Vegetation Communities of Marguerite Crag and Tail Wildland Provincial Park

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INTRODUCTION

Marguerite Crag and Tail Wildland Provincial Park, a newly established Park in located in northeastern Alberta, encompasses portions of Townships 100 –102 in Ranges 2-5, West of the 4th Meridian.

This park straddles the Central Mixedwood and Athabasca Plain Natural Subregions transitional area. The terrain in the park is defined by the crag and tail topography created through the actions of glacial ice and meltwater. Crags refer to the knobs or areas of exposed bedrock located on the up-ice side of the landform, while the tails are the trailing elongate bodies on the lee side of the landform and generally consist of erodible bedrock (American Geological Institute 1984 in Alberta Natural Heritage Information Centre 1998). The bedrock patches in this area are generally quite small; however they are very distinct, and do provide defining character for the park landscape

This park is located in a relatively remote region of the province and little documented information is currently available for this area. Much of the information currently used to describe this area has been extrapolated from more intensively studied areas near Lake Athabasca to the north and the Athabasca Sand Dunes Ecological Reserve to the northwest. This vegetation study was one component of a multi-disciplinary project, which was conducted to develop a preliminary inventory of the natural components of the area. The objective of this vegetation study was to define some of the more commonly occurring plant communities found within the park and to identify the site conditions with which these communities are associated.

METHODS

Field Investigation

The data discussed in this report was collected using parameters provided in the *Ecological Land Survey Site Description Manual* (Alberta Environmental Protection 1994). Vegetation data was collected by M. Meijer, and site and soils data was collected by C. Jedrzycki, at 19 sites over a period of 4 days from June 12-15, 2000. Information was collected for general community classification and mapping purposes, therefore it was more important to observe as many of the more common terrain types and vegetation communities possible than to obtain detailed species lists for the field sites sampled.

Field sites were selected prior to the actual fieldwork. Selection was conducted to obtain coverage of the common variations in the landscape (terrain and

vegetation) observed on maps and air photos. Accessibility was also of major importance. Field sample plots were located in areas with a homogenous vegetation composition representative of the area to be defined. Attempts were made to avoid transitional areas.

Coverage for dominant species and as many other species as possible was recorded. Species that were present in trace amounts or not easily observed may have been omitted. The vegetation information collected was sufficient to identify plant communities.

A very small portion of the park was actually visited and generally only very briefly, therefore it should be noted that the species identified at field sites and presented in this report are by no means an exhaustive listing of all vascular and non-vascular plants growing in the park. Other components of this inventory dealt with rare and unusual communities and plant species (See Allen and Johnson 2000 and Gould in progress).

Plants were identified to species where possible, with species names corresponding to those in "Alberta Plants and Fungi – Master Species List and Species Group Checklists" (Alberta Environmental Protection 1993). Bryophytes and lichens with a NV cover (no cover value, presence noted) were observed in the vicinity of field sites by Derek Johnson (Northern Forestry Centre, Edmonton). Derek Johnson also identified some collected specimens.

Community Characterization

Sampled sites were given a quick community identification in the field based on the dominant species present. Later a qualitative approach was utilized to group similar field identified communities into community groupings based on site moisture and nutrients and dominant canopy species. In cases were the canopy was absent, the tallest physiognomic strata was used. Canopy cover was described for woodlands as open or closed, with canopies of 6 to 50 % cover defined as open and > 50 % cover closed. Woodland communities were further divided based on differences in the shrub, forb, moss and lichen strata.

Presentation of Community Information

Community Name - The naming convention for the communities includes the forestry code for the tree layer and the 7-letter species code (Alberta Environmental Protection 1994) for other dominant species in the community. The community name is based on the dominant species within each strata as observed in the study plots. Separations between strata have been indicated by a forward slash (/) and co-dominant species within a strata have been separated by a dash (–). If a species was considered important, but occurred only occasionally, the species name was enclosed within brackets ( ).

Location - Location information makes reference to the UTM coordinates obtained through the use of a handheld geographical positioning system (GPS).

Air Photos - The air photo numbers provided include the photos on which the GPS coordinates or Sites are located. The photos mentioned can be used as a stereo pair.

Site and Soil - Site and soil conditions for each vegetation community is listed and further reviewed in the discussion.

Vegetation - The vegetation composition of each plot belonging to the plant community is listed. Seven-letter codes, scientific names and common names (where applicable) are listed for each species observed in the community. Cover data is presented as % cover. Cover values of 0.5% indicate 0 to 0.5 % covers, including single plants or trace amounts. Due to the limited number of plots representing each community, community cover averages for plant species may not be accurate and therefore have not been presented. Aspects of the vegetation are further reviewed in the discussion.

Field Guide Classification - This classification refers to the classification of the identified community relative to the appropriate existing field guides. Both the Boreal Mixedwood and Canadian Shield Sections of the *Field Guide to Ecosites of Northern Alberta* (Beckingham and Archibald 1996) were reviewed and the identified communities were classified based on the appropriate natural subregion classification and/or the classification which seemed to best identify the community. In cases where an exact match did not exist, a best fit was given and an explanation was then provided detailing the significant differences.

Discussion - This section involves discussion of various aspects of the community.

RESULTS

Nineteen forested and non-forested communities were inventoried. Most of the sites contained unique communities (See Table 1). The treed communities generally consisted of one of five tree species: aspen (*Populous tremuloides*), jack pine (*Pinus banksiana*), birch (*Betula sp.*), tamarack or larch (*Larix larciana*) and black spruce (*Picea mariana*), occasionally a combination of two of these species. Pine and lichen were common in the open, xeric sites, while aspen and birch tended to be associated with more mesic conditions and black spruce and larch with wet sites. Floristic diversity tended to expand with an increase in moisture and nutrients. Moisture and nutrients were influenced by topographic position, parent material and soil texture. Communities are listed here in order of increasing moisture and nutrients.

The information provided in this report should be viewed as preliminary information to be expanded upon in the future. Both the amount of time available (4 days) for sampling sites and access (helicopter) was limited. Four days is far too short a time frame to adequately inventory a park that is 112 km^2. It should be noted that the information collected reflects a very small portion of the park. Further study is required to do justice to this area and to obtain a more refined and detailed picture of the vegetation communities that exist across this landscape.

Table 1. Communities identified at Marguerite Crag and Tail Wildland Provincial Park.

Plot	Site Conditions	Physiognomic Structure	Field Identified Community	Community
MAR 7	Very xeric, oligotrophic	Upland - rock outcrop	lichen	**Lichen – Rock Outcrop**
MAR 11	Xeric,	Upland - open woodland - coniferous	Pj / Arct uva / Clad mit	**Pj / Arct uva / Clad mit**
MAR 19	Very xeric, oligotrophic	Upland - open woodland - coniferous	Pj / Arct uva / Clad mit	
MAR 16	Very xeric, oligotrophic	Upland - open woodland - coniferous	Pj / Clad mit	**Pj / Clad mit**
MAR 17	Very xeric, oligotrophic	Upland - open woodland - coniferous	Pj / Clad mit	**Pj / Clad mit**
MAR 5	Xeric, oligotrophic	Upland - closed woodland - coniferous	Pj / Pleu sch	**Pj / Pleu sch**
MAR 8	Submesic to mesic, mesotrophic	Upland - closed woodland - mixedwood	Pj - Aw / Arct uva / Pleu sch	**Pj - Aw / Arct uva / Pleu sch**
MAR 12	Submesic	Upland - open woodland - deciduous	Ba (Pj - Sb) / Vacc myr - Ledu gro	**Ba (Pj - Sb) / Vacc myr - Ledu gro**
MAR 3	Submesic, submesotrophic	Upland - closed woodland - coniferous	Pj / Vacc myr / Pleu sch	**Pj / Vacc myr / Pleu sch**
MAR 9	Mesic	Upland - closed woodland - coniferous	Pj / Alnu cri / Pleu sch	**Pj / Alnu cri / Pleu sch**
MAR 4	Mesic, permesotrophic	Upland - closed woodland - deciduous	Aw / Alnu cri / Elym inn	**Aw / Alnu cri / Elym inn**
MAR 13	Mesic, mesotrophic	Upland - closed woodland - deciduous	Aw / Forbs	**Aw / Forbs**
MAR 14	Subhygric, permesotrophic	Upland - closed woodland - deciduous	Aw / Forbs	
MAR 10	Subhygric, mesotrophic	Upland - closed woodland - coniferous	Sb - Pj / Ledu gro / Pleu sch	**Sb - Pj / Ledu gro / Pleu sch**
MAR 15	Subhydric	Wetland - closed woodland - coniferous	Sb / Ledu gro / Pleu sch	**Sb / Ledu gro / Pleu sch**
MAR 6	Hydric, submesotrophic to mesotrophic	Wetland - shrubby bog	Cham cal - Pice mar / Ledu gro / Sphagnum	**Cham cal - Pice mar / Ledu gro / Sphagnum**
MAR 2		Wetland - open treed poor fen	Sb-Lt / Ledu gro / Spha ang	**Sb-Lt / Ledu gro / Spha ang**
MAR 18	Hydric, permesotrophic	Wetland - open treed rich fen	Sb - Lt / Betu pum / Care aqu / Spha fus	**Sb - Lt / Betu pum / Care aqu / Spha fus**
MAR 1	Hydric, permesotrophic	Wetland - shrubby rich fen	Betu pum / Carex / Drep spp.	**Betu pum / Carex / Drep spp.**

Lichen - Rock Outcrop

Location:

Site 7 12V517660 UTM6395070 NAD 83

Air photos

AS 4976 #183-184

Site and Soil

Site

Exposure	wind, insolation
Flood Hazard	no hazard
Soil Drainage	very rapidly
Site-Macro	Apex
Site Meso	Crest
Site Shape	Convex
Moisture	Very xeric
Nutrients	Oligotrophic
Factors	terrain

Soils

Parent Material	Rock
Surface Expression	hummocky
Soil Subgroup	no soil

Vegetation

Code	Scientific Name	Common Name	Cover
Lichen			
ARCTSPP	*Arctoparmelia* sp.		NV
CLADCOR	*Cladonia cornuta*		NV
CLADDEF	*Cladonia deformis*		NV
CLADMIT	*Cladina mitis*	reindeer lichen	NV
CLADPHY	*Cladonia phyllophora*		NV
RHIZGEO	*Rhizocarpon geographicum*		NV
STERTOM	*Stereocaulon tomentosum*		NV
UMBIHYP	*Umbilicaria hyperborea*		NV
UMBIMUE	*Umbilicaria muehlenbergii*		NV
XANTCOL	*Xanthoparmelia coloradoensis*		NV

Field Guide Classification

This community did not fit into the field guide classification system. No lichen communities or communities associated with rock substrates are described.

Discussion

Moisture and nutrients are virtually nonexistent on these rock outcrops, with the exception of the release of nutrients as a result of rock weathering and moisture accumulation for short periods in small cavities in the rock. These sites also have high potential for extreme exposure to wind and insolation. Identification of many of the crustose lichens present was not possible because samples could not be collected as the lichens were growing directly on the rock substrate. Derek Johnson identified the species for which samples could be collected. No soil or organic material was present; therefore, the lichen would have to rely on the rock substrate and the air for their moisture and nutrient requirements. Only lichen appears to tolerate the existent conditions. Rock outcrops were generally quite small; however, they appeared to be a very distinct feature on the landscape. This substrate provides for a unique vegetation community within the park.

Pj / Arct uva / Clad mit
(Jack pine / Bearberry / Reindeer Lichen)

Location

Site 11	12V535398	UTM6394780	NAD 83
Site 19	12V534442	UTM6405682	NAD 83

Air photos

Site 11	AS4976 #194-195
Site 19	AS4976 #248-249

Site and Soils

Field Sites	**11**	**19**
Site		
Slope (%)	1	4
Aspect (°)	25	180
Exposure	not applicable	wind
Flood Hazard	no hazard	no hazard
Soil Drainage	rapidly	very rapidly
Site-Macro	apex	apex1
Site Meso	crest	crest
Site Shape	straight	convex
Moisture	xeric	Very xeric
Nutrients		oligotrophic
Factors		Atmosphere, terrain
Soils		
Parent Material	glaciofluvial	glaciofluvial
Surface Expression	rolling	ridged
Soil Subgroup	E.EB	E.EB
Dominant Texture	S	S
Effective Texture	S	S
Texture	S	Sg

Vegetation

Code	Scientific Name	Common Name	11 Cover	19 Cover
Canopy				
PICEMAR	*Picea mariana*	black spruce	1	
PINUBAN	*Pinus banksiana*	jack pine	35	8
POPUTRE	*Populus tremuloides*	aspen	1	
Tall Shrubs				
PICEMAR	*Picea mariana*	black spruce	1	
PINUBAN	*Pinus banksiana*	jack pine	0.5	0.5
Low Shrubs				
ARCTUVA	*Arctostaphylos uva-ursi*	common bearberry	30	15

Code	Scientific Name	Common Name	11 Cover	19 Cover
HUDSTOM	*Hudsonia tomentosa*	sand heather		2
PICEMAR	*Picea mariana*	black spruce	1	
PINUBAN	*Pinus banksiana*	jack pine		0.5
POPUTRE	*Populus tremuloides*	aspen	0.5	
PRUNPEN	*Prunus pensylvanica*	pin cherry		0.5
VACC MYR	*Vaccinium myrtilloides*	common blueberry	1	1
VACCVIT	*Vaccinium vitis-idaea*	bog cranberry	3	1
Forbs				
CYPRACA	*Cypripedium acaule*	stemless lady's-slipper	0.5	
MAIACAN	*Maianthemum canadense*	wild lily-of-the-valley	0.5	
POTETRI	*Potentilla tridentata*	three-toothed cinquefoil	0.5	
SOLIMUL	*Solidago multiradiata*	alpine goldenrod		0.5
Grass				
AGROSPP	*Agropyron sp.*	wheat grass		0.5
CARETON	*Carex tonsa*			0.5
Bryophytes				
DICRPOL	*Dicranum polysetum*	wavy dicranum	0.5	
Lichen				
CETRERI	*Cetraria ericetorum*		0.5	
CETRNIV	*Cetraria nivalis*		0.5	0.5
CLADCRI	*Cladonia crispata*			0.5
CLADMIT	*Cladina mitis*	reindeer lichen	25	90
CLADRAN	*Cladina rangiferina*	reindeer lichen	0.5	
CLADSTE	*Cladina stellaris*	reindeer lichen	0.5	0.5
CLADUNC	*Cladonia uncialis*		0.5	
PELTMAL	*Peltigera malacea*		0.5	
PELTNEO	*Peltigera neopolydactyla*			0.5

Field Guide Classification

Boreal Mixedwood A1.1 Pj/bearberry/lichen
Canadian Shield A1.1 Pj/bearberry/lichen

The two A1.1 communities are very similar in composition. This community is also very similar and would fit into either of these classes.

Discussion

This community was associated xeric, oligotrophic conditions. It was generally associated with higher topographic positions possessing sandy soils (i.e. crests of sandy ridges). Gravels and cobbles were found throughout the soil profile at site 19. This presence of coarse fragments further accentuated the soil drainage and resulted in very xeric conditions throughout the soil profile. The jack pine canopy was generally quite sparse in this community and at site 19 it was heavily infested with mistletoe (*Arceuthobium americanum*). High deadfall was also noted at site 19. Many of the older open pine sites tend to be areas where the existing old pine trees have survived past fires. Due to the stress of very low moisture levels and past fire activity the pine has become vulnerable to the

mistletoe. Lichen cover was high (90%) at site 19 while lichen cover at site 11 tended to be more patchy and lower in cover (25%). The tree cover was higher (30%) in the presence of the lower lichen covers. Reindeer lichen (*Cladina mitis*) tended to be the most abundant lichen. Bearberry (*Arctostaphylos uva-ursi*) was a major component at both of these sites (30% - site 11, 15% - site 19). Extreme growing conditions appeared to contribute to the limited floristic diversity observed in this community.

Wolf and bear scat was observed at site 11. The ridge, to the northeast of site 11, contained a Pj/ Vacc vit – Vacc myr / Clad mit community.

Pj / Clad mit
(Jack pine / Reindeer Lichen)

Location

Site 16	12V535246	UTM6394337	NAD 83
Site 17	12V534187	UTM6404752	NAD 83

Air photos

Site 16	AS4976 #194-195
Site 17	AS4976 #248-249

Site Conditions

Field sites	**16**	**17**
Site		
Slope (%)		2
Aspect (°)		320
Exposure	wind	wind
Flood Hazard	no hazard	no hazard
Soil Drainage	very rapid	Ver rapid
Site-Macro	apex	apex
Site Meso	crest	crest
Site Shape	convex	convex
Moisture	very xeric	very xeric
Nutrients	oligotrophic	oligotrophic
Factors	fire	
Soils		
Parent Material	glaciofluvial	glaciofluvial
Surface Expression	hummocky	undulating
Soil Subgroup	E.EB	
Dominant Texture	S	S
Effective Texture	S	S
Texture	S	S/Sgk

Vegetation

Code	Scientific Name	Common Name	16 Cover	17 Cover
Main Canopy				
PINUBAN	*Pinus banksiana*	jack pine	10	8
Tall Shrubs				
PINUBAN	*Pinus banksiana*	jack pine	0.5	1
POPUTRE	*Populus tremuloides*	aspen	0.5	
Low Shrubs				
ARCTUVA	*Arctostaphylos uva-ursi*	common bearberry	3	0.5
HUDSTOM	*Hudsonia tomentosa*	sand heather	1	1
PINUBAN	*Pinus banksiana*	jack pine	0.1	0.5
POPUTRE	*Populus tremuloides*	aspen	1	

Code	Scientific Name	Common Name	16 Cover	17 Cover
PRUNPEN	*Prunus pensylvanica*	pin cherry	0.5	
VACC MYR	*Vaccinium myrtilloides*	common blueberry	1	0.5
VACCVIT	*Vaccinium vitis-idaea*	bog cranberry	0.5	
Forbs				
SOLIMUL	*Solidago multiradiata*	alpine goldenrod	0.5	
Grass				
CARESIC	*Carex siccata*	hay sedge	0.5	
CARESPP	*Carex* sp.	sedge	0.5	
FESTSAX	*Festuca saximontana*	Rocky Mountain fescue	0.5	
ORYXPUN	*Oryzopsis pungens*	northern rice grass	0.5	
Bryophytes				
POLYPIL	*Polytrichum piliferum*	awned hair-cap	NV	0.5
Lichen				
BRYOFUR	*Bryoria furcellata*	old man's beard	NV	
CETRERI	*Cetraria ericetorum*		NV	
CETRNIV	*Cetraria nivalis*			0.5
CLADAMA	*Cladonia amaurocraea*		0.5	2
CLADCER	*Cladonia cervicornis*		NV	
CLADCOR	*Cladonia cornuta*		NV	0.5
CLADCRI	*Cladonia crispata*		0.5	0.5
CLADCRS	*Cladonia cristatella*		NV	
CLADDEF	*Cladonia deformis*		NV	1
CLADGRA	*Cladonia gracilis*		0.5	1
CLADMIT	*Cladina mitis*	reindeer lichen	70	90
CLADRAN	*Cladina rangiferina*	reindeer lichen		1
CLADSTE	*Cladina stellaris*	reindeer lichen	0.5	0.5
CLADSUL	*Cladonia sulphurina*			0.5
CLADUNC	*Cladonia uncialis*		NV	
EVERMES	*Evernia mesomorpha*		NV	
HYPOPHY	*Hypogymnia physodes*		NV	
IMSHPLA	*Imshaugia placorodia*		NV	
LECACIR	*Lecanora circumborealis*		NV	
PARMSUL	*Parmelia sulcata*		NV	
STERTOM	*Stereocaulon tomentosum*			0.5
TUCKAME	*Tuckermannopsis americana*		NV	
BLACK CRUST L				0.5
Fungi				
ASTRHYG	*Astraeus hygrometricus*		0.5	

Field Guide Classification

Best fit Boreal Mixedwood or Canadian Shield A1.1 Pj/bearberry/lichen

A1.1 is considered only as a best fit because low shrub cover is minimal in this community. Either of these classes may be used to define the community. The presence of sand heather (*Hudsonia tomentosa*) in this community and in the boreal mixedwood class indicates some degree of similarity.

Discussion

This community occupied sites similar to those occupied by the previously discussed Pj / Arct uva / Clad mit community. It tended to be located on exposed crests. The two sites visited had a convex surface profile. The dominant soil texture at the sites was sand with a significant component of gravels and cobbles found in the profile at site 17. This community had very low tree covers (10 and 8%) and very high lichen covers (70 and 90%). Reindeer lichen was the most prolific lichen. Areas of exposed sand were scattered throughout this community. The lichen tends to be very fragile and was easily crushed, especially when it was dry. In both this community and the previously defined Pj / Arct uva / Clad mit community, ungulate trails were conspicuous due to the lack of lichen and the presence of exposed sand. Heavy mistletoe infestation was noted at site 17. Floristic diversity was even more limited in this community than in the previous community. The lack of a major bearberry component distinguished this community from the PJ / Arct uva / Clad mit community. Low shrubs constituted a very minor component. Sand heather had a cover of 1% at both sites and bearberry was present but in very low amounts at both sites.

The presence of bearberry at both of these sites, however in very minute amounts, should be noted. It could be suggested that this community and the previously defined Pj / Arct uva / Clad mit community may be the same community. At this time they have been separated; however, as more information is collected further insight into the specific community composition may be obtained and a more substantive decision made.

Numerous small aspen seedlings were noted at site 16. There was some question as to whether these seedlings would survive to maturity due to the xeric conditions. Perhaps they just may have been opportunistic due to light availability and possibly a period of unusually high moisture (enough to allow germination).

Grouse scat was observed at this site.

Pj / Pleu sch
(Jack Pine / Feather moss)

Location

Site 5 12V525996 UTM6405972 NAD 83

Air Photos

AS4976 #243-244

Site Conditions

Site

Slope (%)	0
Aspect (°)	
Exposure	wind
Flood Hazard	no hazard
Soil Drainage	rapid
Site-Macro	apex
Site Meso	crest
Site Shape	convex
Moisture	xeric
Nutrients	oligotrophic
Factors	terrain

Soils

Parent Material	moraine/rock
Surface Expression	hummocky
Soil Subgroup	O.GL
Dominant Texture	SiS
Effective Texture	SiS
Texture	S/SiS/R

Vegetation

Code	Scientific Name	Common Name	Cover
Canopy			
PICEMAR	*Picea mariana*	black spruce	2
PINUBAN	*Pinus banksiana*	jack pine	75
PICEGLA	*Picea glauca*	white spruce	1
Low Shrubs			
ALNUCRI	*Alnus crispa*	green alder	0.5
BETUNEO	*Betula neoalaskana*	Alaska Birch	0.5
VACC MYR	*Vaccinium myrtilloides*	common blueberry	0.5
VACCVIT	*Vaccinium vitis-idaea*	bog cranberry	0.5
Forbs			
LYCOANN	*Lycopodium annotinum*	stiff club-moss	0.5
Bryophytes			
CYNOSTR	*Cynodontium strumiferum*		NV

Code	Scientific Name	Common Name	Cover
CYNOTEN	*Cynodontium tenellum*		NV
DICRFRA	*Dicranum fragilifolium*	cushion moss	NV
DICRPOL	*Dicranum polysetum*	wavy dicranum	0.5
HEDWCIL	*Hedwigia ciliata*		NV
PLEUSCH	*Pleurozium schreberi*	Schreber's moss	80
POHLNUT	*Pohlia nutans*	copper wire moss	NV
POLYJUN	*Polytrichum juniperinum*	juniper hair-cap	0.5
POLYPIL	*Polytrichum piliferum*	awned hair-cap	0.5
PTILCIL	*Ptilidium ciliare*	liverwort	NV
PTILCRI	*Ptilium crista-castrensis*	knight's plume moss	NV
SANIUNC	*Sanionia uncinata*		NV
Lichen			
ARCTCEN	*Arctoparmelia centrifuga*		NV
BUELPUN	*Buellia punctata*		NV
CETRNIV	*Cetraria nivalis*		0.5
CLADGRA	*Cladonia gracilis*		0.5
CLADMIT	*Cladina mitis*	reindeer lichen	2
CLADRAN	*Cladina rangiferina*	reindeer lichen	0.5
CLADSTE	*Cladina stellaris*	reindeer lichen	0.5
CLADSUL	*Cladonia sulphurina*		0.5
EVERMES	*Evernia mesomorpha*		NV
FLAVNIV	*Flavocetraria nivalis*		NV
HYPOPHY	*Hypogymnia physodes*		NV
IMSHALE	*Imshaugia aleurites*		NV
IMSHPLA	*Imshaugia placorodia*		NV
LECACIR	*Lecanora circumborealis*		NV
PARMSUL	*Parmelia sulcata*		NV
STERTOM	*Stereocaulon tomentosum*		NV
TRAPGRA	*Trapeliopsis granulosa*		NV
TUCKAME	*Tuckermannopsis americana*		NV
UMBIHYP	*Umbilicaria hyperborea*		NV

Field Guide Classification

Best fit Boreal Mixedwood C1.3 Pj-Sb/feather moss

This community had site conditions that were representative of a boreal mixedwood A ecosite type (xeric, oligotrophic) but the feather moss component was more representative of boreal mixedwood C ecosite type. The best fit would be a very dry BM C1.3 with a dense canopy.

Discussion

This community was located on the upper portion of a knoll, which was surrounded by a lake to the north and east and by wetlands to the south and west. Exposed bedrock was located near the site. Silty sands were a major component of the Orthic Gray Luvisol soil. The presence of silty sand may have enhanced the nutrient and moisture trapping capability of the soil, thus providing increased moisture and nutrients for vegetation growth. This community

consisted of a dense cover of jack pine with occasional black and white spruce (*Picea glauca*). Other vascular species were sparse in cover, with feather moss (*Pleurozium schreberi*) comprising 80% of the ground cover. Reindeer lichen (*Cladina* sp.) was prolific in any forest openings. A number of species of mosses and lichens were present in the vicinity of the site, however, only in trace amounts. The general lack in floristic diversity tends to indicate poor nutrient conditions. A denser canopy, which decreases the rate of evaporation and the proximity to open water may provide conditions which favour the development of moss in otherwise xeric conditions. Schreber's moss (*Pleurozium schreberi*) covered 80 % of the substrate. It should be noted that floristic diversity tended to increase at the lower slope positions.

Common Labrador tea (*Ledum groenlandicum*) was not observed at the sampled site; however, it did occur in the area in small patches.

Pj - Aw / Arct uva / Pleu sch
(Jack Pine – Aspen / Bearberry / Feather moss)

Location

Site 8 12V525791 UTM6405899 NAD 83

Air Photos

AS4976 #243-244

Site Conditions

Site

Slope (%)	5
Aspect (°)	80
Exposure	not applicable
Flood Hazard	no hazard
Soil Drainage	well
Site-Macro	
Site Meso	crest
Site Shape	concave
Moisture	Submesic to mesic
Nutrients	mesotrophic
Factors	

Soils

Parent Material	moraine over rock
Surface Expression	undulating
Soil Subgroup	E.EB
Dominant Texture	S
Effective Texture	S
Texture	S

Vegetation

Code	Scientific Name	Common Name	Cover
Canopy			
PINUBAN	*Pinus banksiana*	jack pine	50
POPUTRE	*Populus tremuloides*	aspen	27
Tall Shrubs			
ALNUCRI	*Alnus crispa*	green alder	0.5
Low Shrubs			
ALNUCRI	*Alnus crispa*	green alder	0.5
ARCTUVA	*Arctostaphylos uva-ursi*	common bearberry	20
CORNCAN	*Cornus canadensis*	bunchberry	1
LEDUGRO	*Ledum groenlandicum*	common Labrador tea	1
LINNBOR	*Linnaea borealis*	twinflower	1
PICEGLA	*Picea glauca*	white spruce	0.5
RIBEHUD	*Ribes hudsonianum*	northern black current	0.5

Code	Scientific Name	Common Name	Cover
VACC MYR	*Vaccinium myrtilloides*	common blueberry	1
VACCVIT	*Vaccinium vitis-idaea*	bog cranberry	10
VIBUEDU	*Viburnum edule*	low-bush cranberry	1
Forbs			
GOODREP	*Goodyera repens*	lesser rattlesnake plantain	0.5
GYMNDRY	*Gymnocarpium dryopteris*	oak fern	0.5
MAIACAN	*Maianthemum canadense*	wild lily-of-the-valley	1
PYROCHL	*Pyrola chlorantha*	greenish-flowered wintergreen	0.5
Bryophytes			
PLEUSCH	*Pleurozium schreberi*	Schreber's moss	45
SPLASPH	*Splachnum sphaericum*	globe-fruited splachnum	NV
Lichen			
CLADMIT	*Cladina mitis*	reindeer lichen	0.5
Litter			
Pine needles			high

Field Guide Classification

Boreal Mixedwood B1.1 Pj-Aw/blueberry-bearberry

This community appeared to fit in well with the field guide classification.

Discussion

This closed mixedwood community was located on a very gentle east-facing, upper slope in the north central area of the park. The site was located within relatively close proximity to a lake. Soil texture was sandy. Jack pine was the dominant canopy species (50 %); however, the aspen cover was quite significant (27 %). The presence of mature aspen suggests that moisture was more readily available at this site. As with many of the sites, in this area the shrub component (bearberry and bog cranberry (Vaccinium vitus idea) cover of 30%) was generally indicative of a dry surface. Moisture must be available at depth in order for the aspen to thrive. The water table may be nearer the surface in this area due to the close proximity to a water body.

This was the only mixedwood community sampled during this inventory. A squirrel midden was noted at this site. A high cover of pine needles covered the surface substrate.

Ba (Pj - Sb) / Vacc myr - Ledu gro
(Alaskan Birch (Jack Pine – Black Spruce) / Blueberry – Labrador Tea)

Location

Site 12 12V535763 UTM6394842 NAD 83

Air Photos

AS4976 #194-195

Site Conditions

Site

Slope (%)	-3
Aspect (°)	200
Exposure	not applicable
Flood Hazard	no hazard
Soil Drainage	rapid
Site-Macro	apex
Site Meso	crest
Site Shape	straight
Moisture	submesic
Nutrients	
Factors	

Soils

Parent Material	glaciofluvial over moraine
Surface Expression	rolling
Soil Subgroup	E.EB
Dominant Texture	S
Effective Texture	S
Texture	S

Vegetation

Code	Scientific Name	Common Name	Cover
Canopy			
PICEMAR	*Picea mariana*	black spruce	3
PINUBAN	*Pinus banksiana*	jack pine	2
BETUNEO	*Betula neoalaskana*	Alaska Birch	35
Tall Shrubs			
ALNUCRI	*Alnus crispa*	green alder	0.5
SALIBEB	*Salix bebbiana*	beaked willow	1
Low Shrubs			
ALNUCRI	*Alnus crispa*	green alder	2
CORNCAN	*Cornus canadensis*	bunchberry	0.5
LEDUGRO	*Ledum groenlandicum*	common Labrador tea	25
LINNBOR	*Linnaea borealis*	twinflower	1
POPUTRE	*Populus tremuloides*	aspen	0.5

Code	Scientific Name	Common Name	Cover
PRUNPEN	*Prunus pensylvanica*	pin cherry	0.5
VACC MYR	*Vaccinium myrtilloides*	common blueberry	30
VACCVIT	*Vaccinium vitis-idaea*	bog cranberry	3
Forbs			
CYPRACA	*Cypripedium acaule*	stemless lady's-slipper	0.5
LYCOANN	*Lycopodium annotinum*	stiff club-moss	1
MAIACAN	*Maianthemum canadense*	wild lily-of-the-valley	1
Bryophytes			
PLEUSCH	*Pleurozium schreberi*	Schreber's moss	5
Lichen			
CLADMIT	*Cladina mitis*	reindeer lichen	1

Field Guide Classification

Best fit Boreal Mixedwood B2.3 Aw(Bw)/blueberry-Labrador tea

The community had a birch dominated canopy and aspen was absent. This class (B2.3), therefore, is considered only as a best fit.

Discussion

Sub mesic moisture and mesotrophic nutrient conditions existed at this open deciduous woodland site. This community is not very extensive in the park. It generally occurred in small pockets, amidst the pine, where minor depressions existed in the landscape. Shrub and forb species present indicated a dry surface substrate; however, the depressional nature of the site must have enabled the birch to tap into the water source which was closer to the surface due to the site topography. Prominent shrubs included Labrador tea with a cover of 25 % and blueberry (*Vaccinium myrtilloides*) with a 30 % cover. The Labrador tea tended to be abundant in close proximity to the black spruce, while the blueberry was more prevalent in the open areas. Other shrubs present in trace to 3% covers, included; green alder (*Alnus crispa*), twinflower (*Linnaea borealis*), pin cherry (*Prunus pensylvanicus*) and bunchberry (*Cornus canadensis*).

Bear scat was observed at this site.

Pj / Alnu cri / P leu sch
(Jack Pine / Green Alder / Feather moss)

Location

Site 9 12V525611 UTM6405634 NAD 83

Air Photos

AS4976 #243-244

Site Conditions

Site

Slope (%)	19
Aspect (°)	10
Exposure	not applicable
Flood Hazard	no hazard
Soil Drainage	well
Site-Macro	middle slope
Site Meso	middle slope
Site Shape	straight
Moisture	mesic
Nutrients	
Factors	

Soils

Parent Material	glaciofluvial over moraine
Surface Expression	hummocky
Soil Subgroup	E.DYB
Dominant Texture	S
Effective Texture	S
Texture	Sgk

Vegetation

Code	Scientific Name	Common Name	Cover
Canopy			
PINUBAN	*Pinus banksiana*	jack pine	70
Tall Shrubs			
ALNUCRI	*Alnus crispa*	green alder	5
Low Shrubs			
ALNUCRI	*Alnus crispa*	green alder	30
CORNCAN	*Cornus canadensis*	bunchberry	0.5
LINNBOR	*Linnaea borealis*	twinflower	0.5
VACC MYR	*Vaccinium myrtilloides*	common blueberry	0.5
VACCVIT	*Vaccinium vitis-idaea*	bog cranberry	3
Forbs			
ARALNUD	*Aralia nudicaulis*	wild sarsaparilla	0.5

Code	Scientific Name	Common Name	Cover
MAIACAN	*Maianthemum canadense*	wild lily-of-the-valley	0.5
Bryophytes			
DICRPOL	*Dicranum polysetum*	wavy dicranum	0.5
PLEUSCH	*Pleurozium schreberi*	Schreber's moss	60

Field Guide Classification

Boreal Mixedwood C1.2 Pj-Sb/green alder/ feather moss

This community appeared to fit into the field guide classification quite well.

Discussion

This site was situated on a north facing slope at a mid slope position. Site slope was 19 %. The combined effect of slope, aspect and slope position tended to result in more mesic moisture conditions. Gravels and cobbles were observed throughout the soil profile of the sandy Eluviated Dystric Brunisolic soil. Very little floristic diversity was evident. The community was defined by a high cover of green alder (35 %) located predominantly in the low shrub class (30 %) and a substrate cover of 60 % feather moss. A trace of wild sarsaparilla (*Aralia nudicaulis*) was present.

Pj / Vacc myr / Pleu sch
(Jack Pine / Blueberry / Feather moss)

Location

Site 3 12V517437 UTM6394982 NAD83

Air Photos

AS4976 #183-184

Site Conditions

Site

Slope (%)	4
Aspect (°)	175
Exposure	not applicable
Flood Hazard	rare
Soil Drainage	well
Site-Macro	lower slope
Site Meso	lower slope
Site Shape	straight
Moisture	submesic
Nutrients	submesotrophic
Factors	

Soils

Parent Material	glaciofluvial over rock
Surface Expression	undulating
Soil Subgroup	O.GL
Dominant Texture	S
Effective Texture	LS
Texture	S/LS/R

Vegetation

Code	Scientific Name	Common Name	Cover
Canopy			
PINUBAN	*Pinus banksiana*	jack pine	65
PICEMAR	*Picea mariana*	black spruce	1
POPUTRE	*Populus tremuloides*	aspen	1
Low Shrubs			
ARCTUVA	*Arctostaphylos uva-ursi*	common bearberry	2
CORNCAN	*Cornus canadensis*	bunchberry	1
LEDUGRO	*Ledum groenlandicum*	common Labrador tea	2
LINNBOR	*Linnaea borealis*	twinflower	1
PICEMAR	*Picea mariana*	black spruce	0.5
ROSAACI	*Rosa acicularis*	prickly rose	1
VACC MYR	*Vaccinium myrtilloides*	common blueberry	60
VACCVIT	*Vaccinium vitis-idaea*	bog cranberry	3

Code	Scientific Name	Common Name	Cover
Forbs			
CYPRACA	*Cypripedium acaule*	stemless lady's-slipper	0.5
LATHVEN	*Lathyrus venosus*	purple peavine	0.5
MAIACAN	*Maianthemum canadense*	wild lily-of-the-valley	0.5
Grass			
AGROSPP	*Agropyron* sp.	wheat grass	0.5
ELYMINN	*Elymus innovatus*	hairy wild rye	0.5
Bryophytes			
DISTCAP	*Distichium capillaceum*		NV
DITRFLE	*Ditrichum flexicaule*	slender-stemmed hair moss	NV
GRIMALP	*Grimmia alpicola*		NV
HEDWCIL	*Hedwigia ciliata*		NV
MYURJUL	*Myurella julacea*		NV
PLEUSCH	*Pleurozium schreberi*	Schreber's moss	40
POLYJUN	*Polytrichum juniperinum*	juniper hair-cap	NV
PTILCRI	*Ptilium crista-castrensis*	knight's plume moss	1
SANIUNC	*Sanionia uncinata*		NV
TORTFRA	*Tortella fragilis*	fragile screw moss	NV
Lichen			
CETRERI	*Cetraria ericetorum*		NV
CLADMIT	*Cladina mitis*	reindeer lichen	5
CLADRAN	*Cladina rangiferina*	reindeer lichen	NV
CLADSTE	*Cladina stellaris*	reindeer lichen	0.5
EVERMES	*Evernia mesomorpha*		NV
HYPOPHY	*Hypogymnia physodes*		NV
IMSHALE	*Imshaugia aleurites*		NV
IMSHPLA	*Imshaugia placorodia*		NV
LECACIR	*Lecanora circumborealis*		NV
LECIEUP	*Lecidella euphorea*		NV
PANNSPP	*Pannaria* sp.		NV
PARMSUL	*Parmelia sulcata*		NV
PELTAPH	*Peltigera aphthosa*	studded leather lichen	1
TUCKAME	*Tuckermannopsis americana*		NV
VULPPIN	*Vulpicida pinastri*		NV

Field Guide Classification

Best fit Boreal Mixedwood B1.1 Pj-Aw/blueberry-bearberry or
Canadian Shield B1.1 Pj-Aw-Bw/blueberry

This field guide class was selected as a best fit since the community sampled was not a mixedwood. Aspen was only a very minor component at the site. The species present are similar to both of these classes.

Discussion

This site was situated on glaciofluvial sediments, which overlay till. Eluviated Eutric Brunisolic soils were present. The presence of loamy sand in the soil profile provides some enhanced water and nutrient holding capability, This jack

pine community was defined by the dominance of blueberry and feather moss. Very limited floristic diversity existed in this community due to the limited nutrient and moisture availability. As with the previous closed coniferous woodlands, feather moss was the prominent substrate cover. A number of other shrubs were represented but only in very low covers: twinflower, bearberry, rose (*Rosa* sp.), bog cranberry, Labrador tea and bunchberry. Forb cover was very limited.

This community may be viewed as similar to the previously defined Pj / Pleu sch community; however, it has been separated based on the higher moisture and nutrient levels and the presence of a dominant blueberry component.

Aw / Alnu cri / Elym inn
(Aspen / Green Alder / Hairy Wild Rye)

Location

Site 4 12V517001 UTM6394461 NAD 83

Air Photo

AS4976 #183-184

Site Conditions

Site

Slope (%)	1
Aspect (°)	
Exposure	not applicable
Flood Hazard	no hazard
Soil Drainage	rapid
Site-Macro	middle slope
Site Meso	middle slope
Site Shape	straight
Moisture	mesic
Nutrients	permesotrophic
Factors	

Soils

Parent Material	glaciofluvial over rock
Surface Expression	
Soil Subgroup	O.GL
Dominant Texture	LS
Effective Texture	LS
Texture	LSk/SCLk

Vegetation

Code	Scientific Name	Common Name	Cover
Canopy			
POPUTRE	*Populus tremuloides*	aspen	65
Tall Shrubs			
ALNUCRI	*Alnus crispa*	green alder	2
Low Shrubs			
ALNUCRI	*Alnus crispa*	green alder	25
ARCTUVA	*Arctostaphylos uva-ursi*	common bearberry	2
LEDUGRO	*Ledum groenlandicum*	common Labrador tea	1
LINNBOR	*Linnaea borealis*	twinflower	1
PINUBAN	*Pinus banksiana*	jack pine	0.5
ROSAACI	*Rosa acicularis*	prickly rose	1
SHEPCAN	*Shepherdia canadensis*	Canada buffaloberry	0.5
VACC MYR	*Vaccinium myrtilloides*	common blueberry	4

Code	Scientific Name	Common Name	Cover
VACCVIT	*Vaccinium vitis-idaea*	bog cranberry	2
VIBUEDU	*Viburnum edule*	low-bush cranberry	1
Forbs			
ACHIMIL	*Achillea millefolium*	common yarrow	0.5
ASTEPUN	*Aster puniceus*	purple-stemmed aster	0.5
CYPRACA	*Cypripedium acaule*	stemless lady's-slipper	2
EPILANG	*Epilobium angustifolium*	fireweed	0.5
GALIBOR	*Galium boreale*	northern bedstraw	0.5
LATHVEN	*Lathyrus venosus*	purple peavine	0.5
MAIACAN	*Maianthemum canadense*	wild lily-of-the-valley	2
MONEUNI	*Moneses uniflora*	one-flowered wintergreen	0.5
PETAPAL	*Petasites palmatus*	palmate-leaved coltsfoot	1
PYROCHL	*Pyrola chlorantha*	greenish-flowered wintergreen	0.5
VIOLADU	*Viola adunca*	early blue violet	0.5
Grass			
AGROSPP	*Agropyron sp.*	wheat grass	0.5
ELYMINN	*Elymus innovatus*	hairy wild rye	10
Bryophytes			
BRYUCAE	*Bryum caespiticium*		NV
DICRPOL	*Dicranum polysetum*	wavy dicranum	0.5
ORTHSPE	*Orthotrichum speciosum*		NV
PLEUSCH	*Pleurozium schreberi*	Schreber's moss	3
PTILPUL	*Ptilidium pulcherrimum*	liverwort	NV
PYLAPOL	*Pylaisiella polyantha*		NV
SANIUNC	*Sanionia uncinata*		NV
Lichen			
BACIBAG	*Bacidia bagliettoana*		NV
CALOCER	*Caloplaca cerina*		NV
CALOHOL	*Caloplaca holocarpa*		NV
COLLSPP	*Collema sp.*		NV
HYPOPHY	*Hypogymnia physodes*		NV
LECIEUP	*Lecidella euphorea*		NV
MELASUB	*Melanelia subaurifera*		NV
PARMSUL	*Parmelia sulcata*		NV

Field Guide Classification

Boreal Mixedwood D1.4 Aw/green alder

This community appeared to fit in well with the field guide classification system.

Discussion

The increased moisture and nutrients present was most likely associated with the presence of sandy clay loam in the soil profile. Clay loam possesses an increased ability to hold water and nutrients, both essential requirements for plant productivity. This site was located at a mid slope position of an elongated aspen dominated ridge. Loamy sand gave way to sandy clay loam 40 cm below the

surface. Gravels and cobbles appeared 25 cm into the soil profile. The soil was an Orthic Gray Luvisol. Mesic, permesotrophic conditions were present.
This even aged aspen stand had a canopy cover of 65%. The green alder (total cover 27 %) was predominantly less than 2.5 m in height (25%). For some currently unknown reason the alder appeared to be dying out. Increased moisture and nutrient availability, relative to the previously defined communities, was reflected in the diversity of shrubs and forbs present. Shrubs present, ranging in covers from trace to 4 %, included; blueberry, twinflower low bush cranberry (*Viburnum edule*), bog cranberry, rose (*Rosa acicularis*) and buffaloberry (*Shepherdia canadensis*). Forb diversity was equally high, including; wild lily-of-the-valley (*Maianthemum canadense*), fireweed (*Epilobium angustifolium*), northern bedstraw (*Galium boreale*), purple peavine (*Lathyrus venosus*), purple-stemmed aster (*Aster puniceus*), stemless lady's slipper (*Cypripedium acaule*), early blue violet (*Viola adunca*), palmate-leaved coltsfoot (*Petasites palmatus*), common yarrow (*Achillea millefolium*) and one-flowered wintergreen (*Moneses uniflora*). Hairy wild rye (*Elymus innovatus*) had a cover of 10 %.

Aw / Forbs
(Aspen / Forbs)

Location

Site 13	12V536072	UTM6394731	NAD 83
Site 14	12V536018	UTM6394564	NAD 83

Air Photo

Site 13	AS4976 #194-195
Site 14	AS4976 # 194-195

Site and Soil

	13	14
Site		
Slope (%)	16	0
Aspect (°)	100	
Exposure	not applicable	not applicable
Flood Hazard	no hazard	No hazard
Soil Drainage	rapid	may be expected
Site-Macro	apex	lower slope
Site Meso	middle slope	lower slope
Site Shape	straight	concave
Moisture	mesic	subhygric
Nutrients	mesotrophic	permesotrophic
Soils		
Parent Material	glaciofluvial	glaciofluvial over moraine
Surface expression	rolling	
Soil Subgroup	E.EB	E.EB
Dominant Texture	S	S
Effective Texture	S	SCL
Texture	S/Sgk	S/SCL

Vegetation

Code	Scientific Name	Common Name	13 Cover	14 Cover
Canopy				
BETUNEO	*Betula neoalaskana*	Alaska Birch	2	
POPUTRE	*Populus tremuloides*	aspen	90	85
PICEMAR	*Picea mariana*	black spruce	3	
Tall Shrubs				
ALNUCRI	*Alnus crispa*	green alder	2	
PICEMAR	*Picea mariana*	black spruce	4	
PRUNPEN	*Prunus pensylvanica*	pin cherry		0.5
SALIBEB	*Salix bebbiana*	beaked willow		0.5
Low Shrubs				

Code	Scientific Name	Common Name	13 Cover	14 Cover
ALNUCRI	*Alnus crispa*	green alder	5	
AMELALN	*Amelanchier alnifolia*	saskatoon	0.5	
BETUNEO	*Betula neoalaskana*	Alaska Birch	0.5	
CORNCAN	*Cornus canadensis*	bunchberry	2	3
LEDUGRO	*Ledum groenlandicum*	common Labrador tea	2	1
LINNBOR	*Linnaea borealis*	twinflower	1	1
PICEGLA	*Picea glauca*	white spruce		0.5
PICEMAR	*Picea mariana*	black spruce		0.5
POPUTRE	*Populus tremuloides*	aspen	0.5	
ROSAACI	*Rosa acicularis*	prickly rose	0.5	1
VACC MYR	*Vaccinium myrtilloides*	common blueberry	1	
VACCVIT	*Vaccinium vitis-idaea*	bog cranberry	1	2
VIBUEDU	*Viburnum edule*	low-bush cranberry	1	1
Forbs				
EPILANG	*Epilobium angustifolium*	fireweed	0.5	0.5
LYCOANN	*Lycopodium annotinum*	stiff club-moss	3	0.5
LYCOCOM	*Lycopodium complanatum*	ground-cedar	0.5	
LYCOOBS	*Lycopodium obscurum*	ground-pine	0.5	
MAIACAN	*Maianthemum canadense*	wild lily-of-the-valley	2	3
PYROCHL	*Pyrola chlorantha*	greenish-flowered wintergreen	0.5	0.5
TRIEBOR	*Trientalis borealis*	northern starflower	1	2
Grass				
AGROSPP	*Agropyron* sp.	wheat grass	0.5	
CALACAN	*Calamagrostis canadensis*	bluejoint		0.5
ORYZSPP	*Oryzopsis* sp.	rice grass	0.5	
Bryophytes				
DICRPOL	*Dicranum polysetum*	wavy dicranum	0.5	0.5
HYLOSPL	*Hylocomium splendens*	stair-step moss	1	0.5
PLEUSCH	*Pleurozium schreberi*	Schreber's moss	2	0.5
PTILCRI	*Ptilium crista-castrensis*	knight's plume moss	0.5	

Field Guide Classification

Boreal Mixedwood D1.8 Aw/forbs with site 14 grading to an E1.3 Pb-Aw/river alder/fern

This community appeared to fit within the classes defined by the field guide. Site 14 was richer and moister, therefore was considered to be grading to an E ecosite phase.

Discussion

This community was defined by; the aspen canopy, the diverse forb strata and the lack of a well-defined shrub or moss layer. For purposes of this report, this community has been described in relatively broad terms. More sampling is required to determine if indeed the 2 sites represented here actually belong to a single community or 2 different communities; one higher in nutrients and moisture than the other.

A relatively thick LFH layer was representative of this community (Site 13 – 10 cm, site 14 – 18 cm). Any differences between the 2 sites tended to be a result of slope position. Site 13 was located at a mid slope position while site 14 was located at a lower slope position adjacent to a Sb – Lt / Ledu gro / moss wetland. Sand was the dominant texture throughout the soil profile at site 13, while down slope at site 14 sandy soils gave way to sandy clay loam at a depth of 50 cm.

As a result of topographic position, soils and proximity to a wetland, site 14 possessed higher nutrient and moisture levels than did site 13. Though present in low cover both the shrub and forb layers were floristically diverse in this community. A number of forb and shrub species were common to both sites. This community appears to be one of the most floristically diverse communities sampled in the park during this inventory.

Site 13 had a small amount of green alder, while the sample plot for site 14 contained no green alder. However, there was a scattering of alder in the area where site 14 was located. Green alder was particularly prevalent in close proximity to the wetland transition.

Site 13 was similar in some respects to the previously defined Aw / Alnu cri / Elym inn community which was located at mid slope position as well and at this time the 2 could easily be grouped together. It was separated from that community based on the moister and richer site conditions and an absence of a dominating green alder component. Site 13 and 14 appeared to be more similar than site 4 and 13. More sites need to be sampled to determine the relationship that exists among the characteristics in the 3 sites discussed here.

Moose scat and fresh bear sign (logs pulled part) were observed at site 13.

Sb - Pj / Ledu gro / Pleu sch
(Black Spruce – Jack Pine / Labrador Tea / Feather moss)

Location

Site 10 12V525586 UTM6405547 NAD 83

Air Photos

AS4976 #243-244

Site Conditions

Site

Slope (%)	25
Aspect (°)	240
Exposure	not applicable
Flood Hazard	no hazard
Soil Drainage	well
Site-Macro	lower slope
Site Meso	lower slope
Site Shape	straight
Moisture	subhygric
Nutrients	mesotrophic

Soils

Parent Material	glaciofluvial over moraine
Surface Expression	h
Soil Subgroup	E.DYB
Dominant Texture	S
Effective Texture	CL
Texture	S/CL

Vegetation

Code	Scientific Name	Common Name	Cover
Canopy			
PINUBAN	*Pinus banksiana*	jack pine	15
PICEMAR	*Picea mariana*	black spruce	70
Tall Shrubs			
PICEMAR	*Picea mariana*	black spruce	2
Low Shrubs			
ALNUCRI	*Alnus crispa*	green alder	5
LEDUGRO	*Ledum groenlandicum*	common Labrador tea	20
PICEMAR	*Picea mariana*	black spruce	3
ROSAACI	*Rosa acicularis*	prickly rose	1
VACC MYR	*Vaccinium myrtilloides*	common blueberry	3
VACCVIT	*Vaccinium vitis-idaea*	bog cranberry	1
Forbs			
COPTTRI	*Coptis trifolia*	goldthread	0.5

Code	Scientific Name	Common Name	Cover
MITENUD	*Mitella nuda*	bishop's cap	0.5
Bryophytes			
DICRUND	*Dicranum undulatum*	wavy dicranum	0.5
HYLOSPL	*Hylocomium splendens*	stair-step moss	0.5
PLEUSCH	*Pleurozium schreberi*	Schreber's moss	90
POLYJUN	*Polytrichum juniperinum*	juniper hair-cap	0.5
PTILCRI	*Ptilium crista-castrensis*	knight's plume moss	0.5
Lichen			
CLADMIT	*Cladina mitis*	reindeer lichen	0.5

Field Guide Classification

Best fit Boreal Mixedwood G1.1 subhygric - Sb-Pj/Labrador tea/feather moss or Canadian Shield D1.1 – Sb-Pj/black spruce-Labrador tea/feather moss

Based on site conditions (subhygric, mesotrophic, lower slope position) and the dominance of black spruce the best fit would appear to be G1.1; however soils at the site were not gleyed, indicating drier conditions like those associated with C1.1 (mesic Pj-Sb/ Labrador tea/feather moss). A similar community has been classified for the Canadian Shield (D1.1) but it has a higher cover of shrubby black spruce and also is associated with gleyed soils.

Discussion

This community was located on a strong lower slope and appeared to be the transitional zone or boundary between an upland pine stand and a wetland black spruce community. The soil consisted of sand over clay loam (57 cm down the soil profile). The wetter conditions favored the black spruce, which dominated the canopy cover in this community. The pine however extended above the black spruce canopy. Low pH's were recorded in the upper portion of the soil profile indicating nutrient availability was limited at this site. The canopy was very dense and floristic diversity was limited. Only 2 forbs were present in trace amounts; goldthread (*Coptis trifolia*) and bishop's cap (*Mitella nuda*). Common Labrador tea was the dominant shrub with a cover of 20 % and feather moss was the dominant ground cover at 90 %.

Sb / Ledu gro / Pleu sch
(Black Spruce / Labrador Tea / Feather moss)

Location

Site 15 12V535323 UTM6394168 NAD 83

Air Photos

AS4976 #194-195

Site Conditions

Site

Slope (%)	0
Aspect (°)	
Exposure	not applicable
Flood Hazard	no hazard
Soil Drainage	imperfectly
Site-Macro	
Site Meso	level
Site Shape	straight
Moisture	subhydric
Nutrients	
Factors	

Soils

Parent Material	glaciofluvial over moraine
Surface Expression	undulating
Soil Subgroup	GLE.DYB
Dominant Texture	S
Effective Texture	S
Texture	S/Sk

Vegetation

Code	Scientific Name	Common Name	Cover
Canopy			
PICEMAR	*Picea mariana*	black spruce	50
PINUBAN	*Pinus banksiana*	jack pine	1
Tall Shrubs			
PICEMAR	*Picea mariana*	black spruce	5
Low Shrubs			
CHAMCAL	*Chamaedaphne calyculata*	leatherleaf	1
KALMPOL	*Kalmia polifolia*	northern laurel	0.5
LEDUGRO	*Ledum groenlandicum*	common Labrador tea	90
PICEMAR	*Picea mariana*	black spruce	1
VACC MYR	*Vaccinium myrtilloides*	common blueberry	1
VACCVIT	*Vaccinium vitis-idaea*	bog cranberry	1
Bryophytes			

Code	Scientific Name	Common Name	Cover
DICRUND	*Dicranum undulatum*	wavy dicranum	0.5
PLEUSCH	*Pleurozium schreberi*	Schreber's moss	85
POLYSTR	*Polytrichum strictum*	slender hair-cap	0.5
PTILCIL	*Ptilidium ciliare*	liverwort	NV
SPHAANG	*Sphagnum angustifolium*	peat moss	5
Lichen			
CETRERI	*Cetraria ericetorum*		NV
CLADCRI	*Cladonia crispata*		NV
CLADDEF	*Cladonia deformis*		NV
CLADGRA	*Cladonia gracilis*		NV
CLADMIT	*Cladina mitis*	reindeer lichen	NV
CLADSTE	*Cladina stellaris*	reindeer lichen	0.5
CLADUNC	*Cladonia uncialis*		NV
FLAVNIV	*Flavocetraria nivalis*		NV
PELTNEO	*Peltigera neopolydactyla*		0.5

Field Guide Classification

Boreal Mixedwood G1.1 Sb-Pj/Labrador tea/feather moss

This community appears to fit in well with the field guide classification.

Discussion

This community was defined as a mineral wetland with subhygric moisture and mesotrophic nutrient conditions. A 10 cm layer of moss covered the sandy soil. Seepage occurred at a depth of 27 cm and the water table was encountered at a depth of 35 cm. The presence of a gleyed soil indicated that the soil was saturated much of the time.

This community lacked a distinct canopy. Rather, the tree layer consisted of variable height classes of black spruce. Feather moss covered most of the soil surface, with higher lichen covers (primarily reindeer lichen) associated with some of the more open areas. Occasional peat moss hummocks were noted at the sampled site. Peat moss tended to replace the feather moss and trees got somewhat shorter to the south of the sample site resulting in a SB / Ledu gro / Sphagnum community. This may be associated with increased water levels.

This community was somewhat similar to the Sb-Pj Ledu gro / Pleu sch community at site 10; However it was distinguished based on the wetter conditions and the uneven canopy.

Cham cal - Pice mar / Ledu gro / Sphagnum
(Leatherleaf –Black Spruce Regrowth / Labrador Tea / Peat moss)

Location

Site 6 12V525893 UTM6405952 NAD 83

Air Photos

AS4976 #243-244

Site Conditions

Site

Slope (%)	0
Aspect (°)	
Exposure	cold air drainage
Flood Hazard	may be expected
Soil Drainage	very poorly
Site-Macro	valley floor
Site Meso	level
Site Shape	concave
Moisture	hydric
Nutrients	permesotrophic
Factors	terrain, water

Soils

Parent Material	organic
Surface Expression	level
Soil Subgroup	TY.F
Dominant Texture	Of
Effective Texture	Of
Texture	Of

Vegetation

Code	Scientific Name	Common Name	Cover
Canopy			
PICEMAR	*Picea mariana*	black spruce	1
Tall Shrubs			
PICEMAR	*Picea mariana*	black spruce	3
Low Shrubs			
BETUPUM	*Betula pumila*	dwarf birch	0.5
CHAMCAL	*Chamaedaphne calyculata*	leatherleaf	45
KALMPOL	*Kalmia polifolia*	northern laurel	1
LEDUGRO	*Ledum groenlandicum*	common Labrador tea	1
LEDUPAL	*Ledum palustre*	northern Labrador tea	4
PICEMAR	*Picea mariana*	black spruce	25
RUBUCHA	*Rubus chamaemorus*	cloudberry	0.5
Forbs			

Code	Scientific Name	Common Name	Cover
SMILTRI	*Smilacina trifolia*	three-leaved Solomon's-seal	2
Grass			
CAREAQU	*Carex aquatilis*	water sedge	0.5
CAREGYN	*Carex gynocrates*	northern bog sedge	0.5
ERIOVAG	*Eriophorum vaginatum*	sheathed cotton grass	4
Bryophytes			
SPHAANG	*Sphagnum angustifolium*	peat moss	25
SPHAFUS	*Sphagnum fuscum*	rusty peat moss	65
SPHAWAR	*Sphagnum warnstorfii*	peat moss	7
Lichen			
ICMAERI	*Icmadophila ericetorum*		0.5

Field Guide Classification

Canadian Shield F2.1 black spruce-Labrador tea/cloudberry/peat moss

Cloudberry (*Rubus chamaemorus*) was present but not very prevalent at this site.

Discussion

This wetland community was located near the mouth of a drainage channel, which fed into a lake. The soil consisted of very weakly decomposed peat moss. It appears that the peat moss was acting as insulation and possible acidifying surroundings. Frozen soil was encountered at a depth of 20 cm. Paludification may be a factor at this site (further study is required). A very narrow band of the Betu pum / Tomen shrub fen community paralleled both sides of the creek. The sampled community, which appeared more bog like, was dominant elsewhere throughout the drainage area and situated beyond the creek's immediate influence. Leather leaf (*Chamaedaphne calyculata*) and black spruce were the dominant shrubs with covers of 45 and 28 % respectively. Common Labrador tea and northern Labrador tea (*Ledum palustre*) combined for a 5 % cover. Peat moss (*Sphagnum fuscum*) was the dominant ground cover.

Sb-Lt / Ledu gro / Spha ang
(Black Spruce – Larch / Labrador Tea / Peat moss)

Location

Site 2 no location coordinates available

Air Photos

AS4976 #183-184

Site Conditions

Site

Slope (%)	0
Aspect (°)	
Exposure	
Flood Hazard	
Soil Drainage	very poor
Site-Macro	valley floor
Site Meso	level
Site Shape	straight
Moisture	hydric
Nutrients	permesotrophic
Factors	water

Soils

Parent Material	organic over glaciolacustrine
Surface Expression	level
Soil Subgroup	TY.M
Dominant Texture	F
Effective Texture	M
Texture	Of/Om

Vegetation

Code	Scientific Name	Common Name	Cover
Canopy			
PICEMAR	*Picea mariana*	black spruce	10
LARILAR	*Larix laricina*	tamarack	30
Tall Shrubs			
PICEMAR	*Picea mariana*	black spruce	1
Low Shrubs			
ANDRPOL	*Andromeda polifolia*	bog rosemary	1
BETUPUM	*Betula pumila*	dwarf birch	1
KALMPOL	*Kalmia polifolia*	northern laurel	0.5
LARILAR	*Larix laricina*	tamarack	3
LEDUGRO	*Ledum groenlandicum*	common Labrador tea	10
OXYCMIC	*Oxycoccus microcarpus*	small bog cranberry	1
PICEMAR	*Picea mariana*	black spruce	1

Forbs			
MENYTRI	*Menyanthes trifoliata*	buck-bean	0.5
SMILTRI	*Smilacina trifolia*	three-leaved Solomon's-seal	0.5
STELLON	*Stellaria longifolia*	long-leaved chickweed	0.5
Grass			
CAREAQU	*Carex aquatilis*	water sedge	0.5
CARESPP	*Carex sp.*	sedge	0.5
Bryophytes			
AULAPAL	*Aulacomnium palustre*	tufted moss	0.5
DICRUND	*Dicranum undulatum*	wavy dicranum	0.5
PLEUSCH	*Pleurozium schreberi*	Schreber's moss	3
SPHAANG	*Sphagnum angustifolium*	peat moss	65
SPHAFUS	*Sphagnum fuscum*	rusty peat moss	2
TOMENIT	*Tomenthypnum nitens*	golden moss	3
Lichen			
CLADMIT	*Cladina mitis*	reindeer lichen	0.5

Field Guide Classification

Best fit Boreal MIxedwood J1.1 Sb-Lt/dwarf birch/sedge/peat moss

Dwarf birch (*Betula pumila*) cover was only 1 %.

Discussion

This very poorly drained treed fen was located within a large wetland area located adjacent to a lake. The large wetland graded from sedge to treed fen. Areas of open water were present. Parent materials consisted of glaciolacustrine sediment overlain by organic material. The Typic Meisosol soils consisted of mesic organic materials over lain by less decomposed fibric materials. A pH of 7.5 was recorded and indicated this was a nutrient rich site. This pH however, may not be representative of this treed site as soil information was collected at a site located between this community and a Betu pum / Carex / Drep spp. community (a community described further on in this report). The presence and decomposition of peat moss in this community would tend to acidify the surroundings thereby possibly bringing the pH down somewhat.

This community has been identified as a poor treed fen tending towards richer conditions. All indications of the species present would suggest this.

Sb - Lt / Betu pum / Care aqu / Spha fus
(Black Spruce – Larch / Dwarf Birch / Water Sedge / Peat Moss)

Location

Site 18 12V533811 UTM6405238 NAD 83

Air Photos

AS4976 #248-249

Site Conditions

Site

Slope (%)	0
Aspect (°)	
Exposure	cold air drainage
Flood Hazard	frequent
Soil Drainage	poor
Site-Macro	valley floor
Site Meso	level
Site Shape	concave
Moisture	hydric
Nutrients	permesotrophic
Factors	water

Soils

Parent Material	organic over moraine
Surface Expression	level
Soil Subgroup	TY.M
Dominant Texture	Om
Effective Texture	Om
Texture	Of/Om

Vegetation

Code	Scientific Name	Common Name	Cover
Canopy			
LARILAR	*Larix laricina*	tamarack	2
PICEMAR	*Picea mariana*	black spruce	4
Tall Shrubs			
LARILAR	*Larix laricina*	tamarack	1
PICEMAR	*Picea mariana*	black spruce	3
Low Shrubs			
ANDRPOL	*Andromeda polifolia*	bog rosemary	1
BETUPUM	*Betula pumila*	bog birch	5
CHAMCAL	*Chamaedaphne calyculata*	leatherleaf	1
KALMPOL	*Kalmia polifolia*	northern laurel	1
LARILAR	*Larix laricina*	tamarack	4
LEDUGRO	*Ledum groenlandicum*	common Labrador tea	2

Code	Scientific Name	Common Name	Cover
LEDUPAL	*Ledum palustre*	northern Labrador tea	2
OXYCMIC	*Oxycoccus microcarpus*	small bog cranberry	0.5
PICEMAR	*Picea mariana*	black spruce	6
SALIPED	*Salix pedicellaris*	bog willow	1
Forbs			
MENYTRI	*Menyanthes trifoliata*	buck-bean	0.5
POTEPAL	*Potentilla palustris*	marsh cinquefoil	0.5
SMILTRI	*Smilacina trifolia*	three-leaved Solomon's-seal	1
Grass			
CAREAQU	*Carex aquatilis*	water sedge	5
CARESPP	*Carex* sp.	sedge	2
ELEOPAL	*Eleocharis palustris*	creeping spike-rush	0.5
ERIOCHA	*Eriophorum chamissonis*	russett cotton grass	0.5
SCIRSPP	*Scirpus* sp.	bulrush	3
Bryophytes			
DREPSPP	*Drepanocladus* sp.	brown moss	5
POLYSTR	*Polytrichum strictum*	slender hair-cap	0.5
SPHAFUS	*Sphagnum fuscum*	rusty peat moss	60
SPHAWAR	*Sphagnum warnstorfii*	peat moss	10
TOMENIT	*Tomenthypnum nitens*	golden moss	5
Lichen			
CLADMIT	*Cladina mitis*	reindeer lichen	1

Field Guide Classification

Boreal Mixedwood J1.1 Sb-Lt/dwarf birch/sedge/ peat moss

This community appeared to fit into the field guide classification well. A similar community is defined for the Canadian Shield – G1.1 Sb-Lt/Labrador tea-dwarf birch/golden moss; however, it lacks the peat moss component.

Discussion

This rich treed fen grading to a shrubby fen was situated in a low lying drainage area north of a small lake. Phs of 7 and 8 were observed in the Of and Om layer of the soil profile. Water flow was a major factor for this community. This community would be impacted cold air drainage due to the topographic position. Tree cover was marginal (black spruce 4 %, tamarack 2%). Shrub cover was diverse.

Betu pum / Carex / Drep spp.
(Dwarf Birch / Sedge / Brown Moss)

Location

Site 1 12V517660 UTM6395070 NAD 83

Air Photos

AS4976 #183-184

Site Conditions

Site

Slope (%)	0
Aspect (°)	
Exposure	
Flood Hazard	
Soil Drainage	very poor
Site-Macro	valley floor
Site Meso	level
Site Shape	straight
Moisture	hydric
Nutrients	permesotrophic
Factors	water

Soils

Parent Material	organic over glaciolacustrine
Surface Expression	level
Soil Subgroup	TY.M
Dominant Texture	F
Effective Texture	M
Texture	Of/Om

Vegetation

Code	Scientific Name	Common Name	Cover
Low Shrubs			
BETUNEO	*Betula neoalaskana*	Alaska Birch	0.5
BETUPUM	*Betula pumila*	dwarf birch	5
LARILAR	*Larix laricina*	tamarack	1
Forbs			
MENYTRI	*Menyanthes trifoliata*	buck-bean	1
POTEPAL	*Potentilla palustris*	marsh cinquefoil	1
Grass			
CAREAQU	*Carex aquatilis*	water sedge	2
CARECHO	*Carex chordorrhiza*	prostrate sedge	4
CAREDIA	*Carex diandra*	two-stamened sedge	1
CARELIM	*Carex limosa*	mud sedge	2
ERIOCHA	*Eriophorum chamissonis*	russett cotton grass	5

Code	Scientific Name	Common Name	Cover
Bryophytes			
DREPSPP	*Drepanocladus sp.*	brown moss	70

Field Guide Classification

Best fit Boreal Mixedwood K2.1 dwarf birch/sedge/golden moss

Brown moss (*Drepanocladus* sp.) was dominant.

Discussion

This very poorly drained wetland site was located within a large wetland area located adjacent to a lake. The large wetland graded from sedge to treed fen. Areas of open water were present. Parent materials consisted of glaciolacustrine sediment overlain by organic material. The Typic Meisosol soils consisted of mesic organic materials over lain by less decomposed fibric materials. A pH of 7.5 indicated this was a nutrient rich site.

This site has been identified as a shrubby rich fen; however, with dwarf birch cover of 5 % and a larch cover of 1 % it appeared that this site was somewhat transitional to a sedge fen. The community boundaries in this area were not always evident.

The presence of brown moss (*Drepanocladus sp*.) and buckbean (*Menyanthes trifoliata)*, are indicative of rich, hydric conditions. Brown moss cover was estimated at 70 % for this site. This community is common along low-lying areas adjacent to lakes.

RECOMMENDATIONS

The following are recommendations for future consideration.

1. More widespread and detailed sampling to obtain more sample sites and a better cross section of sites from all areas of the park. During this study the maximum number of field sites representing a community was two. This is far too low. Increased sampling will allow for better characterization of communities (particularly the wetland communities and the Aw/Forb community).

2. Take a closer at birch sites to determine the ratio of the 2 species of birch.

3. Examine the existing boundary between the Boreal Forest and Canadian Shield natural regions. According to the current natural regions map (Alberta Environmental Protection 1994a) this park is situated in the Boreal Forest Natural Region. Based on the landforms and vegetation communities present this park occurs in outlying Canadian Shield terrain and an area that is transitional between the two natural regions. A number of the communities, particularly wetland communities, are more similar to communities described in the Canadian Shield Section of the *Field Guide to Ecosites of Northern Alberta* (Beckingham and Archibald 1996). Increased sampling would provide better community definition and also assist in determining natural region boundaries and transitional areas.

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REFERENCES

Alberta Environmental Protection. 1993. Alberta plants and fungi – Master species list and species group checklist. Alberta Environmental Protection. Edmonton, Alberta.

Alberta Environmental Protection. 1994. Ecological land survey site description manual. Canada- Alberta Partnership Agreement in Forestry. Canadian Forest Service and Alberta Land and Forest Services. Edmonton, Alberta.

Alberta Environmental Protection. 1994a. Natural regions and subregions of Alberta (map).Land Information Services Division, Alberta Environmental Protection.

Alberta Natural Heritage Information Centre. 1998. Classification of Alberta landforms. Alberta Natural Heritage Information Centre, Recreation and Protected Areas Division, Alberta Environmental Protection. Edmonton, Alberta.

Allen, L. and Johnson, J.D. 2001. Potentially trackable small patch communities of the Maybelle Dunes, Richardson River Dunes and Marguerite Crag and Tail Wildland Parks. Parks and Protected Areas, Edmonton, Alberta.

American Geological Institute. (R. Bates and J. Jackson, editors). 1984. Dictionary of Geological Terms. American Geological Institute.

Beckingham, J.D. and Archibald, J.H. 1996. Field guide to ecosites of northern Alberta. Natural Resources Canada, Canadian Forest Service, Northwest Region, Northern Forestry Centre, Edmonton, Alberta.

Gould, J. in progress. Rare plants of the Maybelle Dunes, Richardson River Dunes and Marguerite Crag and Tail Wildland Parks. Parks and Protected Areas, Edmonton, Alberta.