Potentially Trackable Small Patch Communities of the Maybelle Dunes, Richardson River Dunes and Marguerite Crag and Tail Wildland Parks

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Introduction

Natural plant communities are defined as recurring assemblages of plant species; the species occurring together because they respond similarly to a variety of site attributes[1]. They occur at different scales. Some, termed "matrix communities,"[2] are widespread and cover large areas across the landscape. "Large patch" communities are less extensive and cover less of the landscape, but overall may still form large, uninterrupted patches. Together, matrix and large patch communities usually make up the main, representative vegetation of an area. "Small patch" communities form small, discrete areas, usually associated with specific, specialised habitats, such as cliff faces. They may be correlated to some unusual attribute such as saline seepage.

Work to characterise the vegetation of a study area generally concentrates on matrix and large patch communities as the representative types that are common or spread over large areas. Small patch communities are overlooked specifically because they are not extensive enough to be considered representative. However, small patch communities may add significantly to the biodiversity of a site. They may "contain a disproportionately large percentage of the total flora, and also support a specific and restricted set of associated fauna (*e.g.* invertebrates or herpetofauna) dependent on specialized conditions[2]". However, plant communities are "not just containers for species but complex dynamic systems in themselves[2]".

Documenting these small patch plant communities then is important in documenting the biodiversity of protected areas. Both as elements of biodiversity themselves that may be rare or unusual, and as specialised habitats that potentially harbour species not yet documented.

Methods

The focus of this work was to collect information on small patch communities in three recently established wildland parks in and at the edge of the Athabasca Plains Subregion of the Canadian Shield Natural Region of Alberta. These are the Maybelle River, Richardson River Dunes and Marguerite Crag and Tail wildland parks. Although the information presented here will supplement the information on representative vegetation being collected by the Ecological Land Classification team, emphasis was placed on documenting communities that may be significant in a provincial context.

A review of the literature for sites with similarities to the wildland parks and for sites in northeastern Alberta, northwestern Saskatchewan and the nearby Northwest Territories was done. Any plant communities or habitats that have been documented as unusual in any way were noted as community types of interest that potentially occur within the wildland parks. Wherever possible these potential types were linked to landscapes that could be picked out on aerial photographs. The potential types and target landscapes are listed in Appendix 1.

In addition, the Alberta Natural Heritage Information Centre Preliminary Plant Community Tracking List[3] is a compilation of plant communities thought to be of restricted distribution in the province. Although none on the current list are specific to the Canadian Shield Natural Region, it is possible that some of those known to occur in the Boreal Natural Region may be found in the study areas. Again, these were identified and linked to a landscape, as listed in Appendix 2.

In total, 26 unusual communities or habitats were identified as potentially occurring within the study areas and linked to landscapes. Aerial photographs for each of the three wildland parks were then reviewed and any landscapes with potential to include these unusual communities were marked as target areas. As many target areas as possible were visited during the field program.

When a plant community that might be unusual was encountered, a vegetation plot was subjectively placed in a homogeneous location. Site data and floristic composition was documented and the cover of each species noted. For sites with complex lichen mixtures, all lichen species were noted, but individual covers were not assigned. Instead, an overall lichen cover was estimated and the main species assigned relative dominance. Plot sizes were chosen appropriate to the physiognomy of the vegetation being documented.

Results

Table 1 summarises the targeted landscapes that the literature suggested may include some unusual community types. No rocky shorelines, saline seepage areas, shrubby forest openings or Larix fens were located during the aerial photograph review. Locations for all other target landscapes were found on the aerial photographs, however due to timing and logistic constraints, not all were visited. No patterned wetlands, sharp river breaks or large conifers on stabilised dune ridges were inspected.

Table 1. Target Landscapes		
General Landscape	**Target Landscapes**	**Observations**
Uplands	Open graminoid slopes	Graminoid slopes located and documented (*Carex siccata* slope)
	Shrubby forest openings	No sites located on aerial photographs
	Aspen stands	Stands visited, no unusual types noted
Vegetated Dune Areas	Dune blow outs with conifers	No sites inspected
	Open pine stands	One stand documented (*Pinus banksiana / Cladina*)
	Open sandy knolls	Unusual dwarf shrubland documented (*Hudsonia tomentosa* – lichen crust)
	Large conifers on stabilised dune ridges	No sites inspected
Active Dune Areas	Gravel areas between active dune ridges	Gravel areas visited, no vegetated ones located
Riparian areas	Spruce stands	Stands visited, no unusual types noted
	Deciduous stands	One stand documented (*Betula papyrifera / Vaccinium vitis-idaea*)
	Shrublands	Stands visited, no unusual types noted
	Sharp river breaks	No sites inspected
Wetlands	Sandy shorelines	Sites visited, no unusual types noted
	Rocky shorelines	No sites located on aerial photographs
	Shorelines with Phragmites	No stands documented
	Saline seepage	No sites located on aerial photographs
	Small graminoid wetlands among dunes	Two communities documented, (*Chamaedaphne – Kalmia / Cladina* and *Carex oligosperma / Sphagnum*)
	Beaver ponds	Vegetation too immature to document communities
	Larix fen	No sites located on aerial photographs
	Patterned fen	No sites inspected

Some landscape types visited did not support plant communities that were considered unusual. Although in some cases they were a restricted community within the particular wildland park, they were similar to more widespread types and so were not documented in detail.

One beaver pond was inspected that likely included the community on the tracking list *Carex pseudo-cyperus - Calla palustris*, currently ranked S1S2. A seed head left over from a previous year permitted confirmation that *Carex pseudo-cyperus* was present, however, the sedges were too immature to document the community in detail.

Another community on the tracking list, *Phragmites australis,* appears to be frequent around lakes in northeastern Alberta. None were sampled on the ground, but some observations were made.

In her work to locate rare plant species, Joyce Gould documented two occurrences of an unusual fen type (*Andromeda polifolia - Sarracenia purpurea* poor fen).

Those plant communities located that were potentially significant in a provincial context were documented through plots. Other types were just noted.

Plant Communities Documented

Seven plant community types (CT) of potential significance were documented in detail. The general locations of the plots are given in Figure 1 and listed beside each type. The types documented include:

- two forest/woodland communities
  - CT 1. *Betula papyrifera / Vaccinium vitis-idaea* (Site 4)
  - CT 2. *Pinus banksiana / Cladina mitis* (Site 8)
- three shrublands
  - CT 3. *Andromeda polifolia / Sarracenia purpurea – Sphagnum angustifolium* poor fen (Sites 3, 4 &7)
  - CT 4. *Chamaedaphne calyculata – Kalmia polifolia / Cladina mitis* (Sites 4 & 5)
  - CT 5. *Hudsonia tomentosa* / lichen crust on sand (Site 5)
- and two herbaceous communities
  - CT 6. *Carex oligosperma - Sphagnum subsecundum* poor fen (Sites 4 & 5)
  - CT 7. *Carex siccata* graminoid slope (Sites 1 & 3)

For each of these, detailed information collected is presented followed by a discussion, evaluation as to the community's significance and brief recommendations.

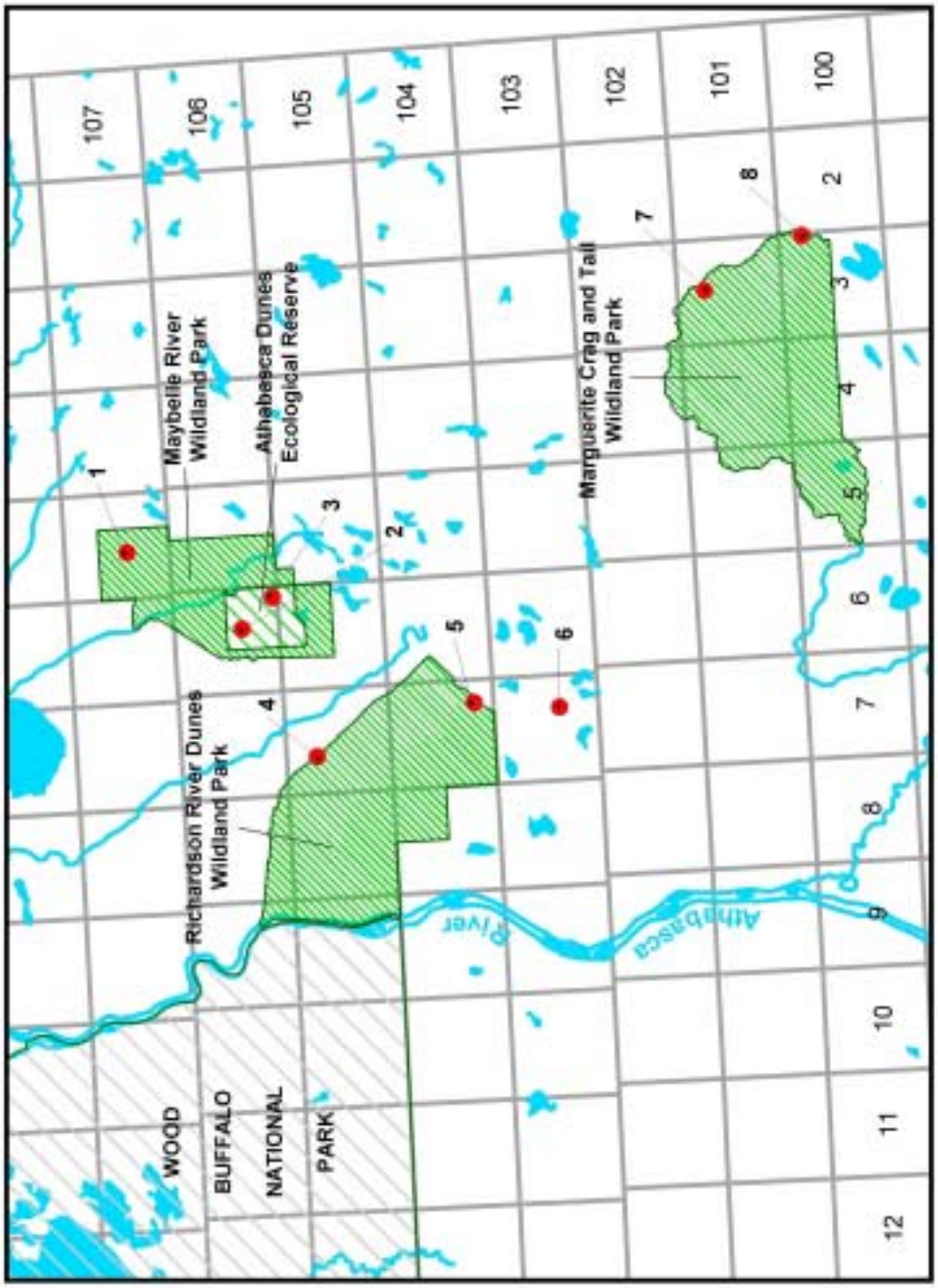


Figure 1.: General Plot Locations for Plant Communities Documented.

CT 1. *Betula papyrifera / Vaccinium vitis-idaea*

Location (Figure 2)

Maybelle River Wildland Park

12V0505852 UTM 6450708 (June 18, 2000)

Site Description

A mature stand of birch on a leading dune edge, at the eastern edge of the main dunes. The plot is located mid-slope on a strongly sloping (25°) north-east facing dune in a protected pocket with a subxeric moisture regime on rapidly drained sand.

photo by Drajs Vujnovic

Comments

This is a stand of mature birch with a closed canopy and open understory. There is a dense layer of leaf litter, covering about 75% of the ground in the plot. A small amount of exposed sand is present (1% cover) from small mammal burrows. Although the plot was done on the slope, the stand continues onto the flats at the base of the slope. On the flats, V*accinium myrtilloides* becomes more prevalent and *Cypripedium acaule* is present.

Plot: 10 X 20 m plot (20 m side following the contour of the slope)

Species		**Cover (%)**
Scientific	**Common**	
Trees		
Betula papyrifera	white birch	50
Pinus banksiana	jack pine	+
Shrubs		
Prunus pensylvanica	pin cherry	+
Vaccinium myrtilloides	common blueberry	5
Herb, Dwarf shrub		
Aralia nudicaulis	wild sarsaparilla	2
Arctostaphylos uva-ursi	bear berry	5
Chimaphila umbellata	prince's-pine	1
Maianthemum canadense	wild lily-of-the-valley	2
Geocaulon lividum	northern bastard toadflax	1
Trientalis borealis	northern starflower	+
Vaccinium vitis-idaea	bog cranberry	50
Mosses		
Rhacomitrium canescens	grey moss	+
Lichens		
Cladina mitis	green reindeer lichen	+

Surveyor: L. Allen

Discussion

Most white birch stands noted in the study areas were *B. papyrifera* / *Vaccinium myrtilloides* communities. A *Betula papyrifera* / *Vaccinium vitis-idaea* / *Cladina mitis* type was noted as a rare type in the Andrew Lake area[4], but this was a mesic community with *Picea mariana* prominent in the understory and *Alnus crispa* present (4% cover). No other similar white birch stands were noted in the literature.

Significance

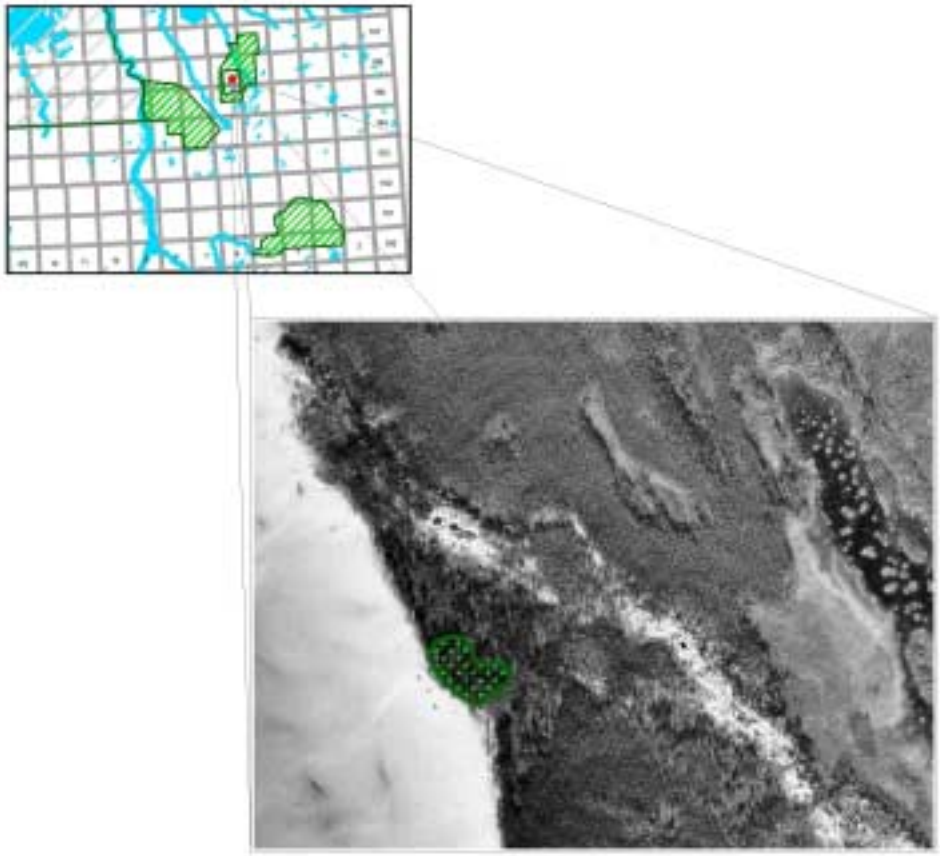
White birch stands were not uncommon in the study areas, but generally occurred as small patches, often in subxeric to mesic locations. Landals[5] noted that aspen and birch stands tended to be found in similar habitats; in depressions and where drainage provides mesic soil conditions or along lake edges where the water table is high. More work is needed to describe the types that may be present. Current information suggests that

there may be one or more types that are restricted to this region of Alberta.

Recommendation

Although not uncommon in the study areas, there may be one or more white birch communities that are restricted to this region of the province. Further work is needed to document the birch community types present and to evaluate their significance.

Figure 2. CT 1 Community Occurrence Location



CT 2. *Pinus banksiana / Cladina mitis*

Location (Figure 3)

Marguerite River Wildland Park
12V0539708 UTM 6396534 (June 14, 2000)

Site Description

A community of vegetated sand plains. The stand is located on a xeric, rapidly drained site on level terrain.

photo by L. Allen

Comments

The jack pine cover is sparse, only about 1% in the stand studied. There are a few scattered, old trees and some saplings (about 2 m tall) coming up. The presence of downed, burnt logs suggests that the old trees may have survived a fire. The shrub and herb layer is essentially lacking, although there are a few thicker patches of *Vaccinium myrtilloides* and the occasional *Picea glauca* (about 1 m tall).

Plot: a north / south transect through the community with a 1 X 1 m plot every 5 meters

Species Scientific	**Common**	**Cover (%)**
Trees		
Pinus banksiana	jack pine	1
Picea glauca	white spruce	+
Shrubs		
Vaccinium myrtilloides	common blueberry	2
Herb/Dwarf shrub		
Arctostaphylos uva-ursi	bearberry	3
Hudsonia tomentosa	sand heather	+
Lycopodium complanatum	ground cedar	+
Maianthemum canadense	wild lily-of-the-valley	+
Melampyrum lineare	cow-wheat	+
Vaccinium vitis-idaea	bog cranberry	+
Graminoids		
Carex siccata	hay sedge	+
Carex tonsa	bald sedge	+
Oryzopsis pungens	northern rice grass	+
Mosses		
Dicranum undulatum	wavy dicranum	+
Polytrichum piliferum	awned hair-cap	+
Lichens		
Cladina mitis	green reindeer lichen	1*
Cladina stellaris		*3**
Cladonia phyllophora		+
Cladonia gracilis		+
Cladonia cornuta		+
Cladonia cristatella		+
Cladonia deformis		+
Cladonia amaurocraea		+
Cladonia crispata		+
Cladonia botrytes		+
Cladonia borealis		+
Cladonia multiformis		+
Cladonia pyxidata		+
Cladonia subulata		+
Cladonia uncialis		2*
Cetraria ericetorum		+
Flavocetraria nivalis		+
Stereocaulon condensatum		+
Stereocaulon tomentosum		+
Black lichen crust		?
Open sand		1
Geastrum floriforme	flower-shaped earthstar	+
Epiphytes (on *Vaccinium* branches)		
Parmeliopsis ambigua		
Vulpicida pinastri		

1*, 2*, 3* = first, second and third most common lichens

Surveyors: J.D. Johnson, L. Allen

Discussion

The transect was run through a stand chosen for its high lichen cover. With sparse tree cover, these lichen communities stood out on the aerial photographs. Although this particular stand was more open than most, there did not seem to be an appreciable difference in the understory when compared to the more closed stands with a high lichen cover. Landals[5] also found *Cladina mitis* and *Cladonia amaurocraea* as the dominant lichens under open pine in areas of stabilised sand.

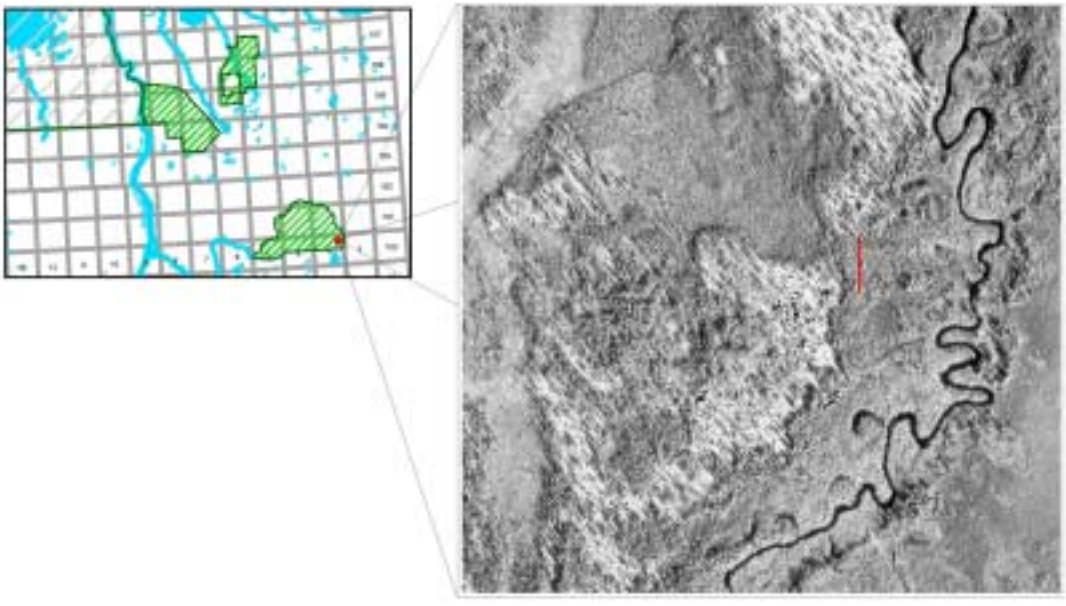
Significance

Pinus banksiana / Cladina mitis is one of the more common communities in the region. For the area south of Lake Athabasca, Raup and Argus[6] consider the open jack pine / lichen forest to be the most common type on dry sites of stabilised dunes and sandy till plains. It is sensitive to disturbance, but not a significant type.

Recommendation

This is a common plant community in north-eastern Alberta, covering extensive areas. No special status is recommended.

Figure 3. CT 2 Transect Location



CT 3. *Andromeda polifolia / Sarracenia purpurea / Sphagnum angustifolium* poor fen

Location (Figure 4)

Marguerite River Wildland Park
Plot 1 12V 0509210 6447066 NAD 83 (June 17, 2000)
Plot 2 12V 0534179 6405428 NAD 83 (June 17, 2000)

Maybelle River Wildland Park
Plot 2 12V 0496726 6421218 NAD 27 (June 20, 2000)

Site Description

This community forms a band around the edges of small lakes. The band varied in width from about 4 m to about 6 m at Plot 2.

Photo by A.J. Gould

Comments

The high cover value of *Sarracenia purpurea* is striking. The stands appear similar, but plot three has a much greater cover of *Andromeda polifolia* and the *Sphagnum* species seem variable.

Plot: 2 X 2 m

Species		**Cover (%)**			
Scientific	Common	plot	1	2	3
<u>Herbs/Dwarf Shrubs</u>					
Sarracenia purpurea			25	20	10
Andromeda polifolia			15	25	50
Chamaedaphne calyculata			10	-	10
Kalmia polifolia			5	P	-
Drosera rotundifolia			P	-	-
Vaccinium oxycoccus			P	-	-
Eriophorum vaginatum			P	-	20
Smilacina trifolia			-	P	-
<u>Mosses</u>					
Sphagnum angustifolium			60	-	45
Sphagnum magellanicum			35	-	45
Sphagnum fuscum			3	95	-
P = present					

Surveyors: A.J. Gould (plots 1, 2 & 3), J.D. Johnson (plot 1)

Discussion

This community type forming narrow rings around small lakes. No communities dominated by *Sarracenia* or *Andromeda* were found in the literature.

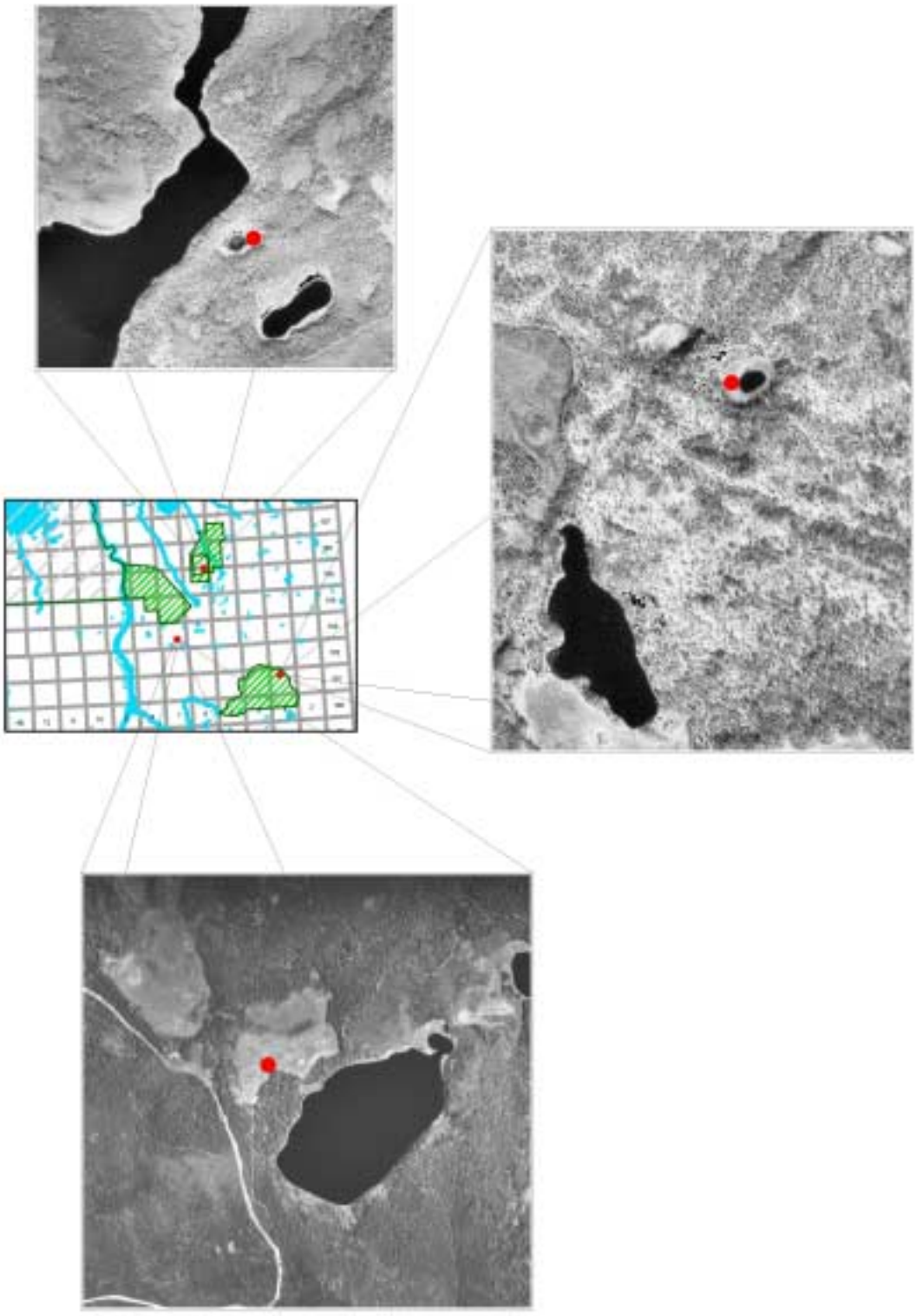
Significance

This appears to be a provincially rare plant community type. Two occurrences were documented, one in the Maybelle River Wildland Park and one in Marguerite River Wildland Park but it is likely that there are several more locations in both.

Recommendation

This community type should be recognised as a special feature of provincial significance. It should be recommended for addition to the Alberta Preliminary Plant Community Tracking List, proposed rank S1S2.

Figure 4. CT 3 Plot Locations



CT 4. *Chamaedaphne calyculata – Kalmia polifolia / Cladina mitis*

Location (Figure 5)

Richardson River Dunes Wildland Park
Plot 3 12V0493776 UTM 6444076 (June 15, 2000)
Plot 7 12V0497848 UTM 6429355 (June 20, 2000)

Site Description

This community occurs on sand in shallow depressions or channel drainages. Occurrences may be in the centre of the depression (plot 7), or may form a band along the drainage (plot 3 and another occurrence noted at 12V0497682 UTM 6429360, but detailed notes not made). When forming a band along drainages, this community was adjacent to another unusual community type, the *Carex oligosperma / Sphagnum subsecundum* channel fen on sand.

In all sites examined, the water table is very near the surface, and the community is likely subject to periodic flooding.

photo by L. Allen

Plot: 5 X 5 m

Species		Cover (%)	
Scientific	**Common**	**plot 3**	**7**
Trees/Shrubs			
Pinus banksiana	jack pine	10	1
Chamaedaphne calyculata	leatherleaf	50	40
Kalmia polifolia	northern laurel	5	5
Ledum groenlandicum	common Labrador tea	-	+
Salix spp.	willows	-	+
Hudsonia tomentosa	sand heather	+	-
Vaccinium myrtilloides	common blueberry	+	2
Graminoid			
Carex oligosperma	few-seeded sedge	-	+
Mosses			
Polytrichum piliferum	awned hair-cap	P	P
Lichens			
Cladina mitis (1*)	green reindeer lichen	P	P
Cladonia gracilis (2*)		P	P
Cladonia cornuta		P	P
Cladonia cristatella		P	P
Cladonia deformis		P	P
Cladonia amaurocraea		P	-
Cladonia crispata		P	P
Cladonia botrytes		P	-
Cladonia borealis		P	P
Cladonia uncialis		-	P
Cladonia/Cladina total cover		40	80
Diploschistes muscorum		P	P
Black lichen crust		P	P
Open sand		5	1
Epiphytes (on ericaceous shrubs)			
Parmeliopsis ambigua			
Vulpicida pinastri			

*1, *2 = first and second most common lichens
P = present but individual species cover not estimated

Surveyors: J.D. Johnson, L. Allen

Comments

Pine cover in this community type is always open, but can be variable. The trees are generally fairly small (maximum height 2.5 m, average 1.5 m tall at plot 3). The main lichen is *Cladina mitis* with *Cladonia gracilis* having the second greatest cover.

Discussion

This appears to be an unusual community type, forming on a specific habitat – sand substrate with seepage at or near the surface. It was only documented in the Richardson River Dunes Wildland Park, but likely also occurs on suitable habitat in the vegetated dunes area of the Maybelle River Wildland Park. It was often found paired with CT 6, the *Carex oligosperma – Sphagnum subsecundum* poor fen.

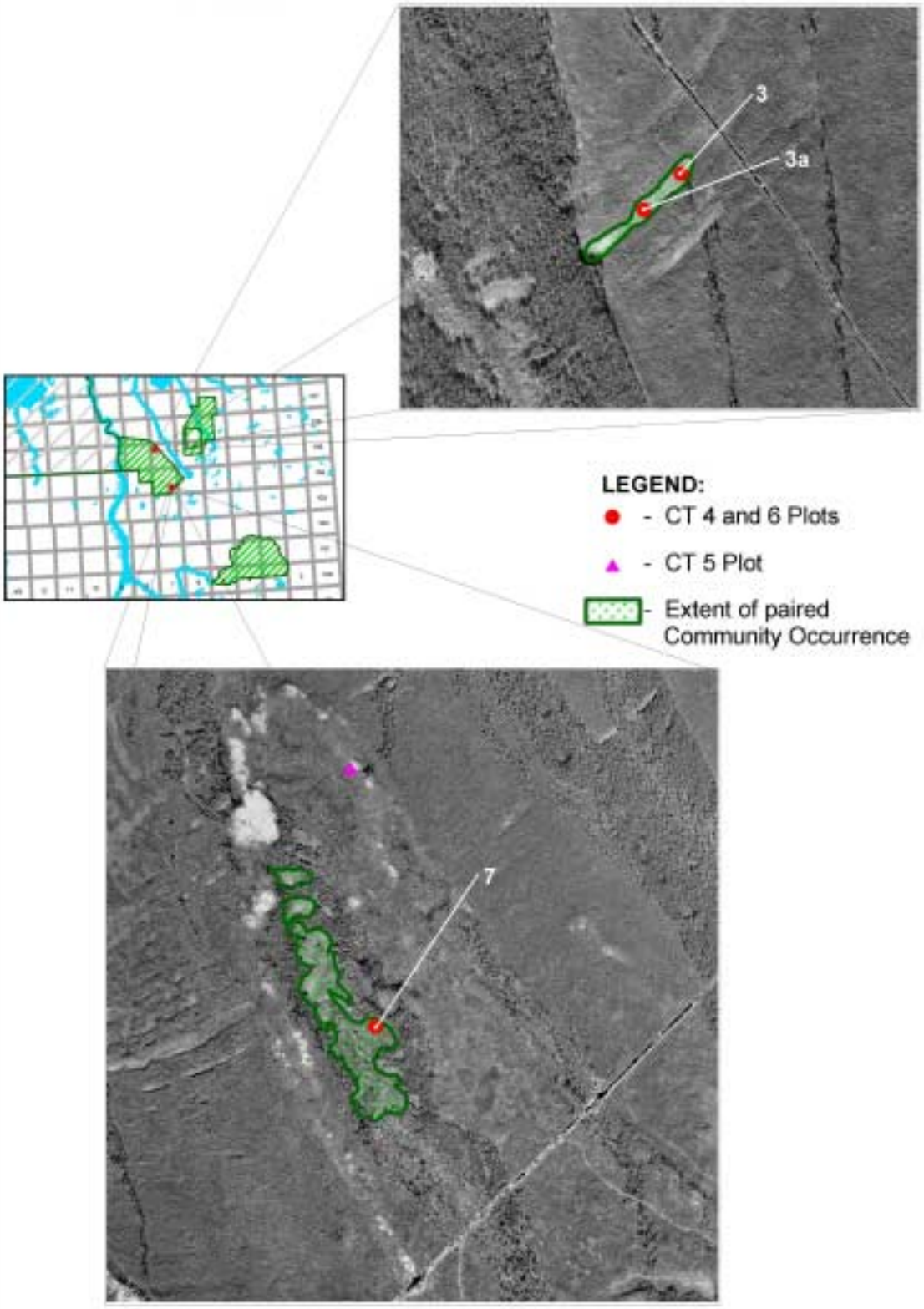
Significance

This appears to be a provincially rare plant community type. Three occurrences are documented to date, but it is likely that there are several more locations in both Maybelle River and Richardson River Dunes Wildland Parks.

Recommendation

This community type should be recognised as a special feature of provincial significance. It should be recommended for addition to the Alberta Preliminary Plant Community Tracking List, proposed rank S1S2.

Figure 5. CT4 and 6 Plots and Community Occurrence Locations
CT5 Plot Location



CT 5. *Hudsonia tomentosa* / lichen crust on sand

Location (see Figure 5)

Richardson River Dunes Wildland Park
12V0497752 UTM 6430191 (June 13, 2000)

Site Description

This community was found on a southwest-facing slope near the head of a parabolic dune in an area with scattered jack pine and some active sand. It was found on the upper slope of a sand ridge and is likely subject to wind and water erosion. It is a xeric, rapidly drained site.

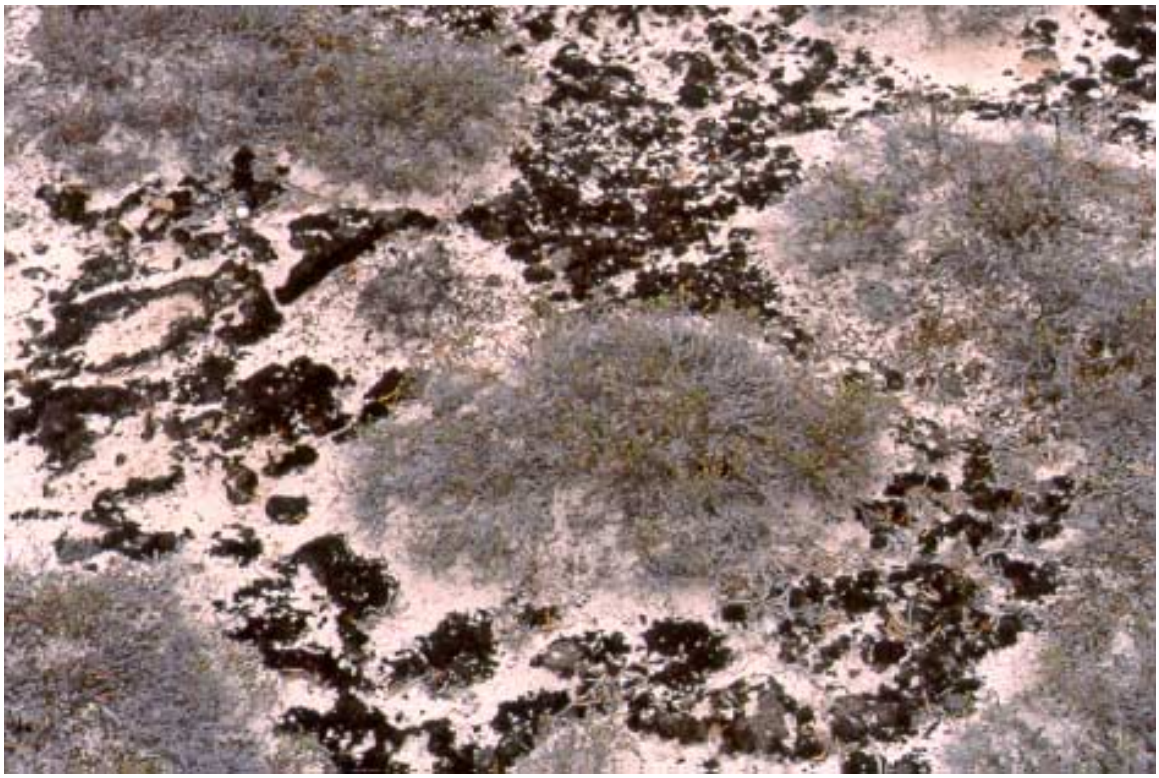


photo by L. Allen

Comments

This appears to be an early successional community on sand. Charcoal was noted, evidence of past burns. The site is subject to wind and water erosion, with some of the crust areas undergoing deflation.

Plot: 5 X 5 m

Species Scientific	Common	Cover (%)
Shrubs		
Pinus banksiana	jack pine	+
Herb/Dwarf shrub		
Hudsonia tomentosa	sand heather	40
Solidago spathulata	mountain goldenrod	+
Mosses		
Ceratodon purpureus	purple horn-toothed moss	1
Polytrichum piliferum	awned hair-cap	5
Lichens		
Cladonia		+
Diploschistes muscorum	Grey lichen crust	10
unknown	Black lichen crust	15
Geastrum floriforme	flower-shaped earth star	+
Open sand		35

Surveyors: J.D. Johnson, L. Allen

Discussion

Only one good occurrence of this community type was located, so it is unknown if it is repeated elsewhere on the landscape. A significant portion of the plant cover of the community is made up of what we have called grey or black “lichen crust”. Samples were collected, but the black crust has yet to be identified.

Significance

Unknown

Recommendations

This is a community of unknown significance. Further work is needed to determine if it is a recognizable or repeatable type on the landscape. This is a sensitive site, very susceptible to disturbance of any kind.

CT 6. *Carex oligosperma* / *Sphagnum subsecundum* poor fen

Location (see Figure 5)

Richardson River Dunes Wildland Park
Plot 3 12V0493776 UTM 6444076 (June 15, 2000)
Plot 7 12V0497848 UTM 6429355 (June 20, 2000)

Site Description

This rare community type occurs on sand, usually in the lowest portions of channel drainages. It may or may not be bordered by another rare CT, the *Chamaedaphne calyculata - Kalmia polifolia / Cladina mitis* lichen heath.

In all sites examined, the water table is very near the surface, and standing water is often present at some time during the growing season.

photo by J.D. Johnson

Comments

The presence of a fen in these channels indicates a slowly moving water table. Without internal drainage, these channels would likely become basin bogs.

Plot: 2 - 5 X 5 m (edge and centre of channel)

Species		**Cover (%)**		
Scientific	Common	plot	3	7
Graminoids				
Carex oligosperma	few-seeded sedge		1*	1*
Carex aquatilis	water sedge		P	P
Calamagrostis canadensis	bluejoint		P	P
Scirpus cyperinus	wool-grass		P	P
Mosses				
Sphagnum subsecundum	twisted bog moss		1*	1*
Drepanocladus exannulatus	marsh hook moss		P	P

1* = dominant species
P = present but individual species cover not estimated

Surveyors: J.D. Johnson, L. Allen

Discussion

This community type is almost totally dominated by the two named species. The presence of other species is dependent on the width of the channel and the presence or absence of standing water. Bluejoint and wool-grass are restricted to the drier edges of the fen, whereas water sedge and marsh hook moss occur in the lowest and wettest portions of the fen, often where standing water accumulates.

This appears to be an unusual community type, forming on a specific habitat – sand substrate with seepage at or near the surface. It was only documented in the Richardson River Dunes Wildland Park, where it is not uncommon in the area investigated. It may also occur on suitable habitat in the vegetated dunes area of the Maybelle River Wildland Park. It was often found paired with CT 4, the *Chamaedaphne calyculata – Kalmia polifolia / Cladina mitis* community, both mapped on Figure 5.

Significance

This appears to be a provincially rare plant community type. About a half dozen occurrences were observed in the Richardson Dunes, but it is likely that there are several more locations in both Maybelle River and Richardson River Dunes Wildland Parks.

Recommendation

This community type should be recognised as a special feature of provincial significance. It should be recommended for addition to the Alberta Preliminary Plant Community Tracking List, proposed rank S1S2.

CT 7. *Carex siccata* Graminoid Slope

Location (Figure 6)

Maybelle River Wildland Park

Plot 4 12V0513221 UTM 6461708 (June 16, 2000)
Plot 5 12V0512871 UTM 6461848 (June 16, 2000)
Plot 5a 12V0509127 UTM 6447499

Site Description

This community as documented here occurs mid-slope on southeast- (plots 4 and 5) to southwest- (plot 5a) facing hillsides. A fourth site on an east- southeast-facing slope (12V0513205 UTM 6461520) was also noted, but not documented in detail. Slopes tended to be moderately steep (about 20°) and the sites xeric and rapidly drained. Plot 5 was quite stony.

photo by L. Allen

Comments

Scattered *Betula papyrifera* (plot 4) or *Alnus crispa* (plot 5) occur at the edge of the stands.

Plot: three 5 X 5 m plots at roughly mid-slope

Species			**Cover (%)**		
Scientific	**Common**	**plot**	**4**	**5**	**5a**
Shrubs					
Pinus banksiana	jack pine		+	-	+
Amelanchier alnifolia	saskatoon		+	-	-
Prunus pensylvanica	pin cherry		+	+	-
Vaccinium myrtilloides	common blueberry		+	-	-
Herbs/Dwarf shrub					
Arctostaphylos uva-ursi	common bearberry		1	+	2
Hudsonia tomentosa	sand heather		-	-	+
Solidago spathulata	mountain goldenrod		+	-	2
Arabis lyrata	lyre-leaved rock cress		+	+	+
Apocynum androsaemifolium	spreading dogbane		+	+	+
Artemisia campestris	plains wormwood		+	+	-
Achillea millefolium	common yarrow		+	+	-
Anemone patens	prairie crocus		-	-	+
Campanula rotundifolia	harebell		-	-	+
Selaginella rupestris	rock little club-moss		-	1	+
Graminoids					
Carex siccata	hay sedge		8	4	8
Carex tonsa	bald sedge		1	1	1
Festuca saximontana	Rocky Mountain fescue		4	+	+
Oryzopsis pungens	northern rice grass		+	-	+
Agrostis scabra	hair grass		+	+	+
Dichanthelium acuminatum	soft millet		-	-	+
Mosses					
Polytrichum piliferum	awned hair-cap		5	3	3
Ceratodon purpureus	purple horn-toothed moss		+	+	+
Lichens					
Cladina mitis	green reindeer lichen		+	+	3
Cladonia gracilis			(1*)	+	+
Cladonia cornuta			+	-	+
Cladonia cristatella			*(2*)*	+	*2*
Cladonia deformis			*(3*)*	-	+
Cladonia amaurocraea			(4*)	-	+
Cladonia subulata			+	-	-
Cladonia botrytes			-	-	+
Cladonia borealis			+	-	-
Cladonia uncialis			-	-	+
Cladonia/Cladina total cover			2	2	5
Peltigera rufescens			-	+	-
Geastrum floriforme	flower-shaped earthstar		-	-	+

1*, 2*, 3*, 4* = first, second, third and fourth most common lichens

Surveyors: J.D. Johnson (plots 4, 5, 5a), L. Allen (plots 4, 5)

Discussion

This community type was documented in three locations, but was noted in many others. It seems to be a fairly common successional type following disturbance on sand. It was noted in areas from slopes such as those documented above to roadsides and along old air strips.

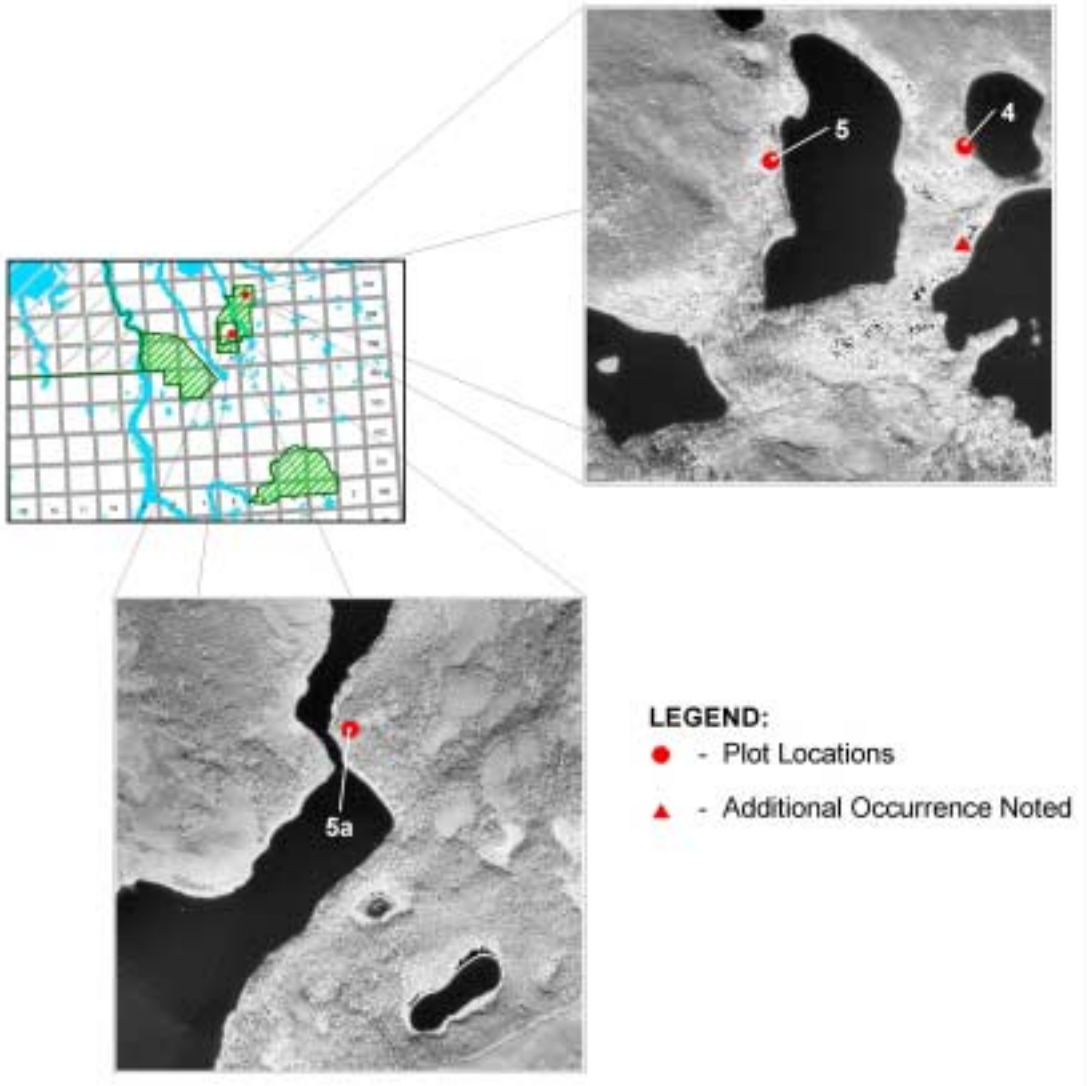
Significance

This is an early successional plant community type that appears to be fairly common in the area.

Recommendation

No special consideration required

Figure 6. CT 7 Plot Locations



Additional communities noted

The following lists additional plant communities that were noted during the field program, with general locations (MR = Maybelle River Wildland Park, RRD = Richardson River Dunes Wildland Park, MCT = Marguerite Crag and Tail Wildland Park). These communities however were not documented in detail.

Forests / Woodlands

Betula neoalaskana / Calamagrostis canadensis
MR, mesic stand beside creek flowing into the Maybelle River, much leaf litter and deadfall

B. neoalaskana / Equisetum sylvaticum
MR, mesic stand beside spring area at east edge of main dunes

B. papyrifera / Vaccinium myrtilloides
MR, small mesic pocket between two hills

Pinus banksiana / Cladina mitis - Cladonia cristatella - Cladonia borealis
RRD, open forest on top of stabilized dune ridge

P. banksiana saplings with sparse understory
RRD, covering extensive areas on sand plains between dune ridges, dense dead and down, burn area

P. banksiana / Alnus crispa
RRD, base of dune ridges

Picea glauca - Betula papyrifera / Hylocomium splendens
RRD, Kenny Woods area, mature stands, *Abies balsamea* in the understory (a few trees), some areas with considerable “electrified cat’s tail moss” (*Rhytidiadelphus triquetrus*)

P. glauca / Equisetum arvense
RRD, Kenny Woods area, mature forest along the Athabasca River, large old trees, *Rosa acicularis, Cornus stolonifera* and *Viburnum edule* are the main shrub species

P. glauca / Viburnum edule – Rosa acicularis
RRD, Kenny Woods area, stand with large trees, feather moss understory

P. glauca / Viburnum edule / Hylocomium splendens - Pleurozium schreberi
RRD, Kenny Woods area, mature forest along old river channel, considerable *Abies balsamea* in understory

Picea mariana / Alnus tenuifolia - Salix spp. / *Ledum groenlandicum / Sphagnum* spp.
MCT, coniferous swamp between sand deposits and Marguerite River

P. mariana / Chamaedaphne calyculata – Kalmia polifolia / Sphagnum spp.
MCT, bog between sand deposits and crag areas

P. mariana / Pleurozium schreberi
MR, stand on terrace beside the Maybelle River, some *Hylocomium splendens*

Populus balsamifera – (Picea glauca) – Betula neoalaskana / Lycopodium annotinum
MR, small bench on south-facing bank of the Maybelle River

P. balsamifera / Cornus stolonifera / Equisetum pratense
RRD, on terrace beside Athabasca River, dense stand, occasional large tree, *Cornus* essentially unbrowsed

P. balsamifera / Rosa acicularis - Viburnum edule – Cornus stolonifera
RRD, Kenny Woods area along the Athabasca River; large, old trees, occasional *Populus tremuloides* and *Betula neoalaskana*, leaf litter is main ground cover

Populus tremuloides – Betula neoalaskana / Rosa acicularis
RRD, dense young submesic forest, impoverished understory

P. tremuloides / Equisetum pratense – E. arvense
RRD, Kenny Woods area, young stand with *Picea glauca* in the understory

Shrublands

Alnus tenuifolia / Calamagrostis canadensis
MCT, wetland between sand deposits and Marguerite River

Alnus tenuifolia / Matteuccia struthiopteris
RRD, on terrace beside Athabasca River, dense stand, lots of deadfall, dissected by old channels

Rosa acicularis / Festuca saximontana / Arctostaphylos uva-ursi
RRD, small shrubby opening along Embarras trail

Salix planifolia – S. petiolaris
RRD, willow ring at edge of old beaver pond

Salix spp. – *Betula pumila*
MCT, wetland between sand deposits and Marguerite River

Herbaceous

Carex aquatilis marsh
MR, main community in small pothole with standing water, surrounded by dunes
RRD, Kenny Woods area, forming patches at edge of an old river channel, largely vegetated but with some open water

C. utriculata marsh
RRD, small bowl wetland, middle of parabolic dune

Equisetum fluviatile
RRD, Kenny Woods area, forming patches at edge of an old river channel, largely vegetated but with some open water

Phragmites australis
RDD, MR, fairly common ring around lakes. A tracking list community[3], but no sites were inspected in detail on the ground

Typha latifolia
RRD, Kenny Woods area, forming patches at edge of an old river channel, largely vegetated but with some open water

Discussion and Recommendations

Generally, more work on the vegetation is needed in all the wildland parks. For example, there are a number of species of lichens that were not found, but would be expected to occur in the study areas, including *Cladina arbuscula, Cetraria islandica* and *Ramalina* spp. The least amount of time on the ground was spent in the Marguerite River Wildland Park.

Several landscapes with potential to include unusual plant communities were not visited (Table 1) due to the limited time and difficulties in access. Additional work is needed to inspect landscapes not visited.

There are some sites that were looked at superficially, such as the poor fen ponds with the boggy islands, off the east edge of the Maybelle River dunes. Work is needed here to document the vegetation, and should be complimented with information on the water chemistry.

More work is needed to better document a number of the communities in the wildland parks.

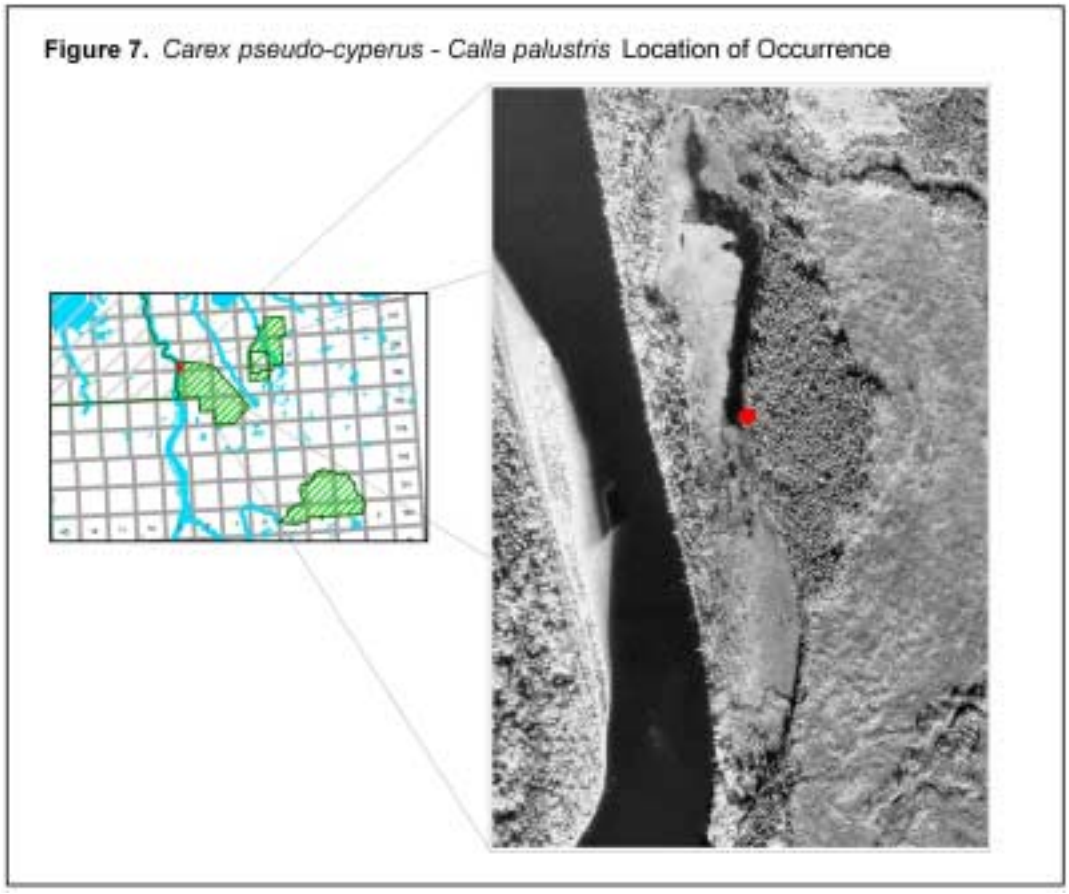
- The spring was late in 2000 and so some communities dominated by grasses and sedges were impossible to confirm, because the main species were not yet identifiable. More work is needed to document the species composition of graminoid communities. In particular beaver ponds with potential habitat for the *Carex pseudo-cyperus - Calla palustris*, currently ranked S1S2, should be inspected.
- Although not uncommon in the study areas, there may be one or more white birch communities that are restricted to this region of the province. Further work is needed to document the birch community types present and to evaluate their significance.
- While no aspen stands that appear significant were noted, further fieldwork should be done to document the types that occur and to determine if there are any unusual types present.
- No communities of riparian areas inspected were considered provincially significant. However they are a restricted habitat within the wildland parks and should be considered special features. They are biologically diverse, with species and communities not found elsewhere in the wildland parks. Further field work should be done to document the types that occur and to determine if there are any unusual types present.
- More work is required to evaluate the CT 5. *Hudsonia tomentosa* / lichen crust on sand type. It should be considered potentially significant and managed as a sensitive feature within the wildland park.
- Some preliminary observations were made on the *Phragmites australis* community that is currently on the provincial preliminary plant community tracking list[3] (ranked S2S3). *Phragmites* is by far the dominant species with few if any other graminoids. Other species present include pondweeds amongst the canes and *Ranunculus aquatilis*. The band of *Phragmites*

seems to quickly grade into a lakeshore community of *Chamaedaphne-Ledum-Vaccinium myrtilloides* or *Myrica gale* with an understory of either *Sphagnum* (with the heaths) or fen mosses (with *Myrica*) depending on the upslope conditions. Further work through aerial reconnaissance and on the ground plot work is needed to better document the community's extent and composition.

The following plant community types documented in this study will be recommended for addition to the Preliminary Tracking list. These are probably rare in the Alberta context, and should be considered special features in the wildland parks.

- *Chamaedaphne calyculata – Kalmia polifolia / Cladina mitis*
- *Carex oligosperma / Sphagnum subsecundum* poor fen
- *Andromeda polifolia / Sarracenia purpurea / Sphagnum angustifolium* poor fen

One occurrence of the *Carex pseudo-cyperus - Calla palustris*, currently ranked S1S2, was confirmed, at the south end of the large oxbow near Kenny Woods (Figure 7). This community should also be considered provincially significant and recognized as a special feature.



Conclusion

This study concentrated on documenting small patch communities of the Maybelle River, Richardson River Dunes and Marguerite Crag and Tail wildland parks. Four provincially significant plant communities were documented and other significant and sensitive communities noted. There remain significant information gaps on this aspect of the biodiversity of the wildland parks, and further work is needed.

Acknowledgements

We would like to thank Drajs Vujnovic for developing the figures for this report.

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Appendices

Appendix 1. Unusual communities or habitats

Community	Reason	Landscape
Grassy, south-facing slopes	Restricted habitat[1]	Open, south-facing slopes
Gravel pavement vegetation	Restricted habitat[2]	Gravel areas between active dune ridges
Spruce – Pine old growth	Noted in only a few locations[2]	Large conifers on stabilized dune ridges
Park-like white spruce by blowouts	Noted in only a few locations[2]	Dune blow outs with conifers
Spruce stands on floodplains	Limited to small, local areas[2]	Riparian spruce
Grass – sedge meadow on sand	Highly localised[2]	Small graminoid wetlands among dunes
Stone shore	Minor habitat[2]	Rocky shorelines
Sandstone ledges	Almost non-existent in area[2]	Sharp river breaks
Pine savannah	Type suggested for possible inclusion on provincial tracking list	Open pine stands

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Appendix 2. Communities on the Preliminary Plant Community Tracking List that occur in the Boreal Natural Region

Community	*SRank*	**Landscape**
Amelanchier alnifolia / Arctostaphylos uva-ursi / Oryzopsis pungens	S2S3	Shrubby forest openings
Carex limosa – Scheuchzeria palustris – Sphagnum majus / S. jensenii / S. riparium	S1	Patterned fen
Carex pseudo-cyperus - Calla palustris	S1S2	beaver ponds
Isoetes echinospora	S1	sandy shorelines
Larix laricina / Carex prairea	S1	Larix fen
Phragmites australis	S2S3	Lake shores
Picea glauca / Alnus tenuifolia – Betula neoalaskana / Equisetum pratense / Hylocomium splendens	S3	Spruce stands, river terraces
Picea glauca / Cetraria islandica	S1	Open stands, sandy knolls
Populus balsamifera / Alnus tenuifolia / Cornus stolonifera / Equisetum pratense	S3	Deciduous stands, river terraces
Populus balsamifera / Viburnum opulus / Matteuccia struthiopteris	S1S2	Deciduous stands, river terraces
Populus tremuloides / Rubus parviflorus / Aralia nudicaulis	S2S3	Aspen stands
Populus tremuloides / Salix bebbiana-Corylus cornuta / Calamagrostis canadensis – Matteuccia struthiopteris	S1	Aspen stands
Puccinellia nuttalliana – Suaeda calceoliformis – Spergularia marina barren	S2	Saline seepage
Salicornia europaea	S2	Saline seepage
Salix athabascensis string shrubland	SP	Patterned fen
Salix drummondiana / Scirpus microcarpus – Calamagrostis canadensis	S1	Riparian shrubland