm

DRAINAGE

Imperfectly to well-drained

MAJOR SOIL ORDERS

Brunisols, Regosols and Luvisols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy		•		
Fine Loamy Clayey		•		
Mineral				
Peaty				

☐ Organic ☐ Shallow

Subalpine **Bog**

Ecosite Photo

Description

The bog ecosite is rare in the Subalpine, occurring on level and depressional sites where water tables are high and water drainage is slow or impeded. Due to the restricted movement of water, this ecosite is characterized by an accumulation of decaying organic matter, particularly peat and feather mosses. Soils have high organic content, but range between poor and medium in nutrients. Due to high elevations, soils may remain frozen throughout the year. Black spruce are the dominant tree in this ecosite, but are typically stunted and unmerchantable. This ecosite is considered an edaphic climax maintained by high water tables. Hydrarch succession to this climax stage is extremely slow.

Indicator Species (Ranked by Abundance):

1. Black spruce
2. Labrador tea
3. Bog cranberry
4. Cloudberry
5. Peat moss

H1 Treed Bog

Ecosite Photo

Key Features

- Hygric to subhydric site occurring on level and north aspects. Topographic position understudied.
- Slopes range from 0% to 5%.
- Poor to medium nutrient levels.
- Overstory is dominated by black spruce.
- Understory is dominated by Labrador tea, bog cranberry, knight's plume moss, and Schreber's moss.

Key Indicator Plants (in order of dominance)

Trees
-Black Spruce

Shrubs:
-Labrador tea
-Bog cranberry
-Black spruce
-Willow
-Bog rosemary

Forbs:
-Cloudberry
-Woodland horsetail

Grasses:
-Sedge

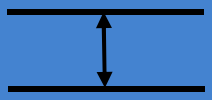
Mosses
-Knight's plus moss
-Schreber's moss
-Stair-step moss
-Peat moss
-Slender hair-cap

Lichens:
-Studded leather lichen
-Reindeer lichen

Soil Characteristics

HUMUS FORM

Peatymors

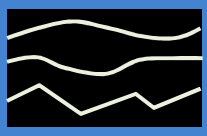


ORGANIC THICKNESS

≥80 cm

DRAINAGE

Poorly drained



MAJOR SOIL ORDERS

Mesisols, and Cryosols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy		•		
Fine Loamy Clayey		•		
Mineral				
Peaty				

☒ Organic ☐ Shallow

H2 Shrubby Bog

Ecosite Photo

Key Features

- Hygric site occurring on level aspects in level or depressional topographic positions.
- Nutrient poor; less frequently very poor.
- Vegetation dominated by Labrador tea, bog cranberry, peat moss, and common hair-cap moss.

Key Indicator Plants (in order of dominance)

Trees
-None

Shrubs:
-Labrador tea
-Bog cranberry
-Blueberry
-Black spruce
-Lodgepole pine
-Dwarf birch
-Small bog cranberry

Forbs:
-Cloudberry

Grasses:
-None

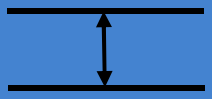
Mosses
-Peat moss
-Common hair-cap
-Schreber's moss
-Slender hair-cap moss

Lichens:
-Reindeer lichens
-Spraypaint lichen

Soil Characteristics

HUMUS FORM

No data



ORGANIC THICKNESS

26 to 39 cm

DRAINAGE

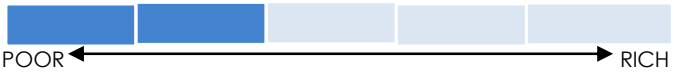
Very poor to imperfectly drained

MAJOR SOIL ORDERS

Mesisols and Gleysols

Soil Moisture

Soil Nutrient



Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey				
Mineral				
Peaty				•

 Organic

 Shallow

Subalpine **Fen**

Ecosite Photo

Description

The Subalpine fen occurs on level or depressional sites where water flows at or near the ground surface for at least part of the year. Wet, oxygen-rich conditions result in the decomposition of sedges and mosses and the accumulation of decaying organic matter. Both nutrient-rich and nutrient-poor fens are classified together in the subalpine fen ecosite; however, soils are most frequently nutrient-rich and alkaline. The tree canopy is dominated by black and/or Engelmann spruce in treed fens. Dwarf birch or willows dominate shrubby areas, and sedges dominate graminoid phases. Treed phases of black and Engelmann spruce form the climax community if the moisture regime is suitable for their establishment. Overall, this ecosite is in the early stages of hydrarch succession and the types of species, direction, and rate of succession are related to changes in hydrology. Succession and recovery from disturbance in this ecosite are extremely slow.

Indicator Species (Ranked by Abundance):

1. Black spruce
2. Tamarack
3. Willow
4. Dwarf birch
5. Labrador tea
6. Common horsetail
7. Sedge
8. Peat moss
9. Tufted moss
10. Golden moss
11. Brown moss

I3 Graminoid Fen

Ecosite Photo

Key Features

- Hydric to subhydric site occurring on level sites.
- Medium nutrient levels.
- Vegetative community is dominated by sedges and tufted moss.

Key Indicator Plants (in order of dominance)

Trees
-None

Shrubs:
-None

Forbs:
-Three-flowered avens
-Showy Jacob's ladder
-Arrow-leaved coltsfoot
- Dwarf raspberry
-Brook ragwort

Grasses:
-Sedge
-Tufted hair grass
-Tall cotton grass

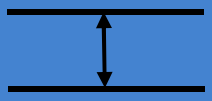
Mosses
-Tufted moss
-Golden moss
-Marsh magnificent moss
-Common leafy moss
-Fern moss
-Brown moss

Lichens:
-None

Soil Characteristics

HUMUS FORM

Peatymors



ORGANIC THICKNESS

≥80; less frequently between 40 and 59 cm

DRAINAGE

Poor to very poorly drained

MAJOR SOIL ORDERS

Mesisols and Gleysols

Soil Moisture

Soil Nutrient

Summary of Soils

	VERY DRY	DRY	MOIST	WET
Sandy				
Coarse Loamy				
Silty Loamy				
Fine Loamy Clayey				
Mineral				
Peaty				•

Organic

Shallow

Glossary

Achenes A small, dry, hard, 1-seeded fruit resembling a nut.

Aeolian Parent materials deposited by the wind; well sorted sands and coarse silts which are not compacted.

Alkaline Having a pH of greater than 7; basic.

Alternate Leaves Leaves arranged on either side of stem which are not opposite each other.

Ah horizon A mineral soil horizon which is darker than the layer below it, and having less than 17% organic content by weight.

Auricles A small projecting lobe or appendage usually attached at the bottom of an organ.

Brunisols Brunisolic soils have more soil development than Regosols; however, they lack the amount of soil horizon development as other soil orders. Brunisols are well to imperfectly drained, and occur in variety of habitats including: boreal forest, mixed wood, shrubby and grass areas, and heath and tundra.

Capitulum Crowded branches at the stem in *Sphagnum* spp., creating a "head".

Catkins A long, bracted spike or raceme, with many small, naked flowers without petals; usually of one sex.

Chinook A warm, dry, westerly wind which blows down the eastern slopes of the Rocky Mountains.

Colluvium A mix of materials of different sizes which accumulate on lower slopes and flat surfaces, having been transported by gravity.

Compound Leaves Divided into smaller parts; leaves made up of two or more leaflets.

Cymes Inflorescence where the inner, terminal flowers bloom first.

Depression An area occurring usually at the base of a slope, or on level ground, where it is concave in all directions creating a bowl shape.

Dimorphic Of two forms.

Dioecious Male and female flowers occurring on separate plants.

Disc Flowers A type of flower in the Aster family with a tubular corolla.

Drupes A fleshy, generally 1-seeded fruit, with a hard covering around the seed.

Ecotones The transition zone or edge between two different communities.

Edaphic Climax Where a community reaches a climax based largely on soil processes.

Fascicles A bundle of branches from a single point on the stem.

Fibrisols Fibrisols are an organic soil largely comprised of under-decomposed, fibric, organic materials. They occur in peaty areas dominated by Sphagnum spp. mosses.

Follicle	A dry, 1-seeded fruit composed of one carpel which splits along one side at maturity.
Fluvial	Parent materials which have been sorted and deposited by the action of rivers or streams.
Glabrous	Smooth, hairless, and glandless.
Glacial Till	Parent materials which are not sorted or consolidated and which have been transported by glaciers.
Glaciofluvial	Parent materials deposited by streams flowing from glaciers.
Glacio-lacustrine	Parent materials which have been deposited by glacial lakes.
Gleysolic	Soils which have been exposed to long periods of intermittent or continuous saturation with water and reducing conditions. Gleysols occur in depressions and level lowlands that become saturated with water.
Glume	One of two bracts at the base of a spikelet in a grass flower.
Graminoid	Grass and grass-like plants including sedges and rushes.
Humus	Soil horizons which occur at or near the surface and are composed of organic matter and are either separate or mixed with mineral soil.
Hydrach succession	A change in plant species composition and abundance over time, in a specific direction in wetted areas; i.e. open water undergoes succession and changes over time into a treed bog through the accumulation of sediment and organic matter and changing water levels.
Hydric	A habitat characterized by wet conditions. Where water is moved very slowly creating a water table at or above the surface all year; typically found in poor drainage sites at the bottom of slopes in level or toe positions.
Hygric	A habitat characterized by moist conditions. Water is removed slow enough to allow the soil to remain wet during the growing season; occurs in lower slopes in seepage areas with imperfectly to poor drainage.
Hypanthium	Ring or cup around the ovary where the petals, sepals, and stamens are fused.
Inclined	Capsules which are less than vertical, but between erect and horizontal.
Lemma	The lower of two bracts which enclose a grass flower.
Ligules	In the grass family: a flat, membranous projection at the top and inner side of a leaf, where the blade and sheath meet.
Loamy	Having the characteristics of loam which is a soil composed of a mixture of sand, clay and organic materials.
Lower Slope	The area towards the bottom of a slope with a definite aspect and usually a concave profile.
Luvisols	Luvisols are light coloured soils with a layer of clay; usually occurs on well drained to imperfectly drained sites in sandy loam to clay based parent materials in deciduous, mixed wood, or forest-grassland transition in moderate to cool climates.

Mesic	Habitats characterized by moderate moisture conditions; having a medium level of moisture as opposed to hydric (wet) and xeric (dry).
Mesisols	Mesisols are organic soils which are at a decomposition level between the under-decomposed fibrisols and advanced decomposed humisols.
Microclimates	The climate on a localized small scale that determines the presence and distribution of species and which is different than the general climate of an area.
Middle Slope	The middle slope is between the upper and lower slope, and has a definite aspect with a straight profile; neither convex nor concave in shape.
Moder	A humus form where there is some intermixing between the mineral and organic layers creating gradual transition between organic and mineral layers. Soil fauna presence is high and leads to partly decomposed vegetation matter which is loose and not matted as in Mor humus forms.
Monoecious	Separate male and female flowers borne on the same plant.
Morainal	Materials which have been directly deposited by glacial action.
Mors	Humus form occurring mostly in coniferous and boreal forests where there is low biological activity in the soil. Mineralization of organic material is slow and creates layers. The majority of this humus form is the layer which is comprised of relatively intact vegetation matter interwoven with fungal hyphae.
Mulls	Humus form occurring in mostly deciduous stands where a humus rich layer of forest soil occurs with mixed organic and mineral matter blended into the upper mineral layer without distinct layering. Ah horizon is large and insect droppings and earthworms are common.
Nodes	Where a leaf is, or was, attached to the stem.
Nutlets	A thick walled achene which resembles a nut.
Opposite Leaves	When leaves are situated directly across from each other at the same node.
Organic	Soils largely comprised of organic materials that have been saturated with water for prolonged periods of time. Organic soils occur in poor to very poorly drained depressional and level topography.
Palmately	Divided into lobes or leaflets from a common point.
Panicle	A loosely branched inflorescence made up of stalked flowers.
Pappus	Structures such as hairs, bristles, and scales, which are borne on the achenes of Asters.
Parent Material	Surficial material which has been deposited by various processes from which soil develops from.
Peatymors	Humus form with a definite boundary between the organic and mineral layers and is comprised of "Of", "Om" and "Oh" layers; generally occurs in lowlands in poor to poorly drained sites.
Pendent	Hanging.

Perennial	A plant which grows for 3 or more years, usually producing fruit each year.
Pinnately	A feather-like, compound leaf where leaflets lie on either side of the main axis.
Plicate	Folded into longitudinal pleats and furrows.
Podzols	Soils which occur in coniferous forests and have "Bh", "Bhf", or "Bf' horizons. The dominant accumulation is amorphous material mainly comprised of humified organic matter combined with Al and Fe.
Pomes	A fruit with a core.
Pubescent	With hairs.
Ray Flowers	A flower in the aster family where the corolla is flattened and is usually situated at the edge of the flower head.
Raw Moders	A transitional humus form between moders and mors. L, F, and Hi layers occur. Thin Hi layer is composed of organics granules mixed with loose mineral grains.
Regosols	Soils with an insufficient A or B horizon, the early stages of soil formation and occur on young parent materials.
Rhizomes	A creeping underground stem differentiated from the roots by nodes, buds or scales.
Seta	Stalk supporting the capsule in mosses.
Sheaths	An organ which surrounds, or partially surrounds another organ, such as the sheath of a leaf blade surrounding the stem.
Spinules	Small spines.
Spikelets	The flowering unit of a grass flower cluster.
Sporophyte	The spore bearing part of a moss, produced sexually, attached and dependent on the gametophyte stage; consists of foot, seta and capsule.
Stipulate	A leaf like appendage at the bottom of a leaf stalk.
Subhydric	Water is removed slow enough to allow it to be at, or near the surface for most of the year; occurs in poor to very poorly drained areas, depression and level topography.
Subhygric	Water is removed slow enough to allow soil to be wet for a large portion of the growing season; occurs in lower slopes and in areas which are moderately well to imperfectly drained.
Submesic	Water is moved readily in relation to its source and soil remains moist for some time after precipitation; occurs in upper slopes in rapidly to well drained areas.
Subxeric	Water is moved rapidly in relation to its source and soil is moist for some time after precipitation; occurring on upper slopes in rapidly drained areas.
Successional	The replacement of one community by another which eventually ends in a terminal community called the climax.
Toe	The toe is found below or adjacent to the lower slope and is defined by a definite decrease in slope.

Upper Slope	Occurs at the top of a slope and has a definite aspect, it has a convex shape and lies below the crest of the slope.
Xeric	Habitat characterized by dry conditions. Water is moved very rapidly in relation to its source and soil is moist for a brief time after precipitation; occurs on very rapidly drained areas in crest and ridge positions.
Zonal	Sites which best represent the characteristic climate, soil and topography of an area. They are intermediate in terms of moisture and nutrient regimes, and occur on middle slopes.

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Appendix 1
Indicator Plants

Trees

Aspen (Populus tremuloides)

- Small to medium sized, slender, deciduous tree.
- Oval to circular, round-toothed leaves with a sharp pointed tip and flattened stalk; dark dull green above, paler below.
- Flowers are drooping catkins appearing before leaves; dioecious.
- Fruit are capsules filled with tiny seeds with soft hairs.
- Bark smooth; whitish to tinged green.

Balsam Poplar (Populus balsamifera)

- Deciduous tree with deeply furrowed bark.
- Thick, egg to lance shaped leaves, ending in a sharp tip, and having a round to heart shaped base; shiny dark green above, silvery whitish or brownish below.
- Flowers in catkins appearing before leaves; dioecious.
- Sap/resin is fragrant.
- Fruit is an egg shaped, hairy capsule

Black Spruce (Picea mariana)

- Small, shrubby coniferous tree; lower branches dropping and upper branches clustered.
- Young twigs are covered in tiny rusty hairs.
- Thick, short, stiff, 4 sided needles, on all sides of branch point upwards.
- Seed cones are small, oval, dark brown or purplish.

Trees

Lodgepole Pine (Pinus contorta var. latifolia)

- Coniferous tree with a pyramidal crown and upwardly curved branches, bark is scaly and reddish brown to grayish.
- Twigs are orange to brown in colour.
- Needles are in pairs with a papery sheath near the bottom.
- Tan coloured seed cones are egg shaped, and curve or bend backward on the branch; scales have stiff sharp tip.

White Spruce (Picea glauca)

- Coniferous tree with smooth, hairless, shiny, young, grey or yellow coloured twigs and spreading or dropping branches.
- Needles spirally arranged (on all sides of the branches), sharp, stiff, four-sided and are aromatic.
- Seed cones hang down and are light brown to purplish coloured.

Tamarack (Larix laricina)

- Deciduous tree with needles growing in groups of 10 to 20 on small woody protuberances
- Leaves are soft and pale to bluish green, turning yellow in autumn.
- Grows up to 20m tall; bark is reddish brown and scaly.
- Seed cones are erect while pollen cones are egg-shaped

Shrubs

Bearberry (Arctostaphylos uva-ursi)

- Trailing, evergreen shrub.
- Leathery, oval to spoon shaped leaves.
- Small, urn shaped, dropping flowers in clusters at branch tips; white or rose coloured.
- Dull red berries.

Blueberry (Vaccinium myrtilloides)

- Low shrub, forming dense clusters, growing from between 10 to 50 cm tall with velvety hairs on twigs.
- Alternate, thin, elliptic to oblong, lance-shaped leaves with smooth edges and covered in soft-hairs.
- Greenish-white to pinkish bell shaped flowers borne singly or in clusters at branch tips.
- Blue berries.

Bog Cranberry (Vaccinium vitis-idaea)

- Mat forming, evergreen shrub trailing on the ground.
- Leaves are leathery, elliptic to egg-shaped with rounded tips; dark green above and pale with dark spots below; edges are smooth and rolled under.
- Drooping, pinkish cup-shaped flowers in clusters at branch tips.
- Red berries.

Shrubs

Canada Buffaloberry (Shepherdia canadensis)

- Small, spreading to erect shrub with brown branches; bark is covered in tiny brown and silver scales.
- Leaves are simple, opposite, elliptic to narrowly-oval, and thick; dark green above and silvery scaled with rusty dots below.
- Yellowish-brown, inconspicuous flowers growing singly or in small clusters; dioecious.
- Bright red, translucent juicy berries.

Dogwood (Cornus stolonifera)

- Shrub with bright red or sometimes green to purplish, smooth stems, growing erect or spreading; 1 to 3 m tall.
- Oval to egg or lance-shaped, opposite leaves with 5 to 7 prominent parallel veins converging at the pointed tip; dark green above, lighter and hairy below.
- Flat topped, white to greenish flower clusters borne at branch tips.
- Fruit are white, bitter, juicy drupes.

Dwarf Birch (Betula pumila var. glandulifera)

- Many branched; slender shrub is either low and spreading or ascending/erect.
- Alternate leaves, simple leaves are shiny bright green above, lighter below; the leaves have a wedge-shaped base, rounded at tip, 10-15 teeth per side and prominent lateral veins.
- Flowers in catkins.
- Fruits are small winged flat nutlets.

Shrubs

Juniper (Juniperus spp.)

- Shrub or small tree.
- Scale-like leaves are opposite or in whorls of three.
- Pollen cones small and catkin-like, while seed cones appear like small green to bluish berries.

Labrador Tea (Ledum groenlandicum)

- Erect, evergreen shrubby with a spicy fragrance.
- Leaves are rusty coloured below, with dense woolly hairs and green above.
- Flowers white, with long white hairy stalks, and they are clustered at the branch tips.
- Fruits are hairy capsules in clusters at the branch tips.

Prickly Rose (Rosa acicularis)

- Bushy, shrub with slender thorns.
- Alternate, compound leaves with 3-9 oblong leaflets.
- Single, pink, showy flower on short side branches.
- Spherical to pear shaped red berry (hip).

Shrubs

Saskatoon berry (Amalanchier alnifolia)

- Many branched low, spreading shrub or small erect tree to 5 m tall.
- Alternate, thin leaves, which are oval shaped and are rounded at the tip and sharp, coarsely toothed on the top half.
- White showy flowers in short leafy clusters.
- Purple to blackish, juicy, sweet berry-like pomes (miniature apples).

Shrubby Cinquefoil (Potentilla fruticosa)

- Spreading to erect shrub with reddish-brown, shredding bark.
- Leaves are compound in 3-7 crowded leaflets, slightly hairy, grayish-green and rolled under edges.
- Yellow, buttercup-like flowers, either singly or in clusters at branch tips.
- Fruits are hairy achenes.

Silver-berry (Elaeagnus commutata)

- Shrub or small tree with twigs covered in rusty brown and silvery scales.
- Leaves are alternate, silver, and with tiny star shaped hairs on upper and lower surfaces sometimes with brown scales; oval to egg or lance shaped.
- Yellowish flowers in clusters of 3 or 4 at leaf axis.
- Silver, oval berries

Shrubs

Small bog Cranberry (Oxycoccus microcarpus)

- Small, creeping, evergreen shrub with slender, thread-like stems.
- Leathery leaves are dark green above, grey-waxy below with rolled under edges, widely spaces along stem.
- Drooping, pink flowers bend backwards sharply appearing like shooting stars.
- Pale pink to dark red berries.

Willow (Salix spp.)

- Shrubs or occasionally trees.
- Leaves usually narrow and stipulate.
- Flowers in catkins.
- Fruit in 2-valved capsules.

Forbs

Avens (Geum spp.)

- Perennial, hairy wildflower.
- Alternate leaves are mostly basal, with lower leaves pinnate and upper leaves smaller, and bract-like.
- Hypanthium is cup or saucer shaped.
- Fruit are achenes.

Cloudberry (Rubus chamaemorus)

- Low, unbranched perennial, growing from creeping rhizomes.
- Leaves are round to kidney shaped, slightly leathery, and shallowly 5 or 7 lobed; edges are saw-toothed.
- White solitary flower on stem tip; dioecious.
- Fruit is a large druplet in raspberry like cluster, soft, reddish and amber to yellow when mature.

Common Horsetail (Equisetum arvense)

- Unbranched, thick, brownish to whitish fertile stem, appearing in spring and has 8 to 12 large, brown, acuminate teeth; contains spore bearing cone at the tip.
- Sterile stem is green with whorls of branches with 10 to 12 ridges and with 12 sharp teeth at the sheaths; attached at nodes.
- First branch segment on sterile stem longer then adjacent stem sheath.

Forbs

Common Yarrow (Achillea millefolium)

- Aromatic perennial.
- Alternate leaves are fern-like, divided two or three times pinnately into segments.
- White flowers grouped in many heads in a short, flat-topped cluster; 5 white, ray flowers and 10 to 30 yellowish disc flowers.
- Hairless flattened achene.

Long-stalked Chickweed (Stellaria longipes)

- Branched, slender perennial forming mats.
- Leaves are opposite, stiff, shiny and hairless tinged bluish grey; linear to lance shaped.
- White flowers are on slender erect stalks, with five petals which are deeply 2 lobed making it appears as 10 petals.
- Fruit are dark brown to purplish black shiny capsules.

Cow Parsnip (Heracleum lanatum)

- • Tall perennial with thick, hollow, hairy stems; pungent aroma when mature.
- Compound leaves with 3 lobed to coarse toothed, veined leaflets.
- Many white flowers clustered together in a flat-topped umbel.
- Fruit is a schizocarp.

Forbs

Meadow Horsetail (Equisetum pratense)

- Fertile stem unbranched at first, but becoming branched with whorls of branches; pale sheaths with slender teeth.
- Spore cone is slender.
- Solitary, sterile stems are whitish-green, with 10 to 18 minutely roughened ridges, and many whorled branches; sheaths are pale with slender, brown, white margined teeth.
- First segment on sterile stem is no longer than adjacent sheath.

Pasture Sagewort (Artemisia frigida)

- Aromatic, silvery grey perennial.
- Leaves are alternate, finely divided, silvery grey in colour, and hairy.
- Yellow disk flowers in numerous flower clusters growing in a narrow leafy cluster.
- Fruit is a smooth achene with no pappus.

Showy Aster (Aster conspicuus)

- Single, unbranched perennial with glands and stiff hairs near the top of stem.
- Leaves are sharp-toothed, stalkless, clasping, stiff-hairy and are rough and "sandpapery" above when mature.
- Purple ray flowers and yellow disc flowers form round to flat-topped clusters at the stem tips; lance-shaped bracts are glandular.
- Fruits are hairless achene.

Forbs

Spreading Dogbane (Apocynum androsaemifolium)

- Perennial plant arising from stout woody base and becoming spreading.
- Opposite, simple, egg-shaped leaves have a sharp tip and are somewhat hanging and spreading.
- Pink, bell-shaped flowers in showy clusters at the stem tips and leaf axils.
- Fruits are paired, hanging, cylindrical pods.

Tall Larkspur (Delphinium glaucum)

- Large, stout perennial, growing 1 to 2 m tall with a hairless stem.
- Leaves are palmately 5 to 7 lobed, alternate, and hairless or sparsely hairy.
- Deep blue to purple flowers, showy, with prominent straight spurs, growing in long, loose clusters at the stem tips.
- Fruit is an erect, hairless to slightly hairy follicle.

Tall Lungwort (Mertensia paniculata)

- Perennial wildflower growing 20 to 80 cm tall from 1 or several hairy stems.
- Rough hairy, alternate leaves with prominent veins; basal leaves are long stalked, egg to heart-shaped, whilst stem leaves are narrower, smaller, and short stalked to stalkless.
- Fruit are four wrinkled nutless.

Forbs

Veiny Meadow Rue (Thalictrum venulosum)

- Perennial wildflower growing between 20 and 70 cm tall.
- Bluish-green, strongly veined, compound, alternate leaves divided twice into 3's; long stalked.
- Greenish flowers with no petals forming a dense, narrow, many flowered cluster at stem tip.
- Fruit is a small, ribbed, green achene.

Western Canada Violet (Viola canadensis)

- Perennial wildflower growing from thick, ascending rhizomes.
- Long-stemmed, sharply pointed, heart-shaped leaves, with coarse rounded teeth on the edges.
- White, purplish or pinkish flowers borne singly on the plant; petals are yellow at the base and the lower 3 have purple lines, upper two are fringed with purple at the back and side petals are bearded.
- Fruit is an egg-shaped capsule.

Woodland Horsetail (Equisetum sylvaticum)

- Green to tan, or pink-brown coloured, fertile stem with compound branches.
- Sheaths flaring and reddish-brown near the top, with teeth united, forming 3 or 4 lobes.
- Twice branched, green, sterile stems with 10 to 18 minutely spiny ridges; each ridge having 2 rows of sharp spinules.
- Spore cluster in a blunt tipped cone on the fertile stem.

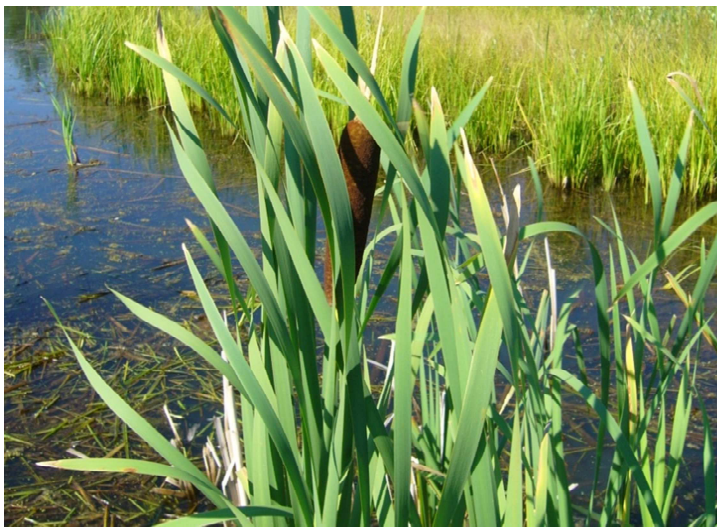
Grasses, Sedges and Rushes

Bellard's Kobresia (Kobresia bellardii)

- Densely tufted, perennial, slender sedge; conspicuous, old fibrous, brown leaf sheaths.
- Leaves are threadlike and rolled inwards; stems equal or slightly larger than leaves.
- Single, brownish, linear spike with staminate upper spikes and androgynous lower ones with one female and one male floret.

Bulrush (Scirpus lacustris spp. validus)

- Slender, perennial, aquatic sedge with soft, spongy stem.
- Leaves often reduced to bladeless sheaths or otherwise near stem base.
- Reddish-brown flower clusters contain many egg-shaped spikelets.
- Spikelets are hairy and are borne from the base of an erect green bract.



Common Cattail (Typha latifolia)

- Tall (1 to 2 m) perennial emergent with pithy, cylindrical stem.
- Grass-like, alternate leaves, slightly spongy and sheathing stem base.
- Many male (smaller, yellowish cone shaped at top) and female (dark brown at bottom) in a densely clustered cylindrical spike at tip of stem.
- Fruit is an elliptic achene with long slender hairs at the base.

Grasses, Sedges and Rushes

Fringed Brome (Bromus ciliatus)

- Loosely tufted, slender, perennial grass growing 60 to 100 cm tall.
- Leaves are flat, with either hairless or sparsely soft-hairy sheaths near the bottom; nodes are glabrous or pubescent.
- Flowers in an open, loose, drooping panicle.
- First glume is narrow and 1-veined while the second glume is lance shaped and 3-veined.
- Spikelets greenish with 4 to 10 flowered lemmas with long hairs near the edges, and hairless or sparsely hairy on back; rarely hairless throughout.

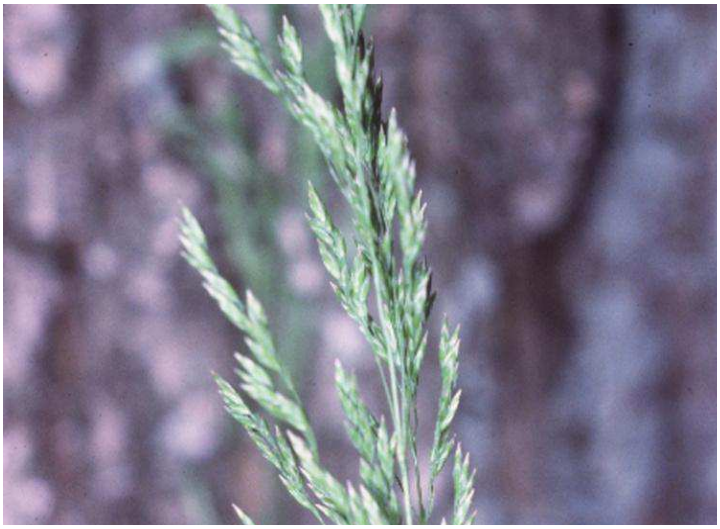
Hairy Wild Rye (Elymus innovatus)

- Tufted, perennial grass growing 0.5 to 1 m tall from slender rhizomes.
- Leaves are thin, stiff, flat or inrolled with well-developed auricles; hairless beneath and rough hairy above and often covered in blue grey "bloom".
- Very dense and fuzzy purplish spike; two spiklets per node with 3 to 5 flowers.
- Glumes are very narrow with long soft hairs, lemmas are broad and hairy.

June Grass (Koeleria macrantha)

- Perennial grayish-green grass growing to 20 to 50 cm tall in dense tufts.
- Still, flat, slightly inrolled leaves grow mostly at stem base.
- Pale green to purplish flowers grow in dense spike-like panicles.
- Spiklets with 2 to 4 flowers; upper glume has 3 to 5 veins while lower glume is smaller and 1 veined.
- Lemmas are thin and pointed with a short bristle.

Grasses, Sedges and Rushes



Kentucky Bluegrass (Poa pratensis)

- Slender perennial grass growing 30 to 100 cm tall; sod forming.
- Leaves are dark green, soft, flat or folded, and with a distinct boat shaped at the tip; no auricles.
- Flowers in a green to purplish, dense to open pyramid panicle, which tends to curve to 1 side when mature.
- Spikelets are 3 to 5 flowered; lemmas with 5 veins and tufts of white hairs near the base.

Marsh Reed Grass (Calamagrostis canadensis)

- Loosely tufted, tussock-forming perennial grass growing 50 to 150 cm tall.
- Leaves are flat, rough, have membranous ligules and no auricles.
- Flowers in a purplish, but occasionally green or straw coloured, drooping panicle; narrow and dense but loose and relatively open at maturity.
- Spikelets with 1 flower; glumes are pointed and slender, while lemmas are shorter, white hairy, and with a straight awn from below the middle.

Northern Wheat Grass (Agropyron dasystachyum)

- Perennial grass, growing from long, creeping rhizomes.
- Leaves are flat or rolled inward and have a bluish grey “bloom”.
- Spikelets with 4 to 8 flowers; overlapping.
- Glumes with 3 to 5 veins and lemmas hairy, short-awned or awnless.

Grasses, Sedges and Rushes

Quack Grass (Agropyron repens)

- Perennial grass, growing from long, creeping, yellow rhizomes.
- Leaves are thin and flat.
- Spikelets with 4 to 8 flowers; glumes with 3 to 7 veins.
- Lemmas with awns and are similar in size and shape to the glumes.

Rush (Juncus sp.)

- Perennial herbs growing between 20 and 80 cm with smooth stems.
- Leaves usually cylindrical and tapering at ends or reduced to bladeless sheaths; stem leaves usually open sheathes.
- Flowers in clustered in loosely branched or compact cymes.

Sedge (Carex sp.)

- Perennial herbs with triangular stems.
- Leaves are long, narrow and sheathing.
- Spikes with a leaf-like or reduced bract underneath.
- Plants are either monoecious or dioecious, and male and female flowers are either in same spike or in different parts of the spike.

Slender Wheat Grass (Agropyron trachycaulum)

- Tufted perennial with slender, erect, or slightly curved spike growing between 50 and 90 cm tall.
- Several rough-hairy, flat leaves with short, or no auricles and short ligules.
- One spikelet per node with 5 to 8 flowers; glumes with 3 to 7 veins and hairy lemmas with short sharp tip or awn.

Mosses and Lichens

Awned Hair-Cap Moss (Polytrichum piliferum)

- Small, light green to brown moss, forming tufts; leafless at the stem base.
- Leaves that point up when dry and out when wet; tip ends in a colourless point which appears as a whitish coating on the plant.
- Sporophyte stalk is brown is thick, wavy, and capsules are reddish brown and cubic.

Brown Moss (Drepanocladus uncinatus)

- Slender and compact, golden green, or yellowish-olive coloured moss.
- Stems are pinnately branched.
- Leaves are narrow and taper to a distinctly toothed apex; turned in same direction and curve like crescent moons.
- Leaves are plicate.
- Curved cylindrical capsule is borne on an orange-brown seta.

Golden Moss (Tomenthypnum nitens)

- Golden coloured moss with a sharply acuminate stem and leaf apices.
- Leaves are stiff, erect, strongly plicate, and costate.
- Stems are covered in reddish-brown felt.
- Capsules oblong to cylindrical shaped, smooth and inclined or horizontal on long smooth stalks.

Mosses and Lichens

Peat Moss (Sphagnum sp.)

- Moss with spirally arranged branches at apex of an upright stem, forming a capitulum.
- Fascicles made up of clustered branches along the stem.
- Branches are usually dimorphic and are either spreading or pendent.
- Sporophyte is a spherical, brown to black capsule, borne on a very short seta.

Tufted Moss (Aulacomnium palustre)

- Yellow-green moss becoming brown when dry, stems erect, usually unbranched and with reddish, brown, fuzzy covering.
- Leaves are lance to egg-shaped and are sharply pointed and twisted when dry.
- Sporophyte stalk is red-brown, twisted when dry, with a reddish brown capsule which is inclined and strongly grooved.

Wiry Fern Moss (Thuidium abietinum)

- Yellow or dark green to brown, stiff, wiry, pinnately branched moss with abundant fuzz on the stem.
- Leaves are oval and furrowed and overlap and press against the stem when dry.
- Sporophyte stalk is reddish and slightly bent or twisted; capsule is strongly curved and inclined.

Mosses and Lichens

Lichen

- Lichens are fungi which have a symbiotic association with algae.
- Crustose lichens attach their whole thallus to a substrate and are typically found on rock.
- Foliose lichens are bilaterally symmetric and are leaf-like or they have distinct lobes.
- Fruticose lichens are radially symmetric and are therefore more or less round.