

# **Rare Wildlife & Plant Conservation Studies in Sandhill and Sand Plain Habitats of Southern Alberta**

RARE WILDLIFE AND PLANT CONSERVATION STUDIES  
IN SANDHILL AND SAND PLAIN HABITATS  
OF SOUTHERN ALBERTA

by  
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## EXECUTIVE SUMMARY

Sandhill habitats contain a major concentration of significant features, including numerous rare, threatened and endangered species of plants and animals.

Based on recommendations from previous studies on reptiles and amphibians and rare plants in Alberta's Grassland and Parkland Natural Regions, a broad study on sandhill habitats was undertaken in 1987. The study area encompassed all sand plains and sandhill habitats from the Red Deer River south to the United States boundary, west to Highway 2 and east to the Saskatchewan border. In addition, several sites north of the Red Deer River north to the David Lake area were investigated.

Research in 1987 was undertaken on rare, threatened and endangered wildlife and plants. Rare, threatened and endangered plants were studied to map their distributions, and to assess the degree to which dune stabilization was occurring and how this affected native plants.

Recommendations were developed for the management of key habitats and significant species. The species are placed in the following categories:

### Extirpated

Greater Prairie Chicken.

### Endangered

Tradescantia occidentalis, Cyperus schweinitzii (Aspen Parkland only), Plains Hognose Snake and Great Plains Toad. Detailed recovery and monitoring plans should be prepared for each.

### Threatened

Chenopodium subglabrum, Abronia micrantha, Astragalus lotiflorus and Lygodesmia rostrata (Aspen Parkland only).

### Rare, But Not Threatened

Cyperus schweinitzii (Mixed Grassland only), Eriogonum cernuum, Draba reptans, Polanisia dodecandra, Astragalus kentrophyta, Franseria acanthicarpa, Lygodesmia rostrata (Mixed Grassland only), Yucca glauca, Thellungiella salsuginea, Astragalus purshii, Psoralea argophylla, Oenothera andina, Asclepias viridiflora, Castilleja sessiliflora and Ord's Kangaroo Rat.

### Rare; Further Research Needed

Munroa squarrosa, Sporobolus neglectus, Cyperus squarrosus, Oenothera serrulata, Cryptantha minima, Hedeoma hispidum and Thelesperma marginatum.

### Uncommon

Lupinus pusillus and Antennaria dimorpha have been classified as rare but should be considered uncommon.

### Removed From Rare List

Cryptantha fendleri, Vulpia octoflora, Androsace occidentalis and Grasshopper Sparrow occur in large numbers in most sandhill habitats.

Principal threats to native plants relate to the encroachment of vegetation on active dunes. Threats to wildlife include natural drought, proliferation of road networks in natural habitats, drainage and cultivation of natural habitats, placement of dugouts in ephemeral wetlands, heavy summer grazing and stabilization of active dunes.

Key sand plain and sandhill habitats, which have highly significant resources or concentrations of features, and which are worthy of formal protection through legislation, include: Dune Point, Empress Dune (C), Lost River, Lower Bow (at least Sites A and F), Pakowki Lake North, Remount (Bindloss Depression springs), Suffield North, Centre and South, Turin and Wolf Island (D, E).

Key sand plain habitats, which should be retained in their natural condition by Crown land managers or through landowner agreements, are: Atlee, Barnwell, Empress (in part), Gleichen, Hemaruka, Hilda, Lazy H, Little Rolling Hills East, Little Rolling Hills West, Lonesome Lake, Many Island Lake, Matzhiwin, Old Channel Lake, Pakowki Lake South, Purple Springs, Remount, Sandy Point and Wolf Island (in part).

Sandhill and sand plain habitats which can be dropped from further consideration for significant wildlife, plant or landscape features include: Carmangay, High River, Pearce, Rosebud River, Skiff and Vauxhall.

A recommendation is also made to prepare a comprehensive habitat management strategy, combining 1987 research information with other environmentally significant features data for use by Crown land management agencies and regional planning commissions.



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## 1. INTRODUCTION

Sandhills are key habitats in the Mixed Grassland region. They contain a major concentration of significant features, including numerous rare, threatened and endangered species of plants and animals.

A portion of the 1987 work was based on recommendations for research and management contained in the Cottonwood Consultants' (1986b) study on reptiles and amphibians in Alberta's Grassland and Parkland Natural Regions, and which outlined the following priority projects.

1. An assessment of Great Plains Toad and Plains Hognose Snake populations and habitat in the Middle Sandhills area of the Suffield Military Reserve and adjacent lands.
2. An assessment of Great Plains Toads numbers in natural and irrigated lands in the Hays-Vauxhall-Lake Newell district (Rolling Hills sandhills).

A second study on rare plant monitoring by Wallis et al. (1986) identified the following as a key concern:

1. Encroachment of surrounding vegetation into active sand habitat appears to be a major factor which limits the occurrence of a number of plants which are rare in Alberta or Canada. The rare plants include Chenopodium subglabrum, Franseria acanthicarpa, Cyperus schweinitzii, Abronia micrantha, Lygodesmia rostrata, Eriogonum cernuum, Tradescantia occidentalis, Lupinus pusillus and, possibly, Astragalus lotiflorus and Thelesperma marginatum. These species appear to be largely dependent on areas of active sand.

While various aspects of the 1987 program were recommended as separate studies in previous research reports, it was also recommended that all aspects be considered as elements for one broad study on sandhill habitats. This was because of the overlap in the locations for the recommended studies, and because the same personnel were involved in all parts of the field program.

As a result, the following 1987 research was undertaken:

Sandhill Rare, Threatened and Endangered Wildlife

1. Continuation of research on Great Plains Toad and Plains Hognose Snake populations, and their habitat in the Middle Sandhills area.
2. Mapping of the most significant sites for Great Plains Toads and Plains Hognose Snakes, including breeding ponds, overwintering sites, and concentrations of sightings and collection localities.
3. Recommendations for the management and conservation of the Great Plains Toad and Plains Hognose Snake in Alberta.
4. Assessment of populations of Great Plains Toad in the Hays-Vauxhall-Lake Newell district to clarify the status of this species in this area, and also the use of man-made habitats by this species.

Because of the dependence of Ord's Kangaroo Rats on sandhill habitats, notes on this and other sandhill species (Grasshopper Sparrow, Sharp-tailed Grouse) were taken. The distributions of these species were mapped and populations assessed. Unconfirmed reports of Greater Prairie Chickens in the grasslands north of Empress were investigated.

Sandhill Rare, Threatened and Endangered Plants

1. Assessment of trends in the dynamics of active sand dune areas in sandhill habitats in the following areas: Turin Dunes, Pakowki Dunes, Lost River, Middle Sandhills (including the Suffield Military Reserve) and Lower Red Deer River.
2. On-site inspections of vegetation in historic and recent active sand areas in order to:
  - a. assess distribution and population sizes of rare plants in relation to active/inactive sand areas;
  - b. assess the degree of encroachment by other vegetation in these sites; and
  - c. determine whether these trends are stable or continuing.
3. Mapping of key areas of rare plants in active sand areas.

4. Development of recommendations for the management of these habitats to ensure long-term survival of the rare plants.

In addition to the species noted above, the researchers recorded other rare plants in both active and inactive sand dune areas. Concurrently, a biophysical overview study was conducted in the proposed Middle Sandhills ecological reserve along the east side of the South Saskatchewan River in the Rapid Narrows area.

The sandhill areas studied were in the Grassland and Aspen Parkland regions and most were on Crown lands. As a result, it was felt that chances for successful implementation of recommendations for species and habitat management would be relatively high.

### 1.1 Study Area

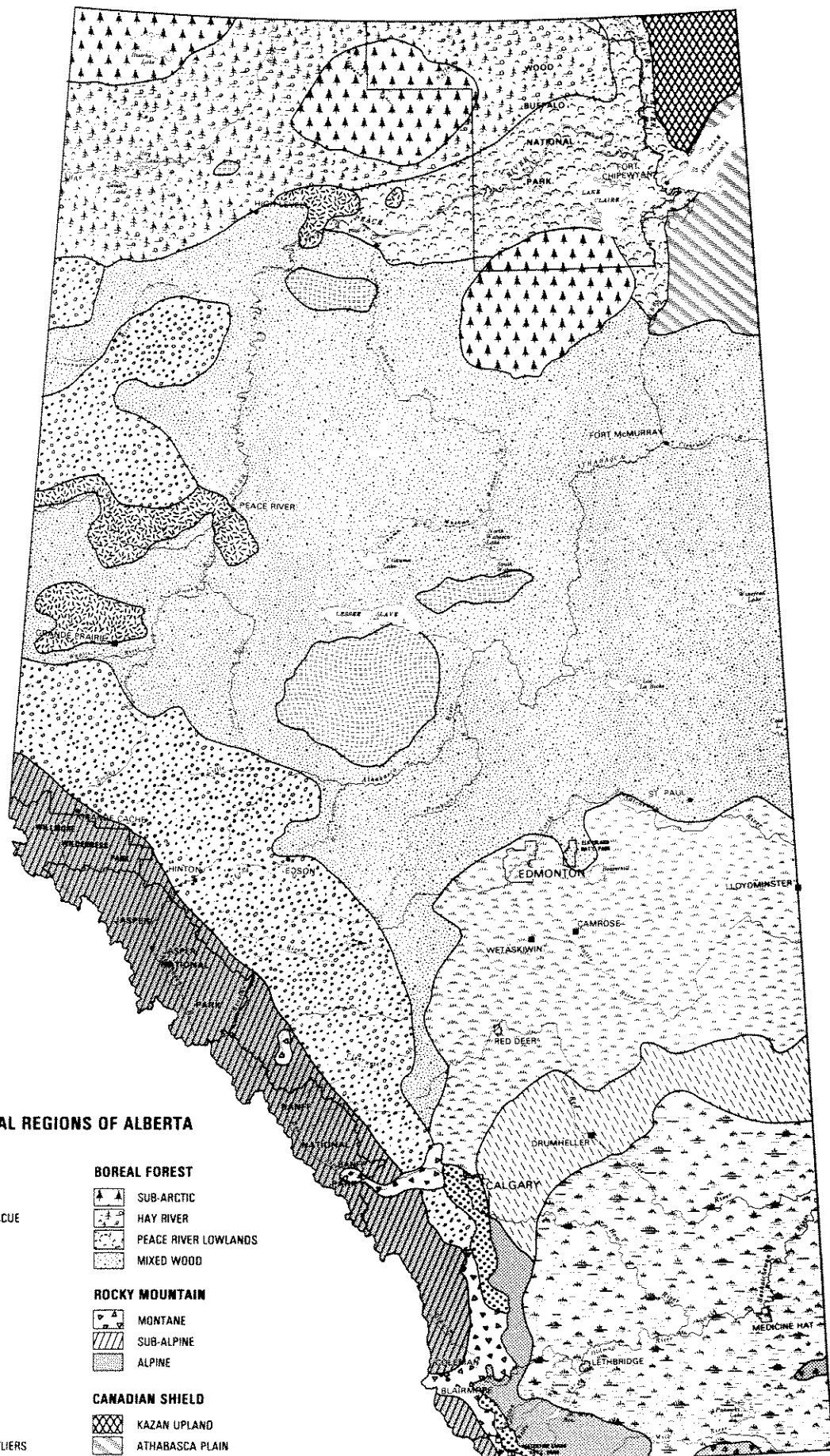
The study area encompassed all sand plains and sandhill habitats from the Red Deer River south to the United States boundary, west to Highway 2 and east to the Saskatchewan border. In addition, several sites north of the Red Deer River north to the David Lake area were investigated.

The area includes all active sand dune habitats in the Aspen Parkland and Grassland natural regions (Map 1) which are known to contain rare plants.

Specific dune and sand plain systems studied included:

#### Mixed Grassland

1. Atlee
2. Barnwell
3. Carmangay
4. Craigmyle
5. Dune Point
6. Empress
7. Gleichen
8. Hemaruka
9. High River
10. Hilda
11. Lazy H
12. Little Rolling Hills East
13. Little Rolling Hills West
14. Lonesome Lake
15. Lost River



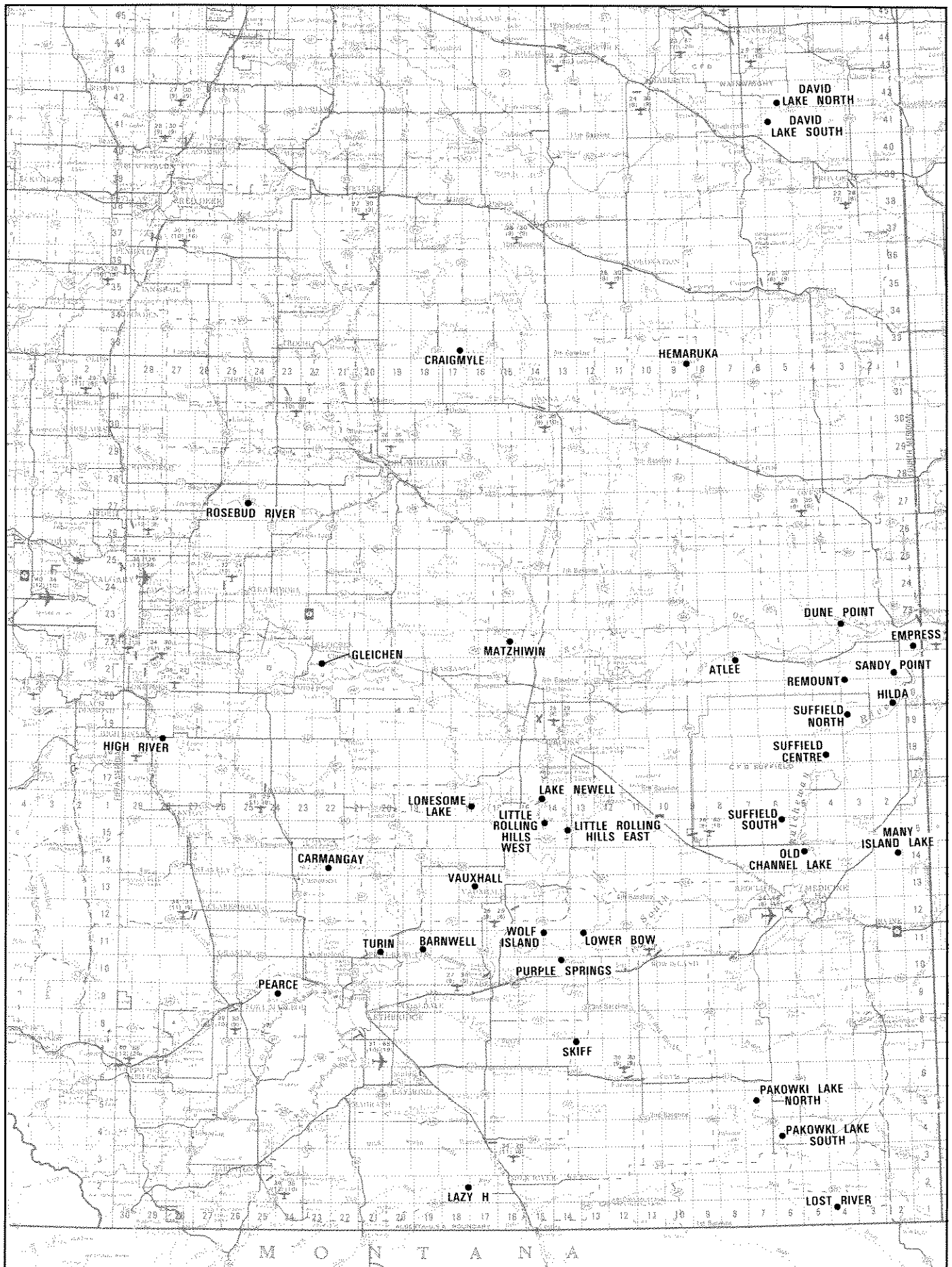
16. Lower Bow
17. Many Island Lake
18. Matzhiwin
19. Old Channel Lake
20. Pakowki Lake North
21. Pakowki Lake South
22. Pearce
23. Purple Springs
24. Remount
25. Rosebud River
26. Sandy Point
27. Skiff
28. Suffield Centre
29. Suffield North
30. Suffield South
31. Turin
32. Vauxhall
33. Wolf Island

Aspen Parkland

34. David Lake North and South

The approximate location of these sites is shown on  
Map 2.





MAP 1 SANDHILL/SAND PLAIN STUDY AREAS

## 2. METHODS

### 2.1 Great Plains Toad

Surveys were conducted from late April to early June 1987. They included the reconnaissance of water bodies for potential Great Plains Toad breeding ponds, and census of potential water bodies for calling Great Plains Toads. They were also conducted in a variety of sand plain and sandhill habitats throughout southeastern Alberta. These areas included sites where Great Plains Toads had been found in the past, as well as new sites selected through an analysis of aerial photography and geological reports. Non-saline water bodies in areas of sandy, surficial deposits were considered to have the highest potential.

Surveys were conducted in the following areas:

Remount - Empress  
Hilda  
Matzhiwin  
Suffield  
Old Channel Lake  
Brooks - Vauxhall  
Barnwell  
Little Rolling Hills  
Lake Newell  
Lower Bow  
Lost River  
Pakowki Lake  
Wildhorse - Manyberries (including Lost River)

Daytime surveys were conducted to determine the presence of water. Where applicable, these were followed by nocturnal surveys beginning at about 20.00 hours. Once Great Plains Toads began calling, or were known to be calling in other sites, the night surveys began and continued until about 02.00 hours. Where populations were high and difficult to estimate, detailed counts were made by walking along the shore or wading through the water.

## 2.2 Rare Plants

Aerial photographs from sandhill areas previously identified by Mulira (1986) or surficial geology reports (Westgate 1965; McPherson 1972; Shetsen 1987; Stalker 1958, 1961 and 1965) were analyzed prior to commencement of the field program. Active and semi-active sand dunes were identified in the following areas:

Barnwell  
Carmangay  
David Lake North and South  
Dune Point  
Empress  
Hilda  
Little Rolling Hills East  
Little Rolling Hills West  
Lonesome Lake  
Lost River  
Lower Bow  
Matzhiwin  
Old Channel Lake  
Pakowki Lake North  
Pakowki Lake South  
Pearce  
Purple Springs  
Remount  
Suffield Centre  
Suffield North  
Suffield South  
Turin  
Wolf Island

Almost all active sand dunes in these areas were field checked. This involved a random wander through the dune to spot check a variety of microhabitats, followed by a traverse through the active portion of the dune into the stabilization zone, and into the surrounding stabilized grassland. Where possible, actual counts of individual plants were done, but in most instances relative estimates of populations were made. Notes on distribution in relation to active, stabilization zone and stabilized portions of the dune were made. Other notes on associated vegetation, and which species were invading the active sand areas, were also kept.

The field information was supplemented by collection data provided by Dr. John Packer and field notes from previous research by Cliff Wallis.

Aerial photographs from 1949-1952 were analyzed to determine the extent of sand dune activity in past decades. The results of this survey were compared to that derived from more recent aerial photographs and 1987 ground survey data.

### 2.3 Other Wildlife

Wildlife surveys were undertaken from late April to November of 1987. All significant wildlife observed were recorded in field notes, but particular attention was paid to Sharp-tailed Grouse, Loggerhead Shrikes, Ferruginous Hawks, Burrowing Owls, Ord's Kangaroo Rats, Plains Hognose Snakes and Grasshopper Sparrows.

Specific surveys for Ord's Kangaroo Rats were made in all the same active sand dune areas as described under the heading "Rare Plants". Relative abundance was estimated for each site but no detailed trapping or counts were made. The numbers of runways and active burrows were compared with more detailed survey information gathered in the 1970s in the Empress and Dune Point areas to help arrive at an overall population estimate.

Careful attention was paid to all grouse observations in the belief that Greater Prairie Chicken might still persist in some sandhill areas. In addition, a specific survey for Greater Prairie Chicken was undertaken by traversing, on foot, a native grassland area where there was a recent unconfirmed record. Weather conditions were less than ideal for this survey.

Plains Hognose Snakes were searched for by travelling roads through suitable habitat at various times of the day and by carefully inspecting areas close to active sand blowouts. In addition, local ranchers and wellsite servicing personnel were interviewed to determine the extent of their knowledge of this rare species.



### 3. RESULTS

#### 3.1 Rare Plants

The following species summary sheets outline the results of the 1987 field investigations. For plants, the following headings are employed:

Latin Name

Common Name

Brief Summary of Status

General Alberta Distribution

Occurrences - field observations and additional collection records

Habitat - brief overview of microhabitat position in dune system

Biology

Threats - major short-term and long-term threats to a species' survival

Population Size and Trend - estimate of overall Alberta population and stability of existing population

Protective Status - areas where plants receive formal protection

Recommendations/Management Action - includes recommendations for classification as "rare, threatened or endangered", or for delisting; specific areas where habitat should be conserved; and management practices which might help in the long- and short-term maintenance of populations.

Plants of active sand or gravel habitats are listed first (Tradescantia occidentalis to Lygodesmia rostrata). These are followed by listings of species which occur in sandy or gravelly substrate and sand plains in the Grassland region

but not necessarily in active sand dunes (Yucca glauca to Thelesperma marginatum). While many of the last group of species were not actively searched for, the 1987 field program uncovered new localities for a number of these plants.

**LATIN NAME:** Tradescantia occidentalis (Britt.) Smyth

**COMMON NAME:** Western Spiderwort

**BRIEF SUMMARY OF STATUS:**

Endangered; very low populations in one locality; rare in Canada; midwestern species, rare at the northwestern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Only known from one dune in the Pakowki Lake North area.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Pakowki Lake North G (southeast corner)	2
Pakowki Lake North G (southeast corner)	1
Pakowki Lake North G (southeast corner)	12

Total Population: fewer than 50

**HABITAT:**

This species appears to be best adapted to partially stabilized sand in dune slack areas, although one plant was found growing in active sand. It occurs where there is 70 per cent or more bare sand in an Oryzopsis hymenoides and Calamovilfa longifolia community associated with species such as Artemisia campestris, Rosa sp., Helianthus sp., Corispermum sp., Franseria acanthicarpa and Heterotheca villosa. The location of the largest "stand" is 14 fence posts west of the easternmost cottonwood tree along the east-west fence line of Pakowki Lake North Dune G and south of the fence line a short distance (5-8 m). Other occurrences are east of the cottonwood tree along the fence line in bare sand, west of the cottonwood tree, 15 m east of a patch of cottonwood and aspen, and 7-8 m south of the fence line.

**BIOLOGY:**

Perennial; flowering July 5 in 1987.

**THREATS:**

The active sand areas have stabilized compared to conditions in the early 1950s. The positive or negative impacts of grazing in various seasons are unknown.



**POPULATION SIZE AND TREND:**

The total Alberta population is estimated to be fewer than 50 plants. Only 15 have been found despite intensive searching through all active dune areas and many stabilized dune areas at Pakowki Lake. Continued stabilization of the dunes would likely be detrimental to the long-term survival of this species.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "endangered". Designation and appropriate management of the Pakowki Lake North Dune G would help protect the only known population of this species in Alberta. This site is Crown land which is leased for grazing. Selective destabilization of some dune areas could benefit this species over the long-term. Collection of seed and research into its biology could be useful in attempts to establish other populations in the Pakowki North dunes.

**REFERENCES:**

Julie Hrapko (pers. comm. 1988)

**LATIN NAME:** Cyperus schweinitzii Torr.

**COMMON NAME:** Sand Nut-grass

**BRIEF SUMMARY OF STATUS:**

Very localized but generally in good numbers where found; should be treated as rare, possibly threatened; widespread species, rare at the northwestern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered occurrences in the Aspen Parkland and Mixed Grassland regions.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
David Lake North	several hundred
David Lake South A	several hundred
David Lake South C	several hundred
Little Rolling Hills West C	hundreds
Pakowki Lake North A	hundreds
Pakowki Lake North C	thousands
Pakowki Lake North D	thousands
Pakowki Lake North E	thousands
Pakowki Lake North G	hundreds
Pakowki Lake North M	hundreds
Pakowki Lake South	thousands

Total Population: fewer than 30 000

**HABITAT:**

Occurs in a variety of stabilizing and active sand dune habitats on windward and lee slopes, but shows a preference for semi-stabilized dune slacks where there is abundant loose sand. It occurs in gravelly sand in the Little Rolling Hills and coarse-grained sand in other localities.

**BIOLOGY:**

Perennial with a short rhizome, forming corm-like branches.

**THREATS:**

All active dune habitats where it occurs are stabilizing to some extent. Dunes in the Aspen Parkland at David Lake are the most heavily stabilized, and Cyperus populations in these areas are the most threatened. The Pakowki Lake dunes have

considerable amounts of active and stabilizing sand and populations here are not in immediate danger.

**POPULATION SIZE AND TREND:**

Estimated total population is fewer than 30 000 plants; populations are probably declining slightly in most southern dunes, but declining rapidly because of encroachment of the dunes in the Aspen Parkland.

**PROTECTIVE STATUS:**

Two small populations are protected in the Aspen Parkland at David Lake Ecological Reserve. None of the large Pakowki Lake populations have any formal protection.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare" in Alberta; "threatened" in the Aspen Parkland. Designation and appropriate management of the Pakowki Lake North dunes would help protect the largest populations of this species in Alberta. Destabilization of dunes would be beneficial in the short-term for the Aspen Parkland, and over the long-term in the Mixed Grassland. Retention of natural habitats at Little Rolling Hills, Pakowki Lake North and South, and David Lake South would protect known populations of this species. With the exception of the one in Little Rolling Hills, all these sites are on Crown land.

**LATIN NAME:** Eriogonum cernuum Nutt.

**COMMON NAME:** Nodding Umbrella Plant

**BRIEF SUMMARY OF STATUS:**

Very localized but with occasionally significant populations in those restricted habitats; should be treated as rare.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered locations in the Mixed Grassland along the lower Red Deer, South Saskatchewan and Milk rivers.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Dinosaur Provincial Park	fewer than 100
Dune Point B	300
Dune Point E	750
Empress A	10
Lost River A and C	100
Lost River/Milk River area	fewer than 5 000

Total Population: fewer than 10 000

This species is also known to occur in small numbers at Writing-on-Stone Provincial Park (Wallis 1986) and along the South Saskatchewan River (Cottonwood Consultants 1987).

**HABITAT:**

Active, but usually partially stabilized, sand in dunes and along valley rims, usually in association with massive sandstone outcrops; occurs on slopes and in dune slacks. It occurs in coarse-grained sand and gravelly sand.

**BIOLOGY:**

Annual.

**THREATS:**

Stabilization of dunes will eventually crowd out populations in dune areas. No detailed assessment of the degree of stabilization of valley rim sites has ever been made, but these sites do not seem to have stabilized to any significant degree.

**POPULATION SIZE AND TREND:**

Fewer than 10 000 plants; probably declining because of stabilization in some dune areas, but stable in valley sites.

**PROTECTIVE STATUS:**

Dinosaur and Writing-on-Stone Provincial Parks contain small populations, but none of the larger populations are yet protected formally.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare" in Alberta. Designation and appropriate management of the Dune Point and Lost River areas would protect the largest known populations of this species in Canada. Both of these sites are on Crown land leased for grazing. Selective destabilization of parts of some dunes may be beneficial.

**LATIN NAME:** Chenopodium subglabrum (S. Wats.) A. Nels.

**COMMON NAME:** Smooth Goosefoot

**BRIEF SUMMARY OF STATUS:**

Threatened; rare in Canada; western species; overall status is difficult to assess because of its inclusion of Chenopodium leptophyllum in many floras, but which appears to be rare in much of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered populations in the southern Mixed Grassland.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Barnwell A	8
Hilda A	3
Lonesome Lake	1
Lost River B	fewer than 5
Pakowki Lake North G	2
Pakowki Lake North J	1
Pakowki Lake North K	1
Purple Springs K	30
Turin A	low hundreds
Turin C	low hundreds

**HABITAT:**

Generally on south- or west-facing actively eroding slopes at the edge of stabilizing sand; sometimes in dune slacks. Populations are highest in areas of finer and more compacted sand. Generally, it appears to be associated with Oryzopsis hymenoides. Rarely, this species grows in very active sand away from the stabilization zone and also in stabilized sand. Populations in the last two habitats are always very low.

**BIOLOGY:**

Annual; flowering June to July.

**THREATS:**

Encroachment of vegetation on active blowouts could eliminate major and minor populations of this species. The effect of cattle grazing is unknown, but the only plant remaining at Lonesome Lake was severely browsed. A dugout next to the active dune had attracted numerous cattle to the dune. The

dune slack at Barnwell A is being invaded by Agropyron cristatum and Melilotus sp.

**POPULATION SIZE AND TREND:**

The total Alberta population is estimated to be fewer than 1 000. This population may be declining slowly in the Turin area, and more rapidly in other sites because of dune encroachment and heavy summer use by cattle.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "threatened" in Alberta. Designation and appropriate management of the Turin Dunes would protect the largest known populations of this species in Canada. Retention of natural habitat at Purple Springs K would protect another significant population. Both of these sites are on Crown land leased for grazing.

**REFERENCES:**

Wahl (1952-53)  
Bassett and Crompton (1982)

**LATIN NAME:** Abronia micrantha Torr.

**COMMON NAME:** Sand Verbena

**BRIEF SUMMARY OF STATUS:**

Threatened; low population size and ongoing loss of habitat through natural encroachment; rare in Canada; western species, rare at the northern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered localities in the Mixed Grassland.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Lost River	200
Lower Bow E	12
Lower Bow F	250
Lower Bow G	3
Purple Springs G	30
South Saskatchewan River	fewer than 100*
Wolf Island D	100
Wolf Island E	10

Total Population: fewer than 1 000

\* This site was not surveyed during the 1987 field season but it appears to have a moderate population (Hope Johnson, personal communication).

**HABITAT:**

Active sand, occasionally with Oryzopsis hymenoides, Psoralea lanceolata and Stipa comata. The largest populations are on hard-packed, finer sand on level terrain, but also occur on south-, west- and east-facing slopes and along dune ridgetops. Most sites surveyed in 1987 are on the uplands, however, there are two occurrences in the valleys of the Lost and South Saskatchewan rivers where sand dunes extend down into the valleys.

**BIOLOGY:**

Annual.

**THREATS:**

Encroachment of vegetation on active blowouts could eliminate major and minor populations of this species. The Lower Bow Dune F is being stabilized by Salsola kali, Cleome serrulata and Hordeum jubatum.



**POPULATION SIZE AND TREND:**

The total Alberta population is estimated to be under 1 000 plants. The amount of suitable habitat is declining because of encroachment on active sand areas.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "threatened". Designation and appropriate management of the Lower Bow, Wolf Island and Lost River sites would help protect the most significant populations of this species. All these sites are on Crown land. Destabilization of the dunes may be beneficial in the long term.

**REFERENCES:**

Johnson and Hallworth (1975)

**LATIN NAME:** Draba reptans (Lam.) Fern.

**COMMON NAME:** Carolina Whitlow-wort

**BRIEF SUMMARY OF STATUS:**

Rare and very local in Alberta.

**GENERAL ALBERTA DISTRIBUTION:**

Scattered localities in the Mixed Grassland region.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Suffield Centre H	fewer than 100

This species is also known from the Milk River Ridge area (SW 27-2-18-W4) in a proposed reservoir site, and from the Turin Dunes area where it is rare.

**HABITAT:**

This is a species of stabilized or exposed sandy or gravelly areas in grasslands and on slopes. No specific surveys to assess this species in non-dune habitats were undertaken.

**BIOLOGY:**

Annual; flowers in May and early June (late April in 1987).

**THREATS:**

Cultivation of sandy soil areas for cropland is a potential threat. The Milk River site is near the location of a proposed dam. Further stabilization of loose sand by denser vegetation may pose a longer term threat in sites like Turin.

**POPULATION SIZE AND TREND:**

Unknown; sandy, gravelly habitats are quite localized and this species may be truly rare, however, Draba reptans is inconspicuous and easily overlooked.

**PROTECTIVE STATUS:**

None.

#### RECOMMENDATIONS/MANAGEMENT ACTION:

Classify as "rare". Designation of the Suffield Centre site as part of the proposed Middle Sandhills Ecological Reserve would help protect one of the largest-known, naturally occurring populations of Draba reptans in Alberta. Retention of natural habitat at Turin would protect another population of this species. All these sites are on Crown land.

#### REFERENCES:

Mulligan (1976)

**LATIN NAME:** Polanisia dodecandra (L.) DC.

**COMMON NAME:** Clammyweed

**BRIEF SUMMARY OF STATUS:**

Rare and very local in Alberta; generally rare in Canada; widespread species, rare at the northern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Scattered localities in the Mixed Grassland and Aspen Parkland regions.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Turin C	50
Suffield Centre H	350
Vauxhall 62, SE 3-12-16-W4	2 000-3 000
Vauxhall 57, NW 18-11-16-W4	200

**Other Occurrences:**

- University of Alberta Herbarium

Steveville area, 50°52'N, 111°37'W, dry stony hillside  
near Red Deer River  
east of Calgary, railway tracks  
Medicine Hat, disturbed grassland in river valley  
Medicine Hat, eroded river valley slope  
Edmonton, south, CPR railway tracks

- Department of Agriculture, Ottawa Herbarium

Calgary

**HABITAT:**

This is a species of exposed gravelly areas, a habitat which is very restricted in Alberta. No specific surveys to assess this species in non-dune habitats were undertaken. None of the other gravelly dunes had populations of this species. Populations in revegetating gravel pits along the Oldman River near Vauxhall appear to have spread from nearby gravelly slopes where natural populations are low.

It also occurs in disturbed gravelly soils along railway grades and in gravel pits.

**BIOLOGY:**

Annual; flowers late June and early July.

**THREATS:**

Populations at Turin Dunes may be threatened with encroachment over the long term, however, most populations appear stable. Over the long term, man-made exposed gravel areas will eventually revegetate and crowd out Polanisia dodecandra.

**POPULATION SIZE AND TREND:**

No accurate estimate; probably fewer than 10 000. It is possible that there are higher numbers of this species in man-made disturbances than in natural habitats.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare". Gravel operations cannot be expected to help in the maintenance of this species over the long term. Designation of the Suffield Centre site as part of the proposed Middle Sandhills Ecological Reserve would help protect the largest naturally occurring population of Polanisia dodecandra in Alberta. Retention of natural habitat at Turin would protect another population of this species. Both of these sites are on Crown land.

Destabilization of Turin C would benefit this and other sand dune plants. Other natural gravelly sites along valleys in Alberta should be investigated to determine the total population of this species in Alberta and additional priorities for protection.

**REFERENCES:**

Iltis (1958)

**LATIN NAME:** Astragalus kentrophyta A. Gray

**COMMON NAME:** Prickly Milk Vetch

**BRIEF SUMMARY OF STATUS:**

This species is locally common along the Milk River, but rare and very localized elsewhere in Alberta. It is considered rare in Canada. Astragalus kentrophyta var. kentrophyta, the Alberta taxon, is apparently rare throughout much of its restricted range, especially in the Great Plains. This is a western species, rare at the northern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Portions of the Milk, lower Bow, lower Red Deer and South Saskatchewan rivers in the Mixed Grassland region.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Dune Point D	300
Dune Point E	400
Empress C	300
Lower Bow D	3
Lower Bow E	12
Suffield Centre G	10
Milk River*	tens of thousands

Total Population: fewer than 30 000

\* No surveys of populations along the Milk River valley were undertaken during 1987. Occurrences there are described in Wallis et al. (1986).

**HABITAT:**

Its principal habitat in areas north of the Milk River is hard-packed or gravelly, exposed sand in sand blowout areas. It occurs very rarely and in very small numbers in man-made habitats on sandy soil.

Along the Milk River, it thrives in eroding sandy soils along the valley slopes and is particularly common in areas of Milk River sandstone.

**BIOLOGY:**

Perennial with a strong taproot; flowers from June to September; known to form mycorrhizal fungal associations (Currah and van Dyck 1986).

**THREATS:**

Construction of a dam could flood some populations of this species along the North Milk River. Pedestrian traffic at Writing-on-Stone Provincial Park is having a minor impact on several plants in the hoodoo areas, but the species appears to be quite resilient. Stabilization of open gravelly dunes is crowding out plants in northern populations.

**POPULATION SIZE AND TREND:**

Locally common along parts of the Milk River; rare along the South Saskatchewan; populations stable and major habitat is secure along the Milk River; populations declining because of dune invasion of more northern populations which have no formal protection.

**PROTECTIVE STATUS:**

Major population found at Writing-on-Stone Provincial Park.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare" in Alberta. Designation and wise management of the Verdigris Coulee Natural Area and Dune Point active dunes would protect significant additional populations of this species. Destabilization of dunes at Empress and Dune Point could be beneficial for this and other species. All these additional sites are on Crown land leased for grazing.

**REFERENCES:**

Barneby (1964)  
Currah and Van Dyck (1986)

**LATIN NAME:** Astragalus lotiflorus Hook.

**COMMON NAME:** Low Milk Vetch

**BRIEF SUMMARY OF STATUS:**

Threatened; rare and localized in Alberta; generally rare in Canada; western and midwestern species, rare at the northern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered localities in the Mixed Grassland region along the lower Bow, lower Red Deer, Oldman, South Saskatchewan and Milk rivers.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Dune Point D	12
Dune Point E	50
Dune Point open grassland	1
Empress C	12
Lower Bow D	1
Lower Bow E	12
South Saskatchewan River, NE 5-18-3-W4	2
Travers Reservoir, NW 19-14-20-W4	1
Turin A	75
Turin B	2
Turin D	1
Turin E	3
Vauxhall 62, SE 3-12-16-W4	12
Vauxhall 57, NW 18-11-16-W4	2

**Other Occurrences:**

- University of Alberta Herbarium

4 miles east of Manyberries Experimental Station  
Turin, Cameron Ranch area, prairie  
Empress  
Grassy Lake  
Manyberries

- Department of Agriculture, Ottawa Herbarium

Medicine Hat



- National Museums of Canada Herbarium

Milk River, castellated rocks, July 15, 1885, in fruit  
Park Royal district, Lethbridge, west-facing valley rim  
of Oldman River, rare

Total Population: fewer than 1 000

#### **HABITAT:**

The principal habitat in Alberta is sandy-gravelly dune slacks in active blowout areas. It occurs in level to gently sloping portions of the dune slack. The species is most common in these very restricted kinds of habitats, the largest of which is Dune Point E. It does not occur in all exposed, sandy-gravelly dunes. There is a considerable amount of potential habitat in the Little Rolling Hills, however, no Astragalus lotiflorus have yet been found there. This species is very scarce and localized in sand plain areas. It is very rare in areas of man-made disturbance such as revegetating gravel pits.

#### **BIOLOGY:**

Perennial; can be cleistogamous.

#### **THREATS:**

Many sand plain areas, where it undoubtedly occurred in low numbers, have been cultivated. The principal sandy-gravelly dune slack habitats are threatened by encroachment of native and non-native species such as Russian thistle (Salsola kali).

#### **POPULATION SIZE AND TREND:**

Total Alberta population less than 1 000. Very local, scarce where found; probably declining because of habitat destruction and encroachment of vegetation onto active blowouts.

#### **PROTECTIVE STATUS:**

No major populations are protected. There are reports of individual plants at Writing-on-Stone Provincial Park.

#### **RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "threatened" in Alberta. Formal designation and protection of dunes at Turin A, Dune Point D and E, Lower Bow E and Empress C would protect the major natural populations. All these sites are on Crown land leased for grazing. Selective destabilization of the dunes may also be beneficial.

**REFERENCES:**

Barneby (1964)

Wallis et al. (1986)



**LATIN NAME:** Lupinus pusillus Pursh

**COMMON NAME:** Annual Lupine

**BRIEF SUMMARY OF STATUS:**

Locally very common in Alberta; rare in Canada; western species, rare at the northern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered localities in the Mixed Grassland.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Dune Point C	5
Dune Point D	1
Dune Point E	75
Little Rolling Hills West	250
Lost River A, B, C	500
Purple Springs D	10
Suffield South (gate at Dugway)	2
Turin A, C, road cut	100
Wolf Island B	50
Wolf Island C	10
Wolf Island E	5

Total Population: difficult to estimate (non-dune habitat not surveyed)

For a complete listing of other Alberta occurrences, see Wallis et al. (1986).

**HABITAT:**

Sandhills, sandy shores and dry, sandy eroded slopes. This species can grow in a variety of sandy sites including active sand and areas well back into the stabilization zone. It is most prevalent in semi-stabilized areas where there is considerable loose sand but abundant grassy vegetation.

**BIOLOGY:**

Annual. Flowers May to August.

**THREATS:**

Cultivation of natural habitats is a long-term threat, but most areas seem secure at the present time.

**POPULATION SIZE AND TREND:**

Locally common over a wide range in southern Alberta; habitat seems mostly secure.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "uncommon". Maintenance of natural habitats in a variety of sandhill areas will protect populations of this species. Designation and protection of areas at Little Rolling Hills West, Dune Point, Turin and Lost River would protect significant populations of this species. With the exception of Little Rolling Hills West, all these sites are on Crown land leased for grazing.

**REFERENCES:**

Dunn and Gillett (1966)

**LATIN NAME:** Cryptantha fendleri (A. Gray) Greene

**COMMON NAME:** Fendler's Cryptanthus

**BRIEF SUMMARY OF STATUS:**

Locally abundant in sand dunes.

**GENERAL ALBERTA DISTRIBUTION:**

Widespread in Mixed Grassland sandhills from the Duchess area south to the United States border; also present in David Lake sandhills in the Aspen Parkland.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Barnwell B	7
Dune Point G	50
Dune Point A	30
Hilda A	9
Hilda B	10
Little Rolling Hills East F	250
Little Rolling Hills East G	50 (old heads)
Little Rolling Hills West A, B, E	75 (scattered)
Lonesome Lake	thousands
Lost River A, B and C	1 000
Lower Bow C	1
Lower Bow F	8
Matzhiwin Dunes (north of Red Deer R.)	thousands
Pakowki North C	thousands
Pakowki North G	thousands
Pakowki North H	40
Pakowki North M	500
Pakowki North I (road cut)	4
Purple Springs G	30
Suffield North H	hundreds
Suffield North K	1
Suffield North L	1
Suffield South A	10
Wolf Island B	300

Total Population: tens of thousands

This species is also known from the David Lake sandhills.

**HABITAT:**

Loose sand usually at interface between stabilization and active zones, on mammal burrows or under shelter of shrubbery such as choke cherry.

**BIOLOGY:**

Annual. Populations appear to fluctuate greatly with moisture conditions. It has completely disappeared from areas where it had been abundant before, and appeared in large numbers in other areas where it had not previously been noted in significant quantities.

**THREATS:**

Stabilization of dunes is a long-term threat to maintenance of large populations of this species. However, it is unlike many other active sand species in that it adapts well to any mobilization of the sand and can survive on pocket gopher diggings.

**POPULATION SIZE AND TREND:**

While the 1987 figures do not reflect this, the total Alberta population of this species is estimated in the tens of thousands. This number fluctuates greatly between dry and wet years. Ongoing stabilization of the dunes will continue to reduce populations of this species.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Remove from rare species lists. Designation and protection of any one of several sand dune sites in southern Alberta will protect populations of this species. Destabilization of sand dunes should be beneficial to maintaining large populations of this species.

**LATIN NAME:** Franseria acanthicarpa (Hook.) Coville

**COMMON NAME:** Bur Ragweed

**BRIEF SUMMARY OF STATUS:**

Rare; rare in Canada; western species, apparently rare or local through a significant part of its range; rare at the northern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered locations in the Mixed Grassland region.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Dune Point C	30
Dune Point D	500
Dune Point E	1 000
Empress A	2
Hilda B	1
Little Rolling Hills West A and B	500
Little Rolling Hills West C	50
Lost River A	900
Pakowki Lake North G	300
Pakowki Lake North K	10
Pakowki Lake North L	100
Purple Springs F	low hundreds
Purple Springs G	100
Purple Springs I	3
Wolf Island A	low hundreds
Wolf Island B	low hundreds
Wolf Island C	low hundreds
Wolf Island D	50

Total Population: fewer than 10 000

A collection at the Agriculture Canada Research Station, Lethbridge, from the Bow Forest Preserve west of Turner Valley needs confirmation and is probably mislabelled.

**HABITAT:**

Flatter terrain in open active sand; occasionally in the semi-stabilized zone but always where there is abundant active sand; sometimes forming pure "stands". This species is able to colonize habitats from the active sand back to the edge of the stabilization zone. It rarely occurs in the stabilization zone. It appears to do best in areas which are harder packed finer sand, sometimes where it is gravelly.



**BIOLOGY:**

Annual.

**THREATS:**

Encroachment of vegetation on active blowouts is reducing habitat for this species.

**POPULATION SIZE AND TREND:**

Fewer than 10 000 plants overall. Populations are probably declining because of vegetation encroachment on active dune habitats.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare" in Alberta. Designation and appropriate management of Dune Point would protect the largest Alberta populations of this species. Retention of natural habitats at Little Rolling Hills, Wolf Island, Pakowki Lake North and Purple Springs would protect other significant populations. Most of these sites are on Crown land leased for grazing. Destabilization of dunes may be beneficial for this species in the long term.

**LATIN NAME:** Lygodesmia rostrata A. Gray

**COMMON NAME:** Annual Skeleton-weed

**BRIEF SUMMARY OF STATUS:**

Rare; possibly threatened. Generally rare in Canada; midwestern species, apparently rare or local through much of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered localities in the Mixed Grassland and Aspen Parkland regions.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
David Lake South B	5
Dune Point A	several hundred
Dune Point B	several hundred
Dune Point D	200
Dune Point E	200
Empress A	2
Empress B	1
Hilda A	1
Hilda C	3
Little Rolling Hills West E	1
Lost River A, B and C	fewer than 100
Pakowki Lake North G	50
Pakowki Lake North J	10
Pakowki Lake North K	10
Pakowki Lake North L	3
Suffield North L	10
Suffield North N	low hundreds
Suffield North and Centre road cuts	odd plant
Suffield South A	4
Suffield South B	200

**Other Occurrences:**

- University of Alberta Herbarium

west of Dilberry lake, 52°35'N, 110°01'W, sand dunes

It is also known to occur in at least one other dune at David Lake.

Total Population: fewer than 5 000

**HABITAT:**

Open west- or south-facing active sand slopes and dune slack gravels; occasionally on north or east exposures and in recently stabilized areas where there is considerable loose sand.

**BIOLOGY:**

Annual.

**THREATS:**

Encroachment of vegetation on active blowouts and dune slacks is reducing habitat for this species. Dune Point dune slacks are being invaded by Salsola kali, elsewhere native vegetation is invading active sand areas.

**POPULATION SIZE AND TREND:**

Less than 5 000 plants; habitat decreasing because of dune stabilization.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare" in Alberta; "threatened" in the Aspen Parkland. Designation and appropriate management of Dune Point would protect the largest Alberta populations of this species. Retention of natural habitats at Pakowki Lake North and Suffield would protect other significant populations. All these sites are on Crown land leased for grazing or military purposes. Destabilization of dunes may be beneficial for this species in the short term in the Aspen Parkland and in the long term in the Mixed Grassland.

**LATIN NAME:** Yucca glauca

**COMMON NAME:** Yucca

**BRIEF SUMMARY OF STATUS:**

Very rare in Alberta and Canada; western and midwestern species, rare at the northern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Known only from the Milk River-Lost River area in two localities.

**HABITAT:**

Dry grassland, especially on gravelly or sandy slopes.

**BIOLOGY:**

Perennial. This species is dependent upon the yucca moth for pollination.

**THREATS:**

None.

**POPULATION SIZE AND TREND:**

For a full account of this species, see Milner (1977). Populations appear to be stable and in some areas increasing into surrounding grasslands.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare" in Alberta. Designation and appropriate management of the Lost River and Milk River sites would protect the known populations of this species in Alberta. The Lost River is the most important of the two sites.

**REFERENCES:**

Milner (1977)  
Wershler and Wallis (1986)



**LATIN NAME:** Munroa squarrosa (Nutt.) Torr.

**COMMON NAME:** False Buffalo Grass

**BRIEF SUMMARY OF STATUS:**

Very rare in Alberta; rare in Canada; western and midwestern species, rare at the northern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Known only from the Medicine Hat and Hardisty districts.

**OCCURRENCES:**

- University of Alberta Herbarium

Hardisty  
Irvine  
Medicine Hat

No plants of this species were found during 1987 surveys, although it is a plant which frequents sandy and gravelly habitats in other parts of its range.

**HABITAT:**

Grassland, probably disturbed gravelly? or sandy? sites.

**BIOLOGY:**

Low tufted annual.

**THREATS:**

Unknown.

**POPULATION SIZE AND TREND:**

Unknown. It is possible that drought conditions have reduced populations in some areas which were surveyed during 1987.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Attempts should be made to relocate the Medicine Hat and Hardisty populations.

**REFERENCES:**

Hitchcock and Chase (1950)

**LATIN NAME:** Sporobolus neglectus Nash

**COMMON NAME:** Annual Dropseed

**BRIEF SUMMARY OF STATUS:**

Very rare plant of sandy habitats; widespread species, rare at the northern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Known in natural habitat only from the Medicine Hat district.

**OCCURRENCES:**

- University of Alberta Herbarium

3 km southwest of Medicine Hat, dry sandy bank at the bottom of a coulee slope

A collection from the Mayerthorpe area along railroad tracks needs confirmation

No plants were observed during 1987 field surveys.

**HABITAT:**

Dry sandy soil.

**BIOLOGY:**

Annual.

**THREATS:**

Unknown.

**POPULATION SIZE AND TREND:**

Unknown.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Attempts to relocate the Medicine Hat population of this species should be made.





**LATIN NAME:** Vulpia octoflora (Walt.) Rydb.

**COMMON NAME:** Six-weeks Fescue

**BRIEF SUMMARY OF STATUS:**

Abundant plant of sandhills; had been considered rare in much of its Canadian range.

**GENERAL ALBERTA DISTRIBUTION:**

Occurs in sandhill and sandy areas from Verdigris Coulee east to the Lost River and north to the Little Rolling Hills and Middle Sandhills.

**OCCURRENCES:**

This species is far more common than previously believed. It occurs in the tens of thousands in many areas including Pakowki, Lost River, Verdigris Coulee, Purple Springs, Little Rolling Hills and Middle Sandhills.

**HABITAT:**

Stabilized sand dunes where there is abundant loose, sandy soil; occasionally on depleted rangeland and sterile ground.

**BIOLOGY:**

Small tufted perennial; heads out in May or early June.

**THREATS:**

None known; appears quite adaptable to cattle grazing and disturbance.

**POPULATION SIZE AND TREND:**

Locally abundant in sandhills; habitat apparently secure.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Remove this species from rare plant lists. Designation and protection of virtually any sandhill area in southeastern Alberta would protect significant populations of this species.

**REFERENCES:**

Lonard and Gould (1974)

**LATIN NAME:** Cyperus squarrosus L.

**COMMON NAME:** Awned Nut-grass

**BRIEF SUMMARY OF STATUS:**

Very rare in Alberta; cosmopolitan temperate and tropical species, rare at the northwestern edge of its North American range.

**GENERAL ALBERTA DISTRIBUTION:**

Known only from the Medicine Hat district.

**OCCURRENCES:**

- University of Alberta Herbarium

16 km south of Redcliff, border of large slough  
north of Seven Persons about 19 km, southwest of Medicine  
Hat, margin of slough

No plants of this species were located in 1987 field surveys.

**HABITAT:**

Borders of sloughs in moist sandy soil.

**BIOLOGY:**

Low tufted annual.

**THREATS:**

Unknown.

**POPULATION SIZE AND TREND:**

Unknown.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Attempts to relocate the known populations of this species should be made.



**LATIN NAME:** Thellungiella salsuginea (Pall.) Schulz

**COMMON NAME:** Mouse-ear Cress

**BRIEF SUMMARY OF STATUS:**

Very rare in Alberta and Canada; a northern species which appears to be uncommon in its North American range.

**GENERAL ALBERTA DISTRIBUTION:**

Known only from the Wood Buffalo Park area in the Peace River Lowlands and in the "Bindloss Depression" in the Mixed Grassland.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Bindloss Depression (NE 28-21-3-W4)	25
Total Population:	northern population not surveyed

**HABITAT:**

Moist saline ground at edge of ungrazed spring.

**BIOLOGY:**

Annual; flowering in late April in 1987.

**THREATS:**

Unknown. Unlike most other springs in the grassland region, the Bindloss Depression site is fenced out from grazing. It is not clear whether the suitable habitat extended further in past years. The immediately adjacent habitat is extremely heavily grazed and no plants were noted in that area.

**POPULATION SIZE AND TREND:**

The total known grassland population in Alberta is 25, although no detailed and systematic survey of this large spring area was made.

**PROTECTIVE STATUS:**

None.

#### RECOMMENDATIONS/MANAGEMENT ACTION:

Classify as "rare". Designation and wise management of the Bindloss Depression site would protect the only known grassland population. Detailed surveys of the Bindloss Depression and other spring areas should be made to determine the effect of cattle grazing on this species. This is Crown land which is used for grazing purposes.

#### REFERENCES:

Hulten (1968)

**LATIN NAME:** Astragalus purshii Dougl. ex Hook.

**COMMON NAME:** Pursh's Milk Vetch

**BRIEF SUMMARY OF STATUS:**

Rare in Alberta and in Canada; western species, rare at the northeastern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Locally prevalent in sand plain grasslands in the Lost River-Sage Creek area. Northward it appears to be very local and rare.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Hilda E	fewer than 5
- University of Alberta Herbarium	
Manyberries Experimental Station, rocky badlands Sage Creek, 36-2-3-W4, mixed grassland, barren flats	
- National Museum of Canada Herbarium	
Medicine Hat	

This species is known to be fairly common in the Lost River-Milk River area (Wershler and Wallis 1986) in extensive sand plain grasslands.

**HABITAT:**

Mixed grasslands on sand plains.

**BIOLOGY:**

Low tufted perennial.

**THREATS:**

Cultivation of sand plains is a long-term threat.

**POPULATION SIZE AND TREND:**

Populations appear to be moderate in their principal range in the Lost River-Milk River, and low elsewhere. Populations are thought to be declining slightly because of cultivation of sand plain habitats.



**PROTECTIVE STATUS:**

There are undoubtedly populations in the Kennedy Creek Ecological Reserve and Milk River Canyon Natural Area.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare" in Alberta. Designation and wise management of sand plain habitats in the Lost River area would protect this and several other significant species. This site is Crown land which is leased for grazing purposes.

**REFERENCES:**

Barneby (1964)  
Wershler and Wallis (1986)

**LATIN NAME:** Psoralea argophylla Pursh

**COMMON NAME:** Silver-leaf Psoralea

**BRIEF SUMMARY OF STATUS:**

Uncommon, possibly rare; and local in Alberta.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered localities in eastern Mixed Grassland and eastern Aspen Parkland regions; nowhere common.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Empress D	250
Empress, SE 11-23-1-W4	30

Other collections include:

- University of Alberta Herbarium

Battle River, dry prairie slope in valley, north of  
Wainwright  
Medicine Hat, 8 km east, railway tracks  
5 km north of Empress, 51°00'N, 110°01'W, grassland  
Walsh, 50°07'N, 110°04'W  
Kinsella, 6 km north of town, 53°02'N, 111°35'W, open  
grassland in aspen parkland  
Battle River Valley near Big Knife Provincial Park,  
52°29'N, 112°11'W, dry grassy slope  
south of Galahad  
north of Irvine, sandy roadside  
14.5 km north, 3 km east of Consort, 1-37-6-W4, dry open  
prairie

- Department of Agriculture, Lethbridge Herbarium

Bindloss  
Dunmore Junction

**HABITAT:**

This is a species of level sand plain areas, especially around moist depressions. No specific surveys to assess this non-dune species were undertaken; however, a considerable amount of its habitat was traversed in 1987 and previous years. From those surveys, it appears to be localized in the Grassland and Aspen Parkland regions. Other known occurrences include Pakowki Lake, Wainwright/David Lake and the northern Middle Sandhills of the Suffield block. Many of the sand plain

areas, particularly in the Aspen Parkland where it undoubtedly used to occur, have been cultivated.

**BIOLOGY:**

Perennial with creeping rhizomes.

**THREATS:**

Cultivation of sand plains is a long-term threat.

**POPULATION SIZE AND TREND:**

There is no accurate estimate of the total population but it is thought to be less than 20 000. This estimate could be high. Populations are thought to be declining because of ongoing clearing and cultivation of sand plain habitats, especially in the Aspen Parkland.

**PROTECTIVE STATUS:**

A small population is located in the David Lake Ecological Reserve.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare" in Alberta. Additional surveys of sand plains and areas, from which there are previous records, should be made to determine the full extent of habitat loss.

Retention of natural sand plain habitat at Empress, Empress Dunes, Suffield, Pakowki Lake, and Wainwright/David Lake sites would protect known populations of this species. All of these sites are on Crown lands which are leased for grazing or military purposes.

Research into the biology of this species, and the impact of different grazing regimes and fire, would be useful and may help explain the relative scarcity of this species.

**LATIN NAME:** Oenothera andina Nutt.

**COMMON NAME:** Upland Evening-Primrose

**BRIEF SUMMARY OF STATUS:**

Very rare in Alberta and Canada; western species, rare at the northern limit of its somewhat limited range.

**GENERAL ALBERTA DISTRIBUTION:**

Known only from the Onefour-Manyberries area.

**OCCURRENCES:**

- University of Alberta Herbarium

Manyberries, gently sloping ground with sagebrush

Wershler and Wallis (1986) describe the Onefour site which lies just south of the old town of Onefour (W1/2 22-1-4-W4 in a slight depression in grassland O. andina is fairly common in th is location.

**HABITAT:**

Sandy plains, especially in slightly moister depressions.

**BIOLOGY:**

Annual.

**THREATS:**

Unknown.

**POPULATION SIZE AND TREND:**

Unknown, but this species is thought to be very rare. Despite intensive searches in areas of known occurrence at Onefour, only one locality could be found.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare". Designation and protection of the Lost River area would protect individuals of this species. This is Crown land which is leased for grazing.

**REFERENCES:**

Raven (1969)

Wershler and Wallis (1986)

**LATIN NAME:** Oenothera serrulata Nutt.

**COMMON NAME:** Shrubby Evening-Primrose

**BRIEF SUMMARY OF STATUS:**

Rare in Alberta; western species, rare at the northwestern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered localities in the Mixed Grassland, but always rare where found.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Dune Point F	less than 10

**Other Occurrences:**

- University of Alberta Herbarium

Medicine Hat, on plains and on river valley flats  
Lost River Coulee, seven km west of Onefour, silt  
deposits in dried up floodplain, 49°06'N, 110°34'W  
Empress, 5 km north of town, 51°00'N, 110°00'W, open  
grassland  
west of Fort Macleod, dry plains  
Fort Macleod, old stubble field  
11.3 km north of Sandy Point along Highway 41, 20-1-W4,  
dry, south-facing slope in patch of Juniperus  
horizontalis

- Department of Agriculture, Ottawa Herbarium

Dunmore

It is also known to occur at the yucca site along the Lost River and other locations in the Dune Point area.

**HABITAT:**

Sandy plains, apparently also occasionally in dunes.

**BIOLOGY:**

Perennial.

**THREATS:**

Cultivation of sand plains is a long-term threat.

**POPULATION SIZE AND TREND:**

Unknown. This non-dune species was not specifically looked at for during 1987. From previous studies, it appears to be rare and local.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Designation and protection of the Dune Point and Lost River areas would protect individuals of this species. These are Crown lands which are leased for grazing.

**LATIN NAME:** Androsace occidentalis Pursh

**COMMON NAME:** Western Pygmyflower, Fairy Candelabra

**BRIEF SUMMARY OF STATUS:**

Abundant in sand plain areas; formerly considered rare in Alberta.

**GENERAL ALBERTA DISTRIBUTION:**

Widespread in the Mixed Grassland.

**OCCURRENCES:**

This species was noted in every sand plain area from the Red Deer River in the Atlee and Bindloss districts south to the Milk River Canyon.

**HABITAT:**

Sandy plains.

**BIOLOGY:**

Annual, usually winter annual; flowering in May and early June (late April 1987).

**THREATS:**

Cultivation of sand plains is a long-term threat. Habitat generally seems secure over the short term.

**POPULATION SIZE AND TREND:**

Hundreds of thousands of individuals occur in many sand plain areas. Population is abundant and stable.

**PROTECTIVE STATUS:**

None known, although this species probably occurs in the Kennedy Creek Ecological Reserve and Milk River Canyon Natural Area.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

This species should be removed from rare plant lists for Alberta. Maintenance of natural habitats in sand plains in southern Alberta would protect populations of this species.



**REFERENCES:**

Wallis et al. (1986)

**LATIN NAME:** Asclepias viridiflora Raf.

**COMMON NAME:** Green Milkweed

**BRIEF SUMMARY OF STATUS:**

Common but very localized in Alberta; generally rare in Canada; midwestern and eastern species, rare at the northwestern limit of its range.

**ALBERTA DISTRIBUTION:**

Known only from Writing-on-Stone Provincial Park and the lower Lost River area in the vicinity of the yuccas.

**HABITAT:**

Eroding sandy or gravelly areas.

**BIOLOGY:**

Perennial.

**THREATS:**

Recreational use at Writing-on-Stone Provincial Park may have an impact on some populations but generally their habitat seems secure.

**POPULATION SIZE AND TREND:**

The total Alberta population is estimated to be less than 1 000 plants, but is probably stable.

**PROTECTIVE STATUS:**

Writing-on-Stone Provincial Park.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare" in Alberta. Designation and wise management of the Lost River area would protect another population of this species. This is Crown land which is leased for grazing.



**LATIN NAME:** Cryptantha minima Rydb.

**COMMON NAME:** Small Cryptanthe

**BRIEF SUMMARY OF STATUS:**

Very rare in Alberta and Canada; midwestern species, rare at the northwestern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Known only from Medicine Hat.

**OCCURRENCES:**

- Department of Agriculture, Ottawa Herbarium  
Medicine Hat

**HABITAT:**

Eroding areas.

**BIOLOGY:**

Annual.

**THREATS:**

Unknown.

**POPULATION SIZE AND TREND:**

Unknown. No surveys of this non-dune plant were undertaken in 1987.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Attempts should be made to relocate the Medicine Hat population.



**LATIN NAME:** Hedeoma hispidum Pursh

**COMMON NAME:** Pennyroyal

**BRIEF SUMMARY OF STATUS:**

Rare in Alberta; midwestern and eastern species, rare at the northwestern limit of its range.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered localities through the Mixed Grassland region but always rare.

**OCCURRENCES:**

- University of Alberta Herbarium

Jenner Ferry, northeast of Brooks, open prairie by ferry  
landing  
southeast of Manyberries, dry slough bottom in prairie  
Fort Macleod, garden  
Walsh, dry prairie  
5 km east of Irvine

- Department of Agriculture, Lethbridge Herbarium

Bow Island Grazing Preserve

**HABITAT:**

Borders of sloughs in moist sandy soil, and sandy soil along grassy river terraces.

**BIOLOGY:**

Low tufted annual.

**THREATS:**

Unknown.

**POPULATION SIZE AND TREND:**

Unknown. No surveys for this non-dune species were undertaken in 1987.

**PROTECTIVE STATUS:**

Dinosaur Provincial Park.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Attempts to relocate the known populations of this species should be made.

**REFERENCES:**

Gill (1981)

**LATIN NAME:** Castilleja sessiliflora Pursh

**COMMON NAME:** Downy Paintbrush

**BRIEF SUMMARY OF STATUS:**

Rare, possibly threatened in Alberta; known only from three localities, populations very low.

**GENERAL ALBERTA DISTRIBUTION:**

Known only from an area just north of Writing-on-Stone Provincial Park and along the Lost River.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Lost River B	25
Writing-on-Stone	fewer than 10

A collection at the Lethbridge Agriculture Station from the Lomond district 50°21'N, 112°39'W needs confirmation and may represent a mislabelled collection.

**HABITAT:**

Stabilized sand in dunes and sand plain areas.

**BIOLOGY:**

Perennial.

**THREATS:**

Cultivation of sand plain areas may pose a threat in the long term for the Writing-on-Stone population. Hay for supplemental winter cattle feed has recently been placed on the largest population at the Lost River. The winter grazing pressure may not be significant, although there could be increased compaction or disturbance of this population. In addition to the increased grazing pressure on this site, there is concern regarding the invasion of this site by weedy species introduced in the hay.

**POPULATION SIZE AND TREND:**

Fewer than 50 plants are known in Alberta. The population appears to have been stable but recent changes in the pattern of cattle use at Lost River could stimulate a decline.



**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare"; "threatened" if further research indicates grazing and hay placement poses a problem. Designation and appropriate management of the Lost River area would protect the most significant Alberta population of this species. This is Crown land which is leased for grazing. Research into the biology of this species with respect to grazing and fire will help in its management.

**LATIN NAME:** Antennaria dimorpha (Nutt.) T. & G.

**COMMON NAME:** Cushion Everlasting

**BRIEF SUMMARY OF STATUS:**

Very locally abundant; generally rare in Canada; western species, rare at the northeastern edge of its somewhat limited range.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered locations from Milk River Canyon to Dinosaur Provincial Park.

**OCCURRENCES:**

<u>Site Name</u>	<u>Population Size</u>
Pakowki South	fewer than 100
Suffield Centre, sand plain above Sherwood Forest	fewer than 100
Suffield Centre H	fewer than 50
Suffield Centre J	fewer than 50

This is not a complete compilation of Alberta records. These represent additional records of this species from 1987 surveys.

**HABITAT:**

Sand plains.

**BIOLOGY:**

Perennial, mat-forming.

**THREATS:**

Cultivation of sand plain habitats is a long-term threat, but habitat now seems secure.

**POPULATION SIZE AND TREND:**

This species is relatively common in sand plains in the Kennedy Creek, Lost River and Milk River Canyon areas, but appears to occur only in low populations north of this district. Populations appear to be stable.

**PROTECTIVE STATUS:**

Dinosaur Provincial Park, Kennedy Creek Ecological Reserve and Milk River Canyon Natural Area.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "uncommon" in Alberta. Designation and appropriate management of the Lost River area would protect another significant Alberta population of this species. This is Crown land which is leased for grazing.

**LATIN NAME:** Thelesperma marginatum Rydb.

**COMMON NAME:** Tickseed

**BRIEF SUMMARY OF STATUS:**

Very rare in Alberta; rare in Canada; western species of limited distribution, apparently rare over most of its range; Medicine Hat is the type locality.

**GENERAL ALBERTA DISTRIBUTION:**

Known only from two sites along the valleys of the South Saskatchewan drainage in the Mixed Grassland; western species of restricted distribution, apparently rare in many parts of its range.

**OCCURRENCES:**

- National Museums of Canada Herbarium

Police Point, Medicine Hat, May 31, 1894

32 km west of Lethbridge, August 25-27, 1964, heads in seed, dry prairie and open slopes

**HABITAT:**

Eroding areas, presumably in sandy soil.

**BIOLOGY:**

Perennial; blooms late May and June.

**THREATS:**

Unknown but cultivation may have affected one population.

**POPULATION SIZE AND TREND:**

Apparently very rare and local. Despite intensive surveys in 1986 and 1987 in sandy plains and sand dunes in the Pearce (Monarch) dunes east of Fort Macleod, this species was not located. These sand plains had heavy impact over the last 30 years, and it is unclear from collection data where populations of Thelesperma marginatum had occurred naturally.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare". Further surveys in the Medicine Hat and Monarch areas should be undertaken in an attempt to locate populations of this species.

**REFERENCES:**

Wallis et al. (1986)

### 3.2 Wildlife

The following species summary sheets outline the results of the 1987 field investigations. For wildlife, the following headings are employed:

**Latin Name**

**Common Name**

**Brief Summary of Status**

**General Alberta Distribution**

**Occurrences** - field observations and additional collection records

**Habitat** - brief overview

**Threats** - major short-term and long-term threats to a species' survival

**Population Size and Trend** - estimate of total Alberta population and stability of existing population

**Protective Status** - areas where wildlife receive formal protection

**Recommendations/Management Action** - includes recommendations for classification as "rare, threatened or endangered", or for delisting; specific areas where habitat should be conserved; and management practices which might help in the long-term and short-term maintenance of populations.



**LATIN NAME:** Bufo cognatus

**COMMON NAME:** Great Plains Toad

**BRIEF SUMMARY OF STATUS:**

Endangered; populations have declined significantly; remaining population low and vulnerable.

**GENERAL ALBERTA DISTRIBUTION:**

Widely scattered localities in the Empress-Medicine Hat, Taber-Lake Newell and Lost River-Milk River districts.

**OCCURRENCES:**

For a complete listing of historical records, see Cottonwood Consultants (1986b).

- Great Plains Toad breeding ponds, 1987

1. Little Rolling Hills East - small ponds in vicinity of Site A

Total: 6 calling

Habitat: three small, shallow ponds, the northern two being next to sandhills; water clear but a lot of algal growth; no emergent vegetation

Location: N 1/2 Sec. 32, Twp. 15, Rge. 13, W4

Observations: May 8 - 2 & 3 in two ponds near pipeline; 1 in very small pond just south and west of these, towards irrigation canal

**Notes:**

- began calling 2130 hrs., very slowly at first when only individuals called but more rapidly later when all called in chorus
- Chorus Frogs called in all three ponds and were especially numerous in the two northern ponds
- migratory shorebirds, a few resident ducks and shorebirds, and a muskrat seen in northern ponds
- day was very warm and sunny; evening was cool, clear and relatively calm -- water in ponds was warm in comparison to air temperature
- Great Plains Toads called from clumps of algae



2. Little Rolling Hills East - pond at Site B

Total: maximum of approximately 25 calling, plus 2 on land

Habitat: shallow pond in series of depressions, some of which were dry; water clear but with considerable algal growth; no emergent vegetation

Location: NW 1/4 of Sec. 26, Twp. 15, Rge. 14, W4

Observations:

May 28 (showery day; clear evening)

- 1815 hrs.: 1 calling intermittently
- 2145 hrs.: a few calling intermittently
- 2230-2245 hrs.: c.25 calling intensively, in two groups of 10-12, plus 2 individuals; 2 individuals on land (1 female moving across dry shore toward water; 1 jumping in water from slightly raised bank)

June 4 (warm clear evening)

- late afternoon: none calling
- 2210 hrs.: started calling
- by 2245 hrs.: 5-6 calling

Notes:

- numerous Chorus Frogs called on both nights
- migrant and nesting shorebirds and a variety of duck species also used the pond
- Great Plains Toads called from clumps of algae

3. Little Rolling Hills East - Site D

Total: maximum of 20+ calling

Habitat: large pond with higher than normal water level -- some of the grassland backshore looked recently flooded; at least a few toads called from this area; water was clear with no emergent vegetation noted

Location: Sec. 34, Twp. 15, Rge. 14, W4M

Observations:

May 29

- just after midnight: 20+ calling

June 4

- 2330 hrs.: 10+ calling

Notes:

- 50+ Plains Spadefoot calling on May 28, but none on June 4
- a variety of waterfowl and nesting shorebirds also used the pond
- a few Great Plains Toads were also calling to the northeast of this site on the east side of the north-south trail, at Site E

4. Little Rolling Hills West - Site F

Total: 20-30 calling

Habitat: small shallow pond; shallows and shore trampled by cattle; water clear

Location: on border of Sec. 20 & 29, Twp. 15, Rge. 14, W4

Observation: May 29 (0219 hrs.) - 20-30 calling

Notes:

- large spring, possibly partly influenced by irrigation development but situated 4 km from the nearest irrigation canal or reservoir
- potential "mother" pond; all other wetlands in the region were dry

5. Lake Newell (south shore)

Total: 4 or 5 calling

Habitat: intermittent wetland close to lakeshore; lake level high

Location: NW 1/4 Sec. 18, Twp. 16, Rge. 15, W4M

Observation: May 29 (0110 hrs.): 4 or 5 calling

Notes:

- 2+ Dakota Toads and numerous Chorus Frogs calling in same wetland
- Dakota Toads calling May 1 (0300 hrs.) during light rain, but no Great Plains Toads

6. Lake Newell (southeast shore)

Total: "a few" calling in distance

Habitat: either intermittent wetland next to lake or  
shallows of lake itself

Location: Sec. 5 or 6, Twp. 17, Rge. 14, W4M

Observation: May 1 (after midnight): more than 1 calling

7. Lower Bow (Wolf Island) Sandhills - pond north of Oldman  
River, east of Bow Island

Total: 30-50 calling

Habitat: large, spring-fed pond, unknown depth; water  
clear; no emergent vegetation; pond connected to  
irrigation canals on north and south sides

Location: NE 1/4 Sec. 19, N 1/2 Sec. 20, Sec. 29, SE 1/4  
Sec. 30, Twp. 11, Rge.13, W4

Observations: May 29 (2215-2230 hrs.): 30-50 calling in  
two large groups; still not completely dark  
by 2230 hrs., so there were potentially many  
more in the pond not yet calling

Notes:

- pond fed by a very large spring -- one of the largest in  
southern Alberta
- possible "mother pond" prior to irrigation development
- many Chorus Frogs also calling

8. Purple Springs Sandhills - Site B pond

Total: 6+ calling

Habitat: small, shallow pond with clear water

Location: NW 1/4 31, Twp. 10, Rge.14, W4M

Observation: May 29 (1035 hrs.) - 6+ calling

Notes:

- Chorus Frogs also calling
- potential of more calling after 1035 hrs.

9. Purple Springs Sandhills - Site I, along irrigation canal

Total: 50-100 calling

Habitat: small, shallow ponds with clear water

Location:

Observation: May 29 (before midnight): 50-100 calling

Notes:

- Chorus Frogs also calling

10. Purple Springs Sandhills - pond in vicinity of Site C, just south of Oldman River

Total: 6 calling

Habitat: small willow-ringed pond with clear water

Location: on border of Sec. 9 & 10, Twp. 11, Rge. 14, W4

Observation: May 29 (before midnight): 6 calling

Notes:

- Chorus Frogs also calling

11. Purple Springs Sandhills - south of Site C

Total: 6 calling

Habitat: small pond with clear water

Location:

Observation: May 29 (before midnight): 6 calling

Notes:

- Chorus Frogs also calling

12. Purple Springs Sandhills - Site H, north of Purple Springs Grazing Reserve Headquarters

Total: 5+ calling

Habitat: 2 small, shallow ponds with clear water

Location: SW 1/4 Sec. 28, Twp.10, Rge. 14, W4

Observation: May 29 (before midnight): 5+ calling

13. Purple Springs Sandhills - Site J

Total: 6 calling

Habitat: small, shallow pond with clear water

Location: S 1/2 Sec. 29, Twp. 10, Rge. 14, W4

Observation: May 29 (before midnight): 6 calling

Notes:

- Chorus Frogs also calling

14. Purple Springs Sandhills - Site A pond, north of Purple Springs

Total: 2 calling

Habitat: small, shallow pond with clear water

Location: N 1/2 Sec. 13, Twp. 10, Rge. 15, W4

Observation: May 29 (before midnight): 2 calling

Notes:

- Chorus Frogs and several Plains Spadefoot also calling

Summary of Other Sites Surveyed in 1987

15. Bindloss-Empress

This area was previously productive in the 1970s. Since that time, previously productive sloughs have been continuously dried up and, in several cases, have been cultivated. Dugouts have also been placed in a significant number of natural wetlands. All wetlands in Townships 21 and 22, Ranges 1 to 4, south of the Red Deer River were surveyed. A few wetlands had some water but contained only breeding Chorus Frogs and in one area, Leopard Frogs (E1/2 28-21-3-W4). Good potential still remains in one previously productive, ephemeral wetland (W1/2 29-21-1-W4), which is in natural grassland on Crown land leased for grazing.

Wetlands in the valley of the Red Deer appear to be too muddy and alkaline, and the adjacent deposits are too fine-textured to be of value to Great Plains Toads.

16. Hilda Sandhills

This area had reports of productive breeding ponds in the 1960s. However, virtually all wetlands are now dry and, in a few instances, have been cultivated. Dugouts have also been placed in a large number of ephemeral wetlands. All wetlands in Townships 18 to 20, Ranges 1 to 3, on both sides of the South Saskatchewan River were surveyed. A few wetlands had some water, but contained breeding Chorus Frogs only. Good potential still remains in several ephemeral wetlands which are in natural grassland on Crown land leased for grazing (SW 4-20-2-W4; several wetlands in the centre of 18-3-W4; wetlands in the southwest corner of 19-2-W4).

17. Matzhiwin Sandhills

Ponds in Township 22, Range 15, were surveyed. This area had apparently good habitat with abundant shallow, clear water and adjacent sand deposits. However, only breeding Dakota Toads and Chorus Frogs occupied these ponds. There is no historical evidence of breeding Great Plains Toads here.

18. C.F.B. Suffield (South)

All wetlands in sand plains are now dry and have been that way for several years. Fortunately, dugouts have not been placed in many of these ephemeral wetlands. All wetlands in Townships 15 and 16, Ranges 5 to 7, on the west side of the South Saskatchewan River were surveyed. No wetlands had any water.

Good potential remains in numerous ephemeral wetlands which are in natural grassland on Crown land leased to the federal government for military purposes (35 and 36-15-6-W4; frog ponds, 28 to 30-15-6-W4; 13-16-6-W4; several wetlands along the western edge of 16-5-W4). Wetlands north and west of this area appeared to be more alkaline, with finer-textured sediment, and do not appear to be suitable for the Great Plains Toad.

19. Old Channel Lake, North of Medicine Hat

This area may have been productive in the 1970s. Since that time, seasonally wet depressions and sloughs have been dried up and dugouts have been placed in a significant number of the natural wetlands. All wetlands in Townships 13 and 14, Ranges 5 to 6, west of the South Saskatchewan River and north of the Trans-Canada Highway, were surveyed. No wetlands had water, however, potential remains in the north part of 14-6-W4. Much of this land is Crown land leased for grazing.

20. Brooks-Vauxhall

Wetlands in the areas between Duchess and Lake Newell, and between Hays and Vauxhall, were checked. Only Dakota Toads and Chorus Frogs were noted. Northern Duchess-Lake Newell is not considered to be a potential area because of the lack of suitable coarse-textured substrates. It was surveyed as a "control" to confirm habitat preference for Great Plains Toads which were found in immediately adjacent wetlands in the Little Rolling Hills-South Lake Newell districts.

The southern Hays-Vauxhall district is known to have some suitable habitats in natural sand plains just south and east of Hays in Townships 12 and 13, Ranges 13 and 14. Because of time constraints and the lack of suitable conditions on other survey dates, these areas were not checked. Wetlands in cultivated land closer to Vauxhall in Township 13, Range 15, were not productive for the Great Plains Toad.

21. Barnwell Sandhills

This is probably the westernmost potential Great Plains Toad habitat along the Oldman River. All wetlands in Township 10, Ranges 17 to 18 north of the Oldman River, were surveyed. None of the wetlands had water, and dugouts had been placed in several of the natural, ephemeral wetlands. There is a mixture of private land and Crown land which is leased for grazing.

22. Lost River Sandhills

This area had previously been productive for the Great Plains Toad, but had suffered through several years of drought. Water levels have returned to "normal"; however, previously productive ponds have not yet been recolonized by the Great Plains Toad. Good potential still exists in a number of wetlands in Township 1, Ranges 4 to 5. The Chorus Frog and Spadefoot Toad were found along the Lost River valley. This area is on Crown land leased for grazing, and has a variety of other nationally significant features associated with it.

23. Pakowki Lake Sandhills

Despite apparently good habitat and surveys in previous years, we have never found the Great Plains Toad in this area. There is clear, shallow water and abundant sand substrate in both active dune and sand plain environments. Much of the suitable potential habitat is on Crown land leased for grazing. The area also has several other provincially significant natural features.

#### 24. Wildhorse-Manyberries

All ponds along Highway 502 between Highway 41 and Onefour, Highway 41 between Highway 501 and Wildhorse, and Highway 501 between Highway 41 and the gravel road between Onefour and Manyberries between Seven Persons and Orion were surveyed. There was abundant water in the wetlands; however, the substrate appears to be too fine for the Great Plains Toad. Only the Chorus Frog was found in these areas, despite the fact that the Spadefoot Toad was calling at Lost River. This area was surveyed as a "control" block to determine the effect of substrate on the Great Plains Toad. Most of this land is Crown land leased for cattle grazing.

#### 25. Seven Persons-Orion

All ponds along Highway 887 between Seven Persons and Orion were surveyed. There was abundant water in the wetlands; however, the substrate appears to be too fine for the Great Plains Toad. Only the Chorus Frog was noted in these wetlands. This area was surveyed as a "control" block to determine the effect of substrate on the Great Plains Toad.

#### **HABITAT:**

With one exception (Little Rolling Hills), all 1987 Great Plains Toad breeding sites were located in sand plain wetlands directly influenced by irrigation water. Because of continued drought conditions in 1987, which have prevailed in much of the Mixed Grassland region for several years, most of the known or potential breeding ponds outside irrigated regions were dry during the survey period. In the irrigated areas, there appeared to have been a rise in the local water table (compared to pre-irrigation conditions) to the extent that small naturally ephemeral ponds were kept flooded during the survey period in 1987. However, numerous similar sized ponds in nearby areas were desiccated. In the Little Rolling Hills area, a Ducks Unlimited water control project has also helped to maintain some habitat for the Great Plains Toad.

The vast majority of water bodies were small, shallow, relatively fresh ponds with very little or no growth of emergent vegetation. At least two sites were spring-fed. The ponds were not in sandhill areas proper, but rather on the edge of sandhills or in sand plain habitats close to sandhills. This was probably because of a lack of water in the dunes. In most of the sites which were checked more closely, algal growth in the water was used as perches for vocalizing males, and probably also plays an important role in providing cover for adults, tadpoles and eggs.



All ponds which contained the Great Plains Toad were surrounded by natural vegetation. Similar sites in cultivated areas were not productive for the Great Plains Toad, and often did not even contain the Chorus Frog.

The majority of breeding ponds checked during daylight hours were also used by a variety of shorebirds (migratory and summer residents) and waterfowl. In most cases, the ponds were also used as breeding sites by the Chorus Frog and, in three instances, by the Plains Spadefoot.

#### THREATS:

The Great Plains Toad face threats which are both natural and man-made. Prolonged drought has kept once-productive breeding ponds dry for northern populations throughout most of the 1980s. Refilled ponds in the south have not yet been recolonized, and this may be related to high mortality in adults and no replacement by young during the long dry period.

It is noteworthy that even though most populations of the Great Plains Toad found in 1987 appeared to be associated with irrigation, all ponds were situated in natural vegetation. As these areas become more developed for agriculture, cultivation will become a significant threat to the continued existence of viable Great Plains Toad habitat. Ponds in adjacent cultivated lands had no Great Plains Toads. Several desiccated former breeding ponds have now been cultivated, and many sand plain wetlands are now drained or cultivated.

Also, as agricultural development intensifies, toxins in the water and salinization also pose potential threats. In at least one instance, breeding ponds continued to be used despite heavy use by cattle. Cattle use of breeding ponds may be a greater threat if heavy use during egg maturation reduces Great Plains Toad survival.

Development of deeper wetlands for waterfowl and rehabilitation of the irrigation canals also threaten the few breeding sites. Surveys of deeper wetlands showed little or no use of these ponds. Seepage and spillage from inefficient canal systems has been beneficial for the Great Plains Toad in some instances (Purple Springs, Little Rolling Hills East). There is a massive program underway to rehabilitate the canal systems in southern Alberta, so there will probably be a reduction in wetland habitats made available by irrigation.

Dugouts placed in natural, ephemeral wetlands also pose a threat. Not only do they attract more cattle to a site, but also produce a deep water habitat which is unsuitable for

breeding toads. Hundreds of natural ephemeral wetlands in sand plains now have dugouts placed in the middle of them. Except in extremely wet periods when entire depressions as well as the dugout will be refilled, it is unlikely that many of these ephemeral ponds will be useful for Great Plains Toads as the spring runoff will collect in the deeper dugout rather than over a broader shallow depression.

#### **POPULATION SIZE AND TREND:**

At least 186 (perhaps as many as 267) Great Plains Toads were counted in a total of four different areas:

Lake Newell - 6+ or 7+ in 2 sites  
Little Rolling Hills Sandhills - between 75+ and 85+ in  
5 sites  
Wolf Island Sandhills - between 30 and 50 in 1 site  
Grassy Lake Sandhills - between 75+ and 125+ in 6 sites

With the exception of 1 or possibly 2 females, the toads found were vocalizing males.

The total Alberta population is estimated at fewer than 1 000 individuals.

From the records, it is clear that the Great Plains Toad has disappeared over a large portion of its Alberta range. While irrigation water has maintained some populations, potential habitat may have been destroyed by cultivation of crops on sand plains and by dugouts placed in ephemeral wetlands.

#### **PROTECTIVE STATUS:**

None.

#### **RECOMMENDATIONS/MANAGEMENT ACTION:**

The Great Plains Toad should be classified as "endangered" in Alberta. Protection of the remaining natural habitats in the Hilda, Sandy Point, Suffield South, Lost River-Milk River and Little Rolling Hills areas should be a priority.

In each sand plain unit, several ephemeral wetlands should remain free of dugout developments.

The Great Plains Toad breeds in relatively fresh or slightly alkaline water, and some sites are known to be spring-fed. It is probable that in non-irrigated portions of the species' range in Alberta, the availability of springs plays a major role in the survival of populations during drought conditions. Efforts should be made to protect areas with springs from damage by cattle by fencing off key areas.

Even if the Great Plains Toad does not use some of these habitats, they are very productive for many species of flora and fauna, many of which are local or rare in Alberta.

It is not known how long Great Plains Toads are able to survive in drought conditions, but it is conceivable that local populations might be seriously reduced during extended periods of dry years. Breeding ponds which are fed by major spring activity may serve as "mother ponds" -- sites where the Great Plains Toad can survive major droughts. They also serve as population centres from which surrounding areas may be recolonized as habitat conditions improve. The Little Rolling Hills West site and the Lower Bow areas may have been natural "mother ponds" before irrigation development. Both have strong spring flow, and the Lower Bow site was apparently this way before irrigation development.

The Lost River and associated springs may serve as a repopulation centre for sand plains in the Milk River-Lost River area. While there have been no breeding records there for the last few years, it is possible that a few adults have survived in moister sites in the Lost River valley. It is unclear where Great Plains Toads could survive in the Middle Sandhills-Sandy Point-Remount areas, although there may be some repopulation from sites along the river valleys or springy areas in Saskatchewan. There is a major spring in the Bindloss Depression, however, it appears unsuitable for the Great Plains Toad. Springs in the Middle Sandhills along the South Saskatchewan River valley are too far removed from potential breeding ponds to be beneficial.

Great Plains Toad populations in Alberta should be monitored in non-irrigated areas during consecutive wet years. This would be to obtain a more complete picture of the status of this species in the province, and to help identify centres of abundance. If moisture conditions improve in southern Alberta wetlands, and the Great Plains Toad fails to appear in previously suitable habitat for two consecutive years, reintroduction of individuals from healthy populations should be considered in order to speed up the process of recolonization.

Condition and trend in habitats and populations in irrigated areas should also be regularly monitored. Should improvements in canal efficiency destroy man-made toad habitats, some provisions should be made to provide water in spring to reflood certain breeding ponds.

Landowner/leaseholder agreements to protect toad habitat should be developed in the Little Rolling Hills, Lower Bow, Milk River-Lost River, Hilda, and Bindloss-Empress areas. These should prevent cultivation and drainage of wetlands,

raising of water levels, and construction of dugouts for cattle.

**REFERENCES:**

Cottonwood Consultants (1986b)



**LATIN NAME:** Heterodon nasicus nasicus

**COMMON NAME:** Plains Hognose Snake

**BRIEF SUMMARY OF STATUS:**

Endangered. Populations have always been low, but they continue to decline.

**GENERAL ALBERTA DISTRIBUTION:**

Two colour morphs inhabit Alberta - a checker-bellied form found in the Dune Point-Remount-Middle Sandhills-Sandy Point-Hilda-Medicine Hat area, and a black-bellied form which occurs in the Lost River-Milk River Canyon-Pakowki Lake area.

**OCCURRENCES:**

<u>Site Name</u>	<u>Notes</u>
Remount A	1 Hognose Snake, found by Bill Picotte; Remount Community Pasture by windmill with cattle corrals and open sandy soil disturbed by cattle; late April
Remount B	1 Hognose Snake, found by June Picotte; Remount Community Pasture by headquarters along road to house; general habitat in vicinity is typical shrubby sandhill and sand plain vegetation; July 7
Sandy Point B	1 Hognose Snake, on Highway 41 west roadside; adjacent habitat is typical shrubby sandhill vegetation; July 3
Suffield South C	2 Hognose Snakes, one recently killed by petroleum industry service truck and a live one in adjacent sandy ditch; surrounding habitat is lightly or ungrazed native grassland; June 25

Interviews with military and well-servicing personnel failed to turn up any knowledge of this species in the Middle Sandhills area.

**HABITAT:**

Sand plains and sandhills with some loose patches of sand. The requirement for sandy habitats stems from its burrowing habits.

#### **THREATS:**

Killing of snakes by man remains the most significant threat. One hibernaculum, which had an overwintering population of the Plains Hognose Snake, was heavily affected and the species apparently no longer uses the site (Cottonwood Consultants 1987). Two of the 1987 records are of road kills. The small and isolated populations of the Plains Hognose Snake can ill-afford any loss. Continued development of wellsite service roads into key habitats will probably lead to further population declines.

Although large areas of sand plains have been cultivated, there is still considerable natural habitat which remains. Cultivation is seen as a longer-term threat.

#### **POPULATION SIZE AND TREND:**

Because so few have been found, we suggest that the Alberta population is low. However, the secretive nature of this species makes any estimate difficult. From discussions with local ranchers and past residents in the area of Plains Hognose Snake habitat, it appears that populations have declined (Cottonwood Consultants 1986b; 1987). The 1987 records are the first in six years, so it is clear that they can survive through the dry years of southern Alberta.

#### **PROTECTIVE STATUS:**

There is a record of a Plains Hognose Snake from the Milk River Canyon Natural Area. No northern populations of the checker-bellied morph currently receive any formal protection.

#### **RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "endangered" in Alberta. Designation and wise management of the Suffield North, Centre and South, Dune Point and Lost River sites would protect a significant amount of natural sand plain and sandhill habitat where the Plains Hognose Snake has been reported. This includes one reported hibernaculum in the Drowning Ford area and a former hibernaculum in the Dune Point area. Retention of the natural habitat at Remount Community Pasture will also protect a significant area for the Plains Hognose Snake.

The designation and maintenance of several roadless areas in sand plain and sandhill habitats, especially adjacent to snake dens, would help prevent further population declines because of road kills. Such programs should be more acceptable in the Suffield area where there is already some sensitivity to wildlife values, and some structure for implementation of wildlife and habitat protection programs.

Programs to educate wellsite workers in areas such as Suffield, where access is tightly controlled, may reduce road kills of snakes and intentional killing of snakes around wellsites. Such education programs could also be useful in helping workers recognize the Plains Hognose Snake and documenting additional records. As a last resort, seasonal closures of selected wellsite roads should be considered if road mortality is not curtailed.





**LATIN NAME:** Pedioecetes phasianellus

**COMMON NAME:** Sharp-tailed Grouse

**BRIEF SUMMARY OF STATUS:**

Locally fairly common in preferred sandhill habitats in the Mixed Grassland. Other habitats in Alberta were not intensively surveyed as part of this study, but continuing cultivation of fescue grassland and aspen parkland sites is having an impact on the total population.

**GENERAL ALBERTA DISTRIBUTION:**

Found in a variety of semi-open and open Grassland, Aspen Parkland and Boreal Forest habitats from the Northwest Territories border south to the United States boundary.

**SUMMARY OF 1987 OBSERVATIONS:**

The highest density of Sharp-tailed Grouse observed was in the Middle Sandhills (Suffield North) area. A lek was found at Suffield North G. Declines from the 1970s seemed to have occurred in the Dune Point and Hilda populations, although these areas are still productive compared to many other sandhill sites.

This species appeared to do best where there was a variety of low shrub vegetation (Dune Point, Suffield, Pakowki Lake, Purple Springs). Populations were lower or non-existent on sandhill sites where there was less shrubbery and more grass cover (Lower Bow, Turin, Barnwell), where most of the natural vegetation had been removed from the area (Pearce, Carmangay), or where the sandhill habitats were very restricted (Lost River). Despite promising potential habitat, relatively low populations were indicated in the Little Rolling Hills and Matzhiwin areas.

**POPULATION SIZE AND TREND:**

Sharp-tailed Grouse populations appear to be doing quite well in several major sandhill areas in the Mixed Grassland. Populations in the Empress-Dune Point-Hilda areas had been down for several years during the drought but appeared to have rebounded somewhat in 1986-87 (V. Pharis, 1988, pers. comm.). From the 1987 surveys, it appears that numbers were still lower than in the 1970s in these areas.

Hunting pressure in the Dune Point area may have compounded the drought problem (W. Smith, 1988, pers. comm.). Numbers are still high on lands adjacent to the drought-stricken Middle Sandhills on the Suffield Military Reserve.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Retention of natural sandhill and sand plain habitats will be a key element to maintenance of Sharp-tailed Grouse in the Mixed Grassland region. Most of these sites are on Crown land which is leased for grazing.

**LATIN NAME:** Tympanuchus cupido

**COMMON NAME:** Greater Prairie Chicken

**BRIEF SUMMARY OF STATUS:**

Extirpated in Alberta.

**SUMMARY OF 1987 OBSERVATIONS:**

No birds of this species were observed in 1987 despite considerable field survey time in sandhill habitats. There were recent unconfirmed reports from a natural grassland area 2 km south of Arneson on the north side of a small lake (east of Acadia Valley). The rolling grassland habitats there were checked, but no Greater Prairie Chicken were noted.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

It is unclear why Greater Prairie Chicken have disappeared from Alberta. There appears to be abundant suitable habitat in areas such as the Suffield Military Reserve. The restrictions on hunting and habitat disruption at Suffield make the area a likely candidate should reintroductions of the Greater Prairie Chicken be attempted.



**LATIN NAME:** Ammodramus savannarum

**COMMON NAME:** Grasshopper Sparrow

**BRIEF SUMMARY OF STATUS:**

Fairly common in its somewhat restricted habitat.

**GENERAL ALBERTA DISTRIBUTION:**

Found in all sandhill habitats south of the Red Deer River and east of Highway 36. These include: Matzhiwin, Little Rolling Hills, Dune Point, Remount, Empress, Hilda, Suffield (North, Centre and South), Old Channel Lake, Lost River, Pakowki Lake (North and South), Lower Bow, Lost River, Purple Springs and Turin. They have also been recorded in the sand plains around Chappice Lake and the Milk River Canyon.

**HABITAT:**

Tall grasses and open low shrubbery, especially wild rose, in rolling sandhill terrain; also occasionally in taller grasses in sandy plains during wetter years. Highest population densities are in areas with scattered low shrubbery such as rose. The most extensive and densely populated Grasshopper Sparrow habitats are in the Dune Point-Remount-Empress-Sandy Point-Suffield-Hilda sandhill and sand plain area.

**THREATS:**

Cultivation of sand plain and sandhill habitats and extremely heavy grazing are long-term threats; however, habitat generally seems secure and well-managed for this species.

**POPULATION SIZE AND TREND:**

This is a fairly common species in its preferred sandhill habitats. Its Alberta population is estimated in the tens of thousands. A permanent and relatively easy-to-monitor transect was established at Purple Springs along a truck access trail (see map for Purple Springs Transect). Stopping every 0.1 km, a total of 23 singing males was noted on a 4.2 km transect on June 23. A 2.4 km walking traverse on June 14 in sandhills in the northeast part of Suffield revealed 50 singing males.

**PROTECTIVE STATUS:**

None.

**RECOMMENDATIONS/MANAGEMENT ACTION:**

Remove from lists of rare species. Maintenance of natural sandhill habitats will benefit this species.

**LATIN NAME:** Dipodomys ordii

**COMMON NAME:** Ord's Kangaroo Rat

**BRIEF SUMMARY OF STATUS:**

Fairly common within a very restricted range in Alberta.

**GENERAL ALBERTA DISTRIBUTION:**

Found only in the Middle Sandhills, Dune Point, Empress and Hilda sandhills in the vicinity of the South Saskatchewan and Red Deer rivers.

**OCCURRENCES:**

<u>Site Name</u>	<u>Notes</u>
Dune Point A, B	Well-developed Kangaroo Rat runways and burrows in stabilization zone; fall/winter grazed.
Dune Point C	Small, mostly stabilized; low level of Kangaroo Rat activity; summer grazed.
Dune Point D	Some stabilization; moderate level of Kangaroo Rat use; fall/winter grazed.
Dune Point E	Some stabilization but still large active sand surface; extensive Kangaroo Rat activity from stabilization zone into adjacent stabilized grassland; fall/winter grazed.
Dune Point G	Stabilized dunes and non-dune sand sheets with abundant loose sand; this is the only area where there is a well-established Kangaroo Rat population in an area of sand which has been stabilized for many years; this is one of the most extensive Kangaroo Rat "colonies" in natural habitat in Alberta and the only area where activity extends into riparian cottonwood stands; some invasion of loose sand by <u>Salsola kali</u> ; main Kangaroo Rat colonies seem to establish in loosest patches of sand and runways radiate out from these areas, especially to ant hills; fall/winter grazed.
Empress A	Large active sand sheet; little Kangaroo Rat activity; heavily summer grazed.
Empress B	Mostly stabilized; very little activity; abandoned burrows; lightly or fall grazed.



Empress C	Large active sand dune; moderate level of Kangaroo Rat activity; lightly or fall grazed.
Hilda F	Collection at U of A Zoology Museum by N. Panter; area checked in 1987, low level of Kangaroo Rat activity along roadside; rolling sand plain; ungrazed; no Kangaroo Rat activity in adjacent active sand dune; summer grazed.
Hilda G	Collection by Smith and Hampson (1969) at the Provincial Museum; low level of Kangaroo Rat activity; ditch not fenced off and heavily disturbed by cattle; in generally vegetated sandhill area.
Hilda H	Collection at U of A Zoology Museum by N. Panter; area checked in 1987, but no Kangaroo Rat sign found; summer grazed adjacent natural grassland on sand plain with ditches fenced off but no sandy areas.
Sandy Point D	Collection at U of A Zoology Museum by V. Lewin; area checked in 1987 and is completely cultivated, ditches fenced off but with no sandy areas; pocket gopher diggings in vegetated ditch.
Suffield Centre A	Active sand with <u>Psoralea-Oryzopsis</u> ; considerable Kangaroo Rat activity; other dunes mostly stabilized in this area; ungrazed.
Suffield Centre B	Active sand with <u>Psoralea-Oryzopsis</u> ; moderate activity by Kangaroo Rats; other dunes mostly stabilized in this area; ungrazed.
Suffield Centre C	Collection at U of A Zoology Museum by H. Reynolds; several burrows in active road cuts; none in adjacent natural grassland; low numbers compared to roadcuts in Suffield North area; ungrazed.
Suffield Centre D, E	Several burrows in active road cuts with <u>Psoralea</u> ; none in adjacent natural grassland; not as productive as roadcuts in Suffield North area; ungrazed.
Suffield Centre I	Several burrows along active fireguard cuts but only on backside adjacent natural grassland; disturbance appears to be too frequent to use "road" side of cut; not as productive as roadcuts in Suffield North area; ungrazed.

Suffield North A	Considerable Kangaroo Rat activity, <u>Psoralea-Oryzopsis</u> , dune stabilizing slightly, lots of open sand; ungrazed.
Suffield North B	Very active Kangaroo Rat colony, more extensive than Suffield North A, some stabilization of the dune; ungrazed.
wellsite trail B-C	Some active runways, <u>Psoralea-Stipa</u> ; ungrazed.
Suffield North C	Low density of Kangaroo Rats; stabilized especially by grasses, <u>Calamovilfa</u> , <u>Psoralea</u> , <u>Rumex venosus</u> ; ungrazed.
Suffield North D	Moderate Kangaroo Rat activity; lower populations than Suffield B; some stabilization by <u>Calamovilfa</u> and <u>Elymus</u> ; ungrazed.
Suffield North E	Moderate Kangaroo Rat activity in <u>Psoralea-Oryzopsis</u> ; some invasion of the dune but still quite open with some totally open sand; ungrazed.
Suffield North F	Considerable Kangaroo Rat activity; stabilizing with some open sand, <u>Psoralea-Oryzopsis</u> and <u>Calamovilfa</u> ; ungrazed.
Suffield North H	Low density of Kangaroo Rat activity, some also along wellsite trail; mostly stabilized; ungrazed.
Suffield North I	Several Kangaroo Rat runways but not too much activity; still open on south end; ungrazed.
Suffield North J	This is an unburned island in a recent burn; considerable Kangaroo Rat runways and fresh burrows; none in adjacent burned dunes; largely stabilized with one active face where Kangaroo Rats are; ungrazed.
Suffield North N, K	Low level of activity by Kangaroo Rats; considerable stabilization by <u>Psoralea</u> , <u>Calamovilfa</u> and <u>Sporobolus</u> ; ungrazed.
Suffield North L	Only a couple of active Kangaroo Rat burrows; considerable stabilization; ungrazed.
wellsite road L-M	Some active runways; ungrazed.
Suffield North M	Only a couple of active runways; considerable stabilization by <u>Psoralea</u> , <u>Oryzopsis</u> , <u>Elymus canadensis</u> and <u>Rumex venosus</u> ; ungrazed.
Suffield North P	Several burrows along active road cuts, especially where there are straw bales; rare in adjacent natural

habitat, including active dunes; Kangaroo Rats appear to make long distance movements away from home burrows along the road; appears to be marginal habitat with only a few active burrows (2 to 20) at each road cut, however, the extent of the road network makes the total number of Kangaroo Rats substantial; Kangaroo Rats extend into adjacent sandy area of sagebrush outside the main dune area; ungrazed.

Suffield North Q Several burrows along active fireguard cuts but only on the backside adjacent natural grassland; disturbance appears to be too frequent to use "road" side of cut; not as productive as other Suffield North sites; ungrazed.

Suffield North R Numerous burrows on west side of road and in cattleguard, in grazed and ungrazed fenced roadcuts; just east of Suffield block; collection at U of A Zoology Museum by N. Panter; ditch is fenced from road; summer grazed.

There were no Kangaroo Rats along the Suffield northeast boundary fireguard, possibly because of the continual disturbance and widening of the fireguard.

#### **HABITAT:**

Natural habitat is generally associated with active dunes or loose sand in vegetated dunes or sand sheets. Kangaroo Rats also colonize active road cuts in sandy soil. Ungrazed or fall/winter grazed areas appear to be most suitable.

#### **THREATS:**

Stabilization of active dunes is an ongoing problem. Populations appear to decline once dunes are stabilized. Empress dune B had considerable Kangaroo Rat activity in the 1970s (C. Wallis, field notes) when it had a large active component, but there is very little activity there today now that it is stabilized. The impact of recent drought is not clearly understood, however, other populations appear to have maintained themselves through the dry years.

Despite the fact that Kangaroo Rats occur north and south of Remount Community Pasture, there were no active burrows or runways noted in the Remount area where all dunes have been

stabilized. Only one large and somewhat unusual population occurs in stabilized sand at Dune Point.

While heavy summer grazing has not been directly linked to Kangaroo Rat declines in natural habitats, the anecdotal evidence suggests that there is some correlation. In the Hilda dunes, active sand sheets which are summer grazed are devoid of Kangaroo Rats, while adjacent roadcuts which are fenced out from cattle grazing have a low level of Kangaroo Rat activity. In the Empress dunes, heavily summer grazed dunes with a large active sand surface have little Kangaroo Rat activity, while adjacent lightly or fall-grazed dunes have moderate levels of Kangaroo Rat use. The Remount area is summer grazed.

The impact grazing has on Kangaroo Rats along roadcuts may not be as significant because of the more consolidated nature of the sand in these areas. It is postulated that trampling by cattle in loose sand of dunes would be more detrimental to burrow systems than in the firm sand along roadcuts.

#### **POPULATION SIZE AND TREND:**

Based on the overall 1987 surveys and nocturnal research done in the 1970s in the Dune Point and Empress areas, the total Alberta population of Kangaroo Rats is estimated at fewer than 5 000 animals. Numbers appear to be increasing due to increased wellsite road access developments in the Middle Sandhills, but this may be offset by declines related to dune stabilization and heavy summer cattle use. Over the long term, wellsite roadcuts will eventually stabilize, thereby eliminating those man-made habitats.

#### **PROTECTIVE STATUS:**

None.

#### **RECOMMENDATIONS/MANAGEMENT ACTION:**

Classify as "rare". Designation and appropriate management of the Dune Point and Suffield North areas would protect the most significant populations of Kangaroo Rats. Research into the effects of amount and season of cattle grazing, as well as the use of using exclosures on dunes and roadcuts, should be encouraged. Selective destabilization of the natural dune habitats may be beneficial over the long term.

### 3.3 Sandhill and Sand Plain Habitats

The habitat summary sheets outline the results of the 1987 analyses. The following headings are used:

**Site** - name of area

**Location** - general location

**Legal Description** - general location by township and range

**Elevation**

**Aerial Photograph and Map Numbers**

**Description** - landscape overview

**Significant Features** - major wildlife and plant features with emphasis on rare, threatened or endangered species

**Habitat Changes** - summary of changes in wetlands, active sand and uncultivated lands since aerial photographs taken in 1949-52

**Recommendations** - summary of additional research requirements, management considerations and protective measures required



**SITE:** Atlee

**LOCATION:** Atlee district

**LEGAL DESCRIPTION:** Twp. 21 to 22 - Rge. 6 to 7 - W4

**ELEVATION:** 775 m

**MAP NO.:** 72L/15

**DESCRIPTION:**

- hummocky sandy kame moraine
- native mixed grassland with moist depressions and ephemeral wetlands
- no sand dune terrain or active blowouts

**SIGNIFICANT FEATURES:**

- Plains Hognose Snakes have been recorded in the vicinity of Atlee and have been reported at the Majestic den site
- high density of Loggerhead Shrikes in native thorny buffalo-berry habitat
- part of one of the largest continuous blocks of native mixed grassland in the plains of Canada, extending south into the Suffield Block
- Sharp-tailed Grouse and Pronghorn habitat
- Baird's Sparrows
- Androsace occidentalis

**HABITAT CHANGES:**

- depressions which held water in the 1970s have been dry through the 1980s

**RECOMMENDATIONS:**

- principally Crown land leased for grazing; retain as native habitat

SITE: Barnwell

LOCATION: 9 km north of Barnwell

LEGAL DESCRIPTION: Twp. 10 - Rge. 17 to 18 - W4

ELEVATION: 820 m

AERIAL PHOTOGRAPH NO.: AS3201 254 to 257

MAP NO.: 82 H/16

DESCRIPTION:

- low relief dunes in mixed grassland terrain
- very small active blowouts, mostly stabilized
- Barnwell B is hard-packed fine sand

SIGNIFICANT FEATURES:

- Chenopodium subglabrum at Barnwell A, SE 30-10-17-W4
- Cryptantha fendleri at Barnwell B, SE 33-10-17-W4
- two pairs of Burrowing Owls in NE 35-10-18-W4
- Ferruginous Hawk feeding area
- ungrazed spring with plants uncommon to the grassland region
- some potential Great Plains Toad and Plains Spadefoot habitat, but very limited

HABITAT CHANGES:

- 1951 aerial photographs clearly show eight small active blowouts, while the 1987 field survey and 1985 photographs revealed only two active blowout sites, which are smaller in extent than in 1951
- considerable invasion at Barnwell A by Agropyron cristatum and Melilotus spp., only a few bare areas remaining
- nine small shallow wetlands in 1951, none in 1987

RECOMMENDATIONS:

- mixture of Crown land leased for grazing and private land; retain as native habitat
- destabilization of dunes would improve rare plant habitat



**SITE:** Carmangay

**LOCATION:** Carmangay district

**LEGAL DESCRIPTION:** Twp. 11 to 14 - Rge. 22 to 25 - W4

**ELEVATION:** 925 m

**AERIAL PHOTOGRAPH NO.:** AS3203 251 to 254

**MAP NO.:** 82I/3

**DESCRIPTION:**

- low relief sand dunes in mixed grassland terrain
- some large active sand sheets and blowouts
- extremely heavily grazed or cultivated in most areas

**SIGNIFICANT FEATURES:**

- tree nesting Ferruginous Hawks in NW 1-14-23-W4
- considerable numbers of ground squirrels
- no rare plants noted

**RECOMMENDATIONS:**

- private land; not of sufficient significance to retain

**SITE:** Craigmyle

**LOCATION:** north and south of Craigmyle

**LEGAL DESCRIPTION:** Twp. 30 to 33 - Rge. 15 to 17 - W4

**DESCRIPTION:**

- all dunes in this area have been converted to crop production
- remaining natural habitats are non-dune sites
- site not visited, assessment based on aerial photograph interpretation

**RECOMMENDATIONS:**

- no significance

SITE: Dune Point

LOCATION: 10 km northwest of Bindloss

LEGAL DESCRIPTION: Twp. 22 to 23 - Rge. 3 to 4 - W4

ELEVATION: 625 m

AERIAL PHOTOGRAPH NO.: AS3423 92 to 94

MAP NO.: 72L/16

DESCRIPTION:

- diverse valley habitats
- major springs
- extensive riparian woodland and tall and low shrubbery, sagebrush flats, rock outcrops and sandy mixed grassland
- large active sand blowouts, including gravelly types
- winter grazed

SIGNIFICANT FEATURES:

- part of highly significant river valley/spring/dune complex (Wallis 1977)
- most extensive gravelly sand blowouts in Alberta (15 m X 15 m and 15 m X 30 m)
- largest Alberta populations of Lygodesmia rostrata (Dunes A, B, D, E) and Franseria acanthicarpa (Dunes C, D, E).
- Astragalus lotiflorus (Dunes D, E), Eriogonum cernuum (Dunes B, E), Lupinus pusillus (Dunes C, D, E), Oenothera serrulata (Site F), Astragalus kentrophyta (largest Alberta dune populations at D,E), Cryptantha fendleri (Dunes A, G)
- Dune Point E is the most diverse and extensive rare plant dune; however, there are significant rare plant populations at all dunes
- former Plains Hognose Snake den along Red Deer River valley and several sightings (Sites B,F) in dune field and adjacent sand plain
- most extensive Ord's Kangaroo Rat "colony" in natural habitat in Alberta, including major populations in stabilized sand; possibly related to winter grazing regime
- diverse breeding bird populations
- Loggerhead Shrikes
- Grasshopper and Lark Sparrows
- key Mule Deer, Pronghorn and Sharp-tailed Grouse habitat
- rare plants in spring habitats (Acer negundo, Elymus virginicus, Osmorhiza longistylis, Oryzopsis micrantha)
- Burrowing Owls nest in upland grassland near Bindloss

SITE: Empress

LOCATION: 11 km south of Empress

LEGAL DESCRIPTION: Twp. 22 - Rge. 1 - W4

ELEVATION: 675 m

AERIAL PHOTOGRAPH NO.: AS3423 77 to 80

MAP NO.: 72L/16

DESCRIPTION:

- moderately rolling sand dune terrain, extensive sagebrush and mixed grassland; some tall shrub development
- upland and valley dunes with some large active blowouts

SIGNIFICANT FEATURES:

- some of the largest active dunes in southern Alberta
- gravelly sand blowouts along river valley
- Franseria acanthicarpa (Dune A), Lygodesmia rostrata (Dunes A, B), Eriogonum cernuum (Dune A), Astragalus lotiflorus (Dune C), Astragalus kentrophyta (Dune C), Psoralea argophylla (Site D) on sand plain uplands
- Ord's Kangaroo Rats (Dunes A, B, C, most abundant in eastern dunes)
- Grasshopper Sparrows
- Sharp-tailed Grouse habitat
- western dunes summer grazed, eastern dunes lightly or fall grazed
- major Acer negundo springs just north of this area along the South Saskatchewan River with rare plants including Oryzopsis micrantha and Elymus virginicus; nesting Lazuli Buntings (Wallis 1977)

HABITAT CHANGES:

- most heavily grazed dune Empress A has not stabilized appreciably since 1950; Kangaroo Rat activity very low, possibly because of summer grazing
- lightly grazed dune Empress B, a large active dune in 1950 is now virtually 100 per cent stabilized; Kangaroo Rat activity low
- the active area of lightly grazed dune Empress C has decreased by about 25 per cent; Kangaroo Rat activity moderate; continuing invasion of gravelly sand by Salsola kali
- it is also interesting to note that in 19.. just east of these dunes in Saskatchewan, there was an almost continuous series of active dunes with an open sand sheet that was virtually unbroken for 2 km; today all these dunes are stabilized and there are only minor active blowouts

#### HABITAT CHANGES:

- approximately 30 to 40 per cent reduction in active sand surface from 1950 to 1987
- some ongoing trail bike activity, but land use generally compatible with sand dune features
- invasion by Salsola kali into gravelly dune areas
- Sharp-tailed Grouse numbers down (T. Minor, 1988, pers. comm.), possibly related to hunting pressure (W. Smith, 1988, pers. comm.)

#### RECOMMENDATIONS:

- this area is deserving of formal protection
- Crown land leased for grazing; retain current land use, including winter grazing regime
- selective destabilization of dunes, particularly gravels, would be beneficial for most rare plants and possibly for Kangaroo Rats

#### RECOMMENDATIONS:

- selective destabilization of the dunes will be beneficial for rare plants and possibly for Kangaroo Rats
- research into the effects of summer or fall/winter grazing and fire on Ord's Kangaroo Rats is required; this site offers some good potential for a comparative research program
- Crown land leased for grazing, retain as natural habitat
- formal protection for gravelly dune Empress C

**SITE:** Gleichen

**LOCATION:** south of Gleichen

**LEGAL DESCRIPTION:** Twp. 21 - Rge. 22 to 23 - W4

**ELEVATION:** 875 m

**AERIAL PHOTOGRAPH NO.:** AS2340 112 to 115

**MAP NO.:** 82 I/15

**DESCRIPTION:**

- dune field of moderate size north of Bow River
- native grassland and low shrubbery
- no significant active sand blowouts
- Blackfoot Indian Reservation, site not visited since late 1970s

**SIGNIFICANT FEATURES:**

- part of a significant habitat complex which includes the Bow River valley
- potential Sharp-tailed Grouse and deer habitat
- low potential for rare plants and wildlife because of geographic location outside the main range of most species

**RECOMMENDATIONS:**

- Indian Reserve, retain as natural habitat

**SITE:** Hemaruka Dunes

**LOCATION:** Hemaruka district

**LEGAL DESCRIPTION:** Twp. 30 to 34 - Rge. 8 to 9 - W4

**ELEVATION:** 750 m

**AERIAL PHOTOGRAPH NO.:** AS3413 48 to 51

**MAP NO.:** 72M/10, 11 & 14

**DESCRIPTION:**

- sand plain with no active dunes
- native aspen parkland vegetation with some cultivation
- heavily grazed in places

**SIGNIFICANT FEATURES:**

- level aspen parkland terrain
- some shorebird migration at Rushmere Lake
- Ferruginous Hawk nesting area
- Sharp-tailed Grouse and deer habitat
- no active sand dune species

**RECOMMENDATIONS:**

- Crown land leased for grazing, retain as natural habitat



**SITE:** High River

**LOCATION:** 6 km east of High River

**LEGAL DESCRIPTION:** Twp. 19 - Rge. 28 - W4

**MAP NO.:** 82 I/12

**DESCRIPTION:**

- all dunes in this area have been converted to crop production
- remaining natural habitats are non-dune sites
- site not visited, assessment based on aerial photograph interpretation

**SITE:** Hilda

**LOCATION:** 20 km northwest of Hilda

**LEGAL DESCRIPTION:** Twp. 19 - Rge. 1 to 2 - W4

**ELEVATION:** 725 m

**AERIAL PHOTOGRAPH NO.:** AS2123 161 to 171, 207-212

**MAP NO.:** 72L/16

**DESCRIPTION:**

- diverse sand plain, ephemeral wetland and dune vegetation ranging from aspen woodland to a variety of tall and low shrubbery and grassland
- small active blowouts

**SIGNIFICANT FEATURES:**

- Plains Hognose Snake and Great Plains Toad breeding ponds (site D)
- key deer and Pronghorn habitat
- Sharp-tailed Grouse
- small populations of Franseria acanthicarpa (Dune B), Chenopodium subglabrum (Dune A), Astragalus purshii (Site E), Cryptantha fendleri (Dunes A, B) and Lygodesmia rostrata (Dunes A, C)
- Ord's Kangaroo Rat
- Upland Sandpiper, Grasshopper Sparrow, Baird's Sparrow

**HABITAT CHANGES:**

- of seven blowouts active in 1950 (including one of moderate size), only three remain active; approximately 35 per cent reduction in the active surface area of the remaining dunes
- Hilda dune B has been damaged by placement of a stock-watering dugout in the middle of the dune
- summer grazing may be affecting Ord's Kangaroo Rats; they appear to be thriving only in active sand areas fenced out from grazing (e.g., ditches)
- there were hundreds of small wetlands in the sand plain and along the edge of the dune field in 1950; these potential Great Plains Toad ponds have been dry through the 1980s
- dugouts have been placed in many of the remaining natural depressions and hundreds of small ephemeral wetlands which were present in 1950, are now cultivated in the sand plain surrounding the dune field

#### RECOMMENDATIONS:

- mostly Crown land leased for grazing, retain as natural habitat
- selective destabilization of dunes would help rare plants
- research into the effects of summer or fall/winter grazing and fire on the Ord's Kangaroo Rat is required

**SITE:** Lazy H

**LOCATION:** 8 km west of Milk River

**LEGAL DESCRIPTION:** Twp. 2 - Rge. 17 and 18 - W4

**ELEVATION:** 1075 m

**MAP NO.:** 82 H/1

**DESCRIPTION:**

- low vegetated sand dunes and sandy plains

**SIGNIFICANT FEATURES:**

- diverse invertebrate populations characteristic of sand plains
- key Pronghorn habitat
- some rare plant potential

**RECOMMENDATIONS:**

- Crown land leased for grazing; retain as natural habitat
- a reduction in grazing pressure would make this area more suitable for species such as Sharp-tailed Grouse

**SITE:** Little Rolling Hills East

**LOCATION:** 8 km north of Rolling Hills

**LEGAL DESCRIPTION:** Twp. 15 to 16 - Rge. 13 to 14 - W4

**ELEVATION:** 740 m

**AERIAL PHOTOGRAPH NO.:** AS2878 127 to 134, 178 to 186

**MAP NO.:** 72L/5

**DESCRIPTION:**

- low relief sand dune terrain with mixed grassland, sagebrush and wild rose
- shallow wetlands created by irrigation water

**SIGNIFICANT FEATURES:**

- Great Plains Toad (Sites A, B, D) and Plains Spadefoot (Sites D, C) breeding ponds
- shorebird migration area
- nesting Ferruginous Hawks (just north of site E by loop in ditch)
- Grasshopper Sparrows, Brewer's Sparrows, Lark Sparrows
- nesting Loggerhead Shrikes
- Cryptantha fenderi (Dunes F, G), Festuca octoflora
- Mule Deer and Sharp-tailed Grouse (low density) habitat
- productive marshes
- moderate Richardson's Ground Squirrel populations

**HABITAT CHANGES:**

- there were numerous small ephemeral wetlands in the area in 1951; with the exception of a few which rely on irrigation water, most have been dry through the 1980s; hundreds of wetlands on the sand plain around the dune field have been cultivated and even when they have water do not support breeding populations of the Great Plains Toad

**RECOMMENDATIONS:**

- maintenance of shallow water levels will ensure productivity for Great Plains Toads and Plains Spadefoots
- retain Crown land portions as natural habitat
- develop landowner agreements for major breeding ponds to ensure their long-term productivity

**SITE:** Little Rolling Hills West

**LOCATION:** Little Rolling Hills, 10 km northwest of Rolling Hills

**LEGAL DESCRIPTION:** Twp. 15 - Rge. 14 - W4

**ELEVATION:** 775 m

**AERIAL PHOTOGRAPH NO.:** AS2878 176 to 178

**MAP NO.:** 72L/5

**DESCRIPTION:**

- strongly rolling upland with mixed grassland, low shrubbery and some low dune development
- numerous active blowouts or eroded sand sheets

**SIGNIFICANT FEATURES:**

- gravelly active blowouts and sand sheets
- Great Plains Toad breeding ponds (Rolling Hills West F) in natural springs
- Ferruginous Hawk feeding area
- Brewer's Sparrow
- Lupinus pusillus, Cyperus schweinitzii (Dune C), Cryptantha fendleri (Dunes A, B, E), Vulpia octoflora, Franseria acanthicarpa (Dunes A, B, C), Lygodesmia rostrata (Dune E)
- key Pronghorn habitat

**HABITAT CHANGES:**

- dozens of small ephemeral wetlands were present in 1951; with the exception of the one major spring area, these are now all dry
- active sand has been reduced in surface area by at least 50 per cent, particularly through the western portion where most dunes are now stabilized

**RECOMMENDATIONS:**

- formal protection for springs area (C), including fencing
- mostly private land, retain as natural habitat through landowner agreements

**SITE:** Lonesome Lake

**LOCATION:** west side of Bow River south of Bow City

**LEGAL DESCRIPTION:** Twp. 16 - Rge. 17 - W4

**ELEVATION:** 750 m

**MAP NO.:** 82 I/8

**DESCRIPTION:**

- extensive mixed grassland with minor active sand blowouts

**SIGNIFICANT FEATURES:**

- small number of Chenopodium subglabrum, Cryptantha fendleri
- feeding area for several birds of prey including Ferruginous Hawk, Golden Eagle and Prairie Falcon
- moderate ground squirrel numbers in grasslands
- associated wetlands around Lonesome Lake are productive for waterfowl and marsh birds

**RECOMMENDATIONS:**

- Crown land leased for grazing; retain as natural habitat

**SITE:** Lost River

**LOCATION:** 10 km south of Onefour along Lost River valley

**LEGAL DESCRIPTION:** Sections 29 to 31 - Twp. 1 - Rge. 4 - W4

**ELEVATION:** 875 m

**AERIAL PHOTOGRAPH NO.:** AS3078 36 to 37

**MAP NO.:** 72E/2

**DESCRIPTION:**

- variety of low shrubbery, sand plain and mixed grassland vegetation
- mostly stabilized dunes along bottom, slope and top of Lost River valley
- one major active blowout along valley edge (Dune A)

**SIGNIFICANT FEATURES:**

- numerous nationally significant features in the general area, including Mountain Plover populations on upland sand plain area and extensive Yucca glauca site along Lost River valley downstream (Wershler and Wallis 1986)
- other rare plants of sand plains or sandy soil include Asclepias viridiflora, Oenothera andina, Oenothera serrulata and Antennaria dimorpha
- Franseria acanthicarpa (Dune A), Lygodesmia rostrata (Dunes A, B, C), Lupinus pusillus (Dunes A, B, C), Abronia micrantha (Dunes A, C), Chenopodium subglabrum (Dune B), Eriogonum cernuum (Dunes A, B, C and numerous coulee sites which have Alberta's largest populations of this species), Cryptantha fendleri (Dunes A, B, C), Vulpia octoflora and Castilleja sessiliflora (Dune B)
- Sharp-tailed Grouse
- Grasshopper Sparrow, Brewer's Sparrow and Baird's Sparrow
- key Pronghorn and Mule Deer area
- Great Plains Toad breeding ponds along uplands west of Lost River (site D)
- Plains Spadefoot breeding ponds along Lost River
- Plains Hognose Snakes have been reported from the adjacent sand plain

**HABITAT CHANGES:**

- very little change in active sand area; has always been a small area
- dozens of small ephemeral wetlands, present in 1951, dried up through the 1980s and refilled during 1986 and 1987; a few have been cultivated



- Great Plains Toads have not yet returned to former breeding ponds
- some invasion of dunes by non-native plants from hay put out for cattle feed; also hay placement in rare plant habitat (Dune B)

#### RECOMMENDATIONS:

- entire Lost River area is worthy of formal protection because of concentration of nationally significant ecological resources; Crown land leased for grazing
- further documentation of Plains Hognose Snake distribution and abundance through this sand plain area to the Milk River Canyon is required
- attempts to reintroduce the Great Plains Toad should be made if natural recolonization does not occur over the next two years, and if wetlands remain refilled
- place hay in areas away from valley and away from rare plant habitats
- mechanical action of cattle grazing may be useful in maintaining active sand

**SITE:** Lower Bow

**LOCATION:** west of Bow River, north of junction with the  
Oldman River

**LEGAL DESCRIPTION:** Twp. 11 to 12 - Rge. 12 to 13 - W4

**ELEVATION:** 750 m

**AERIAL PHOTOGRAPH NO.:** AS2337 65 to 70

**MAP NO.:** 72E/13, 72L/4

**DESCRIPTION:**

- low relief sand dune terrain with mixed grassland and low shrubbery
- several small active blowouts

**SIGNIFICANT FEATURES:**

- gravelly sand blowouts
- major spring
- major and potential Great Plains Toad breeding ponds (Sites A and B); probably a significant source for recolonization
- Cryptantha fendleri (Dunes C, F), Astragalus lotiflorus (Dunes D, E), Astragalus kentrophyta (Dunes D, E), Abronia micrantha (Dunes E, F, G, including largest known population in Canada)
- key Pronghorn habitat
- Upland Sandpiper and Baird's Sparrow

**HABITAT CHANGES:**

- there were numerous small ephemeral ponds on the sand plain around the dune field in 1951; most of these are cultivated today or water levels have been raised making them unsuitable for the Great Plains Toad
- wetlands have been created by irrigation through the western half of this area
- the major spring at the Great Plains Toad breeding pond appears to have been enhanced by irrigation development, but it always had a significant flow (Borneuf 1976)
- there appears to have been only a minor reduction in the active sand dune area from 1951 to 1987; total active sand area has always been small
- there is considerable petroleum development in the area now

**RECOMMENDATIONS:**

- Great Plains Toad breeding ponds and active sand sites are worthy of formal protection
- retain natural habitats; Crown land leased for grazing

**SITE:** Many Island Lake

**LOCATION:** north and west of Many Island Lake

**LEGAL DESCRIPTION:** Twp. 14 - Rge. 1 to 2 - W4

**ELEVATION:** 750 m

**MAP NO.:** 72L/1

**DESCRIPTION:**

- mixed grassland on rolling sand plain terrain

**SIGNIFICANT FEATURES:**

- Plains Hognose Snakes have been reported from this area
- numerous Richardson's Ground Squirrels
- nesting Ferruginous Hawks
- Brewer's Sparrow

**HABITAT CHANGES:**

- numerous wetlands, present in this area in 1950, are now dry

**RECOMMENDATIONS:**

- mostly Crown land, retain as natural habitat
- investigate wetlands for the Great Plains Toad once the areas refill

SITE: Matzhiwin

LOCATION: 10 km east of Gem

LEGAL DESCRIPTION: Twp. 22 - Rge. 14 to 15 - W4

ELEVATION: 720 m

AERIAL PHOTOGRAPH NO.: AS2340 220 to 227

MAP NO.: 82I/16, 72L/13

DESCRIPTION:

- mixed grassland on slightly rolling sand dune terrain
- occasional patches of aspen and tall, thorny, buffalo-berry shrubbery
- large active sand blowouts
- numerous wetlands associated with irrigation

SIGNIFICANT FEATURES:

- breeding Loggerhead Shrikes in thorny buffalo-berry
- Upland Sandpiper, Baird's Sparrow and Grasshopper Sparrow
- abundant Richardson's Ground Squirrel populations
- nesting Merlins (Site A)
- wetlands are productive waterfowl and shorebird areas
- Prairie Falcon feeding area
- there are significant springs at Douglas Creek with nesting Cooper's Hawks and numerous plants which are uncommon or rare in the region (Wallis 1977)
- Sharp-tailed Grouse and Pronghorn habitat
- Androsace occidentalis, large numbers of Cryptantha fendleri

NOTES:

- despite intensive surveys in the dunes and wetlands, no rare plants of great significance, or Great Plains Toads, were found

RECOMMENDATIONS:

- mostly private (Eastern Irrigation District) land used for grazing; retain as natural habitat
- Douglas Creek springs is worthy of formal protection

**SITE:** Old Channel Lake

**LOCATION:** 20 km north of Medicine Hat, both sides of South Saskatchewan River

**LEGAL DESCRIPTION:** Twp. 14 to 15 - Rge. 4 to 6 - W4

**ELEVATION:** 700 m

**AERIAL PHOTOGRAPH NO.:** AS2217 263 to 267

**MAP NO.:** 72L/2, 7

**DESCRIPTION:**

- mixed grassland on slightly rolling sand dune terrain
- no active blowouts

**SIGNIFICANT FEATURES:**

- nesting Loggerhead Shrikes in thorny buffalo-berry
- Plains Hognose Snakes have been reported here
- Grasshopper Sparrow, Brewer's Sparrow and a moderate population of Lark Buntings
- Prairie Falcon feeding area
- Abronia micrantha has been reported from the South Saskatchewan River valley

**HABITAT CHANGES:**

- numerous ephemeral wetlands (potential Great Plains Toad habitat) present in 1951 throughout this district are now dry

**RECOMMENDATIONS:**

- mostly Crown land, retain as natural habitat
- investigate reports of Abronia micrantha and determine extent of population in river valley

SITE: Pakowki Lake North

LOCATION: 10 km west of Manyberries

LEGAL DESCRIPTION: Twp. 5 - Rge. 7 - W4

ELEVATION: 875 m

AERIAL PHOTOGRAPH NO.: AS3079 247 to 252

MAP NO.: 72E/7

**DESCRIPTION:**

- extensive sand dune terrain with a variety of topography
- diversity of vegetation ranging from dense aspen woods to a variety of tall and low shrub communities and grassland
- large active sand blowouts

**SIGNIFICANT FEATURES:**

- some of the most heavily wooded sand dunes in the Mixed Grassland
- high diversity of significant plants including Tradescantia occidentalis (only known Alberta record at Dune G) Lygodesmia rostrata (Dunes G, J, K, L), Franseria acanthicarpa (Dunes G, K, L), Cryptantha fendleri (Dunes C, G, H, I, M), Chenopodium subglabrum (Dunes G, J, K), Cyperus schweinitzii (highest populations in Alberta at Dunes A, C, D, E, G, M), Vulpia octoflora, Androsace occidentalis
- productive Sharp-tailed Grouse and key Pronghorn and deer habitat
- diversity of breeding birds
- Grasshopper Sparrow
- tree-nesting Ferruginous Hawks (at Site N and near Dunes A, E, I) and Golden Eagles and nesting Burrowing Owls (Site O)
- nesting Loggerhead Shrikes in thorny buffalo-berry
- there are no records of the Plains Hognose Snake or the Great Plains Toad from this area; however, it offers excellent potential habitat

**HABITAT CHANGES:**

- there has been little reduction in active blowouts in the western sections, however, significant changes have occurred in eastern portions. Dunes C, G and J have been subject to major invasion by shrubbery and, while there is still considerable active surface area, it has been reduced by 50 per cent (Dunes C and G) to 75 per cent (Dune J) since 1952

- there were numerous small ephemeral wetlands in the area, including the occasional one in the middle of the dunes; most are now dry and many in the adjacent sand plain have been cultivated

**RECOMMENDATIONS:**

- the eastern portion of this area, especially Tradescantia occidentalis Dune G, is worthy of formal protection; mostly Crown land leased for grazing
- a recovery plan for Tradescantia occidentalis should be developed as part of an overall habitat conservation strategy
- selective dune destabilization may be beneficial over the long term



SITE: Pakowki Lake South

LOCATION: 20 km southwest of Manyberries

LEGAL DESCRIPTION: Twp. 4 - Rge. 6 - W4

ELEVATION: 875 m

AERIAL PHOTOGRAPH NO.: AS3079 59 to 61

MAP NO.: 72E/7

**DESCRIPTION:**

- mixed grassland, shrubbery and active blowouts on rolling sand dune terrain

**SIGNIFICANT FEATURES:**

- nesting Ferruginous Hawks (Site A)
- nesting Loggerhead Shrikes
- Sharp-tailed Grouse habitat
- Plains Hognose Snake record from the general area
- Cyperus schweinitzii, Vulpia octoflora, Antennaria dimorpha, Androsace occidentalis

**HABITAT CHANGES:**

- since 1951, the active sand surface has been reduced by about 75 per cent overall
- some large blowouts which were active in 1951 are now largely stabilized
- there was the occasional small ephemeral wetland in the adjacent sand plain in 1951; however, these are now perennially dry and several have stock-watering dugouts in them

**RECOMMENDATIONS:**

- mostly Crown land, retain as natural habitat
- selective destabilization of the dunes would be beneficial for rare plants

**SITE:** Pearce

**LOCATION:** south of Pearce

**LEGAL DESCRIPTION:** Twp. 9 - Rge. 24 - W4

**ELEVATION:** 950 m

**AERIAL PHOTOGRAPH NO.:** AS3201 36 to 37

**MAP NO.:** 82H/14

**DESCRIPTION:**

- heavily grazed or cultivated mixed grassland
- some active sand blowouts

**SIGNIFICANT FEATURES:**

- no significant species or features noted
- Thelesperma marginatum was collected in the vicinity; however, it is unclear whether the collection was along the river valley or in the upland dunes, most of which are now cultivated or negatively affected by cattle grazing

**HABITAT CHANGES:**

- very little of this dune system remains in natural condition

**RECOMMENDATIONS:**

- no significance

**SITE:** Purple Springs

**LOCATION:** northeast of Purple Springs

**LEGAL DESCRIPTION:** Twp. 10 and 11 - Rge. 13 to 15 - W4

**ELEVATION:** 750 m

**AERIAL PHOTOGRAPH NO.:** S3201 264 to 269

**MAP NO.:** 72E/13

**DESCRIPTION:**

- rolling sand dune terrain with extensive sagebrush
- shallow sandy wetlands created by irrigation

**SIGNIFICANT FEATURES:**

- Great Plains Toad breeding ponds (Sites A, B, C, H, I, J)
- Plains Spadefoot breeding ponds (Sites A, J)
- Grasshopper Sparrow and Brewer's Sparrow
- productive Sharp-tailed Grouse habitat
- key deer and Pronghorn habitat
- rare plants including Franseria acanthicarpa (Dunes F, G, I), Abronia micrantha (Dune G), Cryptantha fendleri (Dune G), Chenopodium subglabrum (Dune K), Lupinus pusillus (Dune D), Androsace occidentalis, Vulpia octoflora

**HABITAT CHANGES:**

- there were numerous small ephemeral ponds on the sand plain around the dune field in 1951; most of these are cultivated today and even when wet, do not support breeding Great Plains Toads
- wetlands have been created by irrigation through the western half of this area
- there appears to have been a 25 to 40 per cent reduction in the active sand dune area from 1951 to 1987; stabilization is proceeding in area G and Dune D is fairly well stabilized
- heavy summer use by cattle

**RECOMMENDATIONS:**

- mixture of private and Crown land; retain as natural habitat and develop landowner agreements
- maintain existing land uses
- some wetlands should remain shallow for Great Plains Toads

**SITE:** Remount

**LOCATION:** 16 km southwest of Bindloss

**LEGAL DESCRIPTION:** Twp. 21 - Rge. 2 to 4 - W4

**ELEVATION:** 675 m

**AERIAL PHOTOGRAPH NO.:** AS3423 62 to 64

**MAP NO.:** 72L/16

**DESCRIPTION:**

- mixed grassland on rolling sand dune terrain
- stabilized dunes

**SIGNIFICANT FEATURES:**

- several records of the Plains Hognose Snake (Sites A, B, C)
- Great Plains Toad breeding ponds (Sites D, E)
- springs in the adjacent Bindloss depression are ungrazed and have a population of Thellungiella salsuginea (a very rare plant) as well as productive waterfowl and shorebird ponds, nesting Merlins and breeding Leopard Frogs
- Upland Sandpiper, Brewer's Sparrow, Grasshopper Sparrow
- Sharp-tailed Grouse habitat
- nesting Loggerhead Shrikes
- nesting Burrowing Owls (Site F)
- Androsace occidentalis

**HABITAT CHANGES:**

- all 16 sand blowouts active in 1950 are now stabilized
- there were numerous wetlands in the adjacent sand plain in 1950 which have been perennially dry through the 1980s; a significant number which were in natural vegetation have now been cultivated, or have had cattle-watering dugouts placed in the middle of them

**RECOMMENDATIONS:**

- mostly Crown land, retain as natural habitat
- formally designate unique springs area in Bindloss Depression
- several ephemeral wetland depressions should be retained in native habitat and without stock-watering dugouts

- further investigations on Plains Hognose Snake ecology should be carried out in the Atlee-Buffalo-Bindloss-Remount-Suffield-Hilda area where there were known Plains Hognose Snake hibernacula, and where there continue to be regular reports

**SITE:** Rosebud River

**LOCATION:** north of Strathmore to the Acme district

**LEGAL DESCRIPTION:** Twp. 24 to 31 - Rge. 24 to 27 - W4

**ELEVATION:**

**DESCRIPTION:**

- all dunes in this area have been converted to crop production
- remaining natural habitats are non-dune sites
- site not visited, assessment based on aerial photograph interpretation

**RECOMMENDATIONS:**

- no significance

**SITE:** Sandy Point

**LOCATION:** 20 km south of Empress

**LEGAL DESCRIPTION:** Twp. 21 - Rge. 1 to 2 - W4

**ELEVATION:** 725 m

**AERIAL PHOTOGRAPH NO.:** AS3423 62 to 64

**MAP NO.:** 72L/16

**DESCRIPTION:**

- mixed grassland and low shrubbery on rolling sand dune terrain
- no active dunes

**SIGNIFICANT FEATURES:**

- Plains Hognose Snake record (Site B)
- key Pronghorn habitat
- breeding ponds for the Great Plains Toad (Site A)
- Grasshopper Sparrow, Lark Sparrow and Brewer's Sparrow
- only Alberta record of Cassin's Sparrow (Site C)

**HABITAT CHANGES:**

- several small ephemeral wetlands which were Great Plains Toad breeding ponds have been dry through the 1980s

**RECOMMENDATIONS:**

- mostly Crown land, retain as natural habitat
- prevent placement of dugouts in ephemeral wetlands

**SITE:** Skiff

**LOCATION:** 20 km north of Skiff

**LEGAL DESCRIPTION:** Twp. 8 - Rge. 14 - W4

**ELEVATION:**

**MAP NO.:** 72E/12

**DESCRIPTION:**

- all dunes in this area have been converted to crop production
- remaining natural habitats are non-dune sites
- site not visited, assessment based on aerial photograph interpretation

**RECOMMENDATIONS:**

- no significance



**SITE:** Suffield Centre

**LOCATION:** 30 km west of Hilda

**LEGAL DESCRIPTION:** Twp. 18 - Rge. 4 - W4

**ELEVATION:** 725 m

**AERIAL PHOTOGRAPH NO.:** AS2123 117 to 120

**MAP NO.:** 72L/9

**DESCRIPTION:**

- mixed grassland and sagebrush on rolling sand dune terrain
- active blowouts and occasional patches of tall shrubbery

**SIGNIFICANT FEATURES:**

- Ord's Kangaroo Rat
- key Mule Deer and Pronghorn habitat
- nesting Burrowing Owls (Site F) and Golden Eagles (west of Site H)
- Upland Sandpiper, Grasshopper Sparrow, Lark Sparrow and Brewer's Sparrow; Violet-green Swallows along the South Saskatchewan River
- productive Sharp-tailed Grouse habitat
- Astragalus kentrophyta (Site G), Polanisia dodecandra (Site H), Draba reptans (Site H), Antennaria dimorpha (Sites C, H, I), Androsace occidentalis, Lupinus pusillus
- large snake hibernaculum which has had Plains Hognose Snakes

**HABITAT CHANGES:**

- of 12 sand blowouts active in 1951, all but four are now stabilized
- one of the remaining four, a moderate size blowout in 1951, has been largely stabilized (about 90 per cent); the other three have changed little since 1951
- there has been considerable development of truck trails to service wellsites over the last 10 years
- numerous abandoned Ferruginous Hawk eyries along the South Saskatchewan River

**RECOMMENDATIONS:**

- destabilization of dunes would be beneficial for Ord's Kangaroo Rat
- research into the link between food, shelter and dune destabilization for the Ord's Kangaroo Rat would be useful

- military reserve lease on Crown land, suggest formal designation as National Wildlife Area to ensure wildlife interests are adequately served
- road networks should be kept to a minimum because of the potential impact on the Plains Hognose Snake
- dugouts should not be constructed in moist depressions which have potential as Great Plains Toad habitat
- research into Ferruginous Hawk declines relative to Richardson's Ground Squirrels should be undertaken and, if applicable, information should be used to re-establish ground squirrel populations

SITE: Suffield North

LOCATION: 30 km south of Bindloss

LEGAL DESCRIPTION: Twp. 19 to 20 - Rge. 3 - W4

ELEVATION: 725 m

AERIAL PHOTOGRAPH NO.: AS2123 202 to 206, 240 to 245, 283  
to 290

MAP NO.: 72L/9

DESCRIPTION:

- rolling sand dune terrain
- diverse sand dune vegetation from aspen woods to a variety of tall and low shrubbery, grasslands and active blowouts

SIGNIFICANT FEATURES:

- diverse breeding bird populations
- nesting Ferruginous Hawks (Site O) and possible nesting Cooper's Hawks
- nesting Loggerhead Shrikes
- the most extensive Ord's Kangaroo Rat habitat in Alberta
- key deer and Pronghorn habitat
- Grasshopper Sparrow, Baird's Sparrow, Lark Sparrow and Brewer's Sparrow
- some of the most productive Sharp-tailed Grouse habitat in Alberta
- Psoralea argophylla in sand plain grassland
- Lygodesmia rostrata (Dunes L, N), Astragalus kentrophyta, Cryptantha fendleri (Dunes H, K, L), Vulpia octoflora, Androsace occidentalis
- major ungrazed spring with rare plants, Oryzopsis micrantha, Sphenopholis obtusata, Betula papyrifera (Site N)

HABITAT CHANGES:

- of 39 sand blowouts active in 1951, 23 are now stabilized
- 10 of the remaining 19 are partly (40 per cent more than 1950 levels) stabilized and six are mostly stabilized (about 90 per cent more than in 1950)
- Dune I was largely active in 1979 and is now 50 per cent stabilized
- there has been considerable development of truck trails to service wellsites over the last 10 years

#### RECOMMENDATIONS:

- selective dune destabilization may be beneficial for Ord's Kangaroo Rat
- research into the link between food, shelter and dune destabilization for Ord's Kangaroo Rat would be useful
- military reserve lease on Crown land, now out of bounds to military training; worthy of formal designation as National Wildlife Area to ensure wildlife interests are adequately served
- road networks should be kept to a minimum because of the potential impact on the Plains Hognose Snake

**SITE:** Suffield South

**LOCATION:** 25 km north of Medicine Hat

**LEGAL DESCRIPTION:** Twp. 15 - Rge. 5 to 6 - W4

**ELEVATION:** 725 m

**AERIAL PHOTOGRAPH NO.:** AS2218 99 to 101

**MAP NO.:** 72L/9

**DESCRIPTION:**

- mixed grassland and sagebrush on rolling sand dune terrain
- open plains cottonwood and tall shrubbery near eastern end of this unit

**SIGNIFICANT FEATURES:**

- Plains Hognose Snake (Site C)
- nesting Loggerhead Shrikes
- Lygodesmia rostrata (Dunes A, B), Lupinus pusillus, Cryptantha fendleri (Dune A)
- Grasshopper Sparrow and Upland Sandpiper
- Mule Deer habitat
- potential Great Plains Toad ponds (Site D)

**HABITAT CHANGES:**

- two sand blowouts, active in 1951, are now 75 per cent stabilized
- there is considerable development of wellsite access trails and roads
- small- to moderate-size ephemeral wetlands in the sand plain around the periphery of the dune field have been dry through the 1980s

**RECOMMENDATIONS:**

- military reserve lease on Crown land, now out of bounds to military training; worthy of formal designation as National Wildlife Area to ensure wildlife interests are adequately served
- road networks should be kept to a minimum because of the potential impact on the Plains Hognose Snake
- dugouts should not be constructed in moist depressions which have potential as Great Plains Toad habitat

**SITE:** Turin

**LOCATION:** 10 km south of Turin

**LEGAL DESCRIPTION:** Twp. 11 - Rge. 19 - W4

**ELEVATION:** 850 m

**AERIAL PHOTOGRAPH NO.:** AS3201 248 to 250

**MAP NO.:** 82H/15

**DESCRIPTION:**

- mixed grassland on low relief sand dune terrain
- small active blowouts

**SIGNIFICANT FEATURES:**

- gravelly and hard-packed sand blowouts
- Polanisia dodecandra (Dune C), Chenopodium subglabrum (largest known populations in Canada at Dunes A, C), Astragalus lotiflorus (Dunes A, B, D, E), Androsace occidentalis, Draba reptans (Dune A), Lupinus pusillus (Dunes A, C)
- Grasshopper Sparrow

**HABITAT CHANGES:**

- active sand area has been reduced from 1951 levels by about 25 per cent in the largest eastern dune; the other two dunes have apparently not stabilized to any significant degree
- some trail bike and OHV use

**RECOMMENDATIONS:**

- selective destabilization of eastern dune would be beneficial to rare plants
- Crown land leased for grazing; area is worthy of formal protection
- current land uses could continue

**SITE:** Vauxhall

**LOCATION:** 10 km northwest of Vauxhall

**LEGAL DESCRIPTION:** Twp. 13 - Rge 17 - W4

**ELEVATION:**

**MAP NO.:** 82I/1

**DESCRIPTION:**

- all dunes in this area have been converted to crop production
- remaining natural habitats are non-dune sites
- site not visited, assessment based on aerial photograph interpretation

**RECOMMENDATIONS:**

- no significance

SITE: Wolf Island

LOCATION: 7 km north of Wolf Island (20 km north of Purple Springs)

LEGAL DESCRIPTION: Twp. 12 - Rge. 14 to 15 - W4

ELEVATION: 775 m

AERIAL PHOTOGRAPH NO.: AS3202 172 to 176

MAP NO.: 72E/13

DESCRIPTION:

- mixed grassland and sagebrush on slightly rolling sand dune terrain

SIGNIFICANT FEATURES:

- nesting Burrowing Owls (Site E)
- Abronia micrantha (Dunes D, E), Lupinus pusillus (Dunes B, C, E), Franseria acanthicarpa (Dunes A, B, C, D), Cryptantha fendleri (Dune B)
- Grasshopper Sparrow and Brewer's Sparrow

HABITAT CHANGES:

- active dune area has remained largely the same since 1951

RECOMMENDATIONS:

- area is worthy of formal protection, particularly the dune with the Abronia micrantha stand
- retain remainder as natural habitat; Crown land leased for grazing
- current land uses appear compatible



**SITE:** David Lake South and North

**LOCATION:** north of Metiskow

**LEGAL DESCRIPTION:** Twp. 41 to 42 - Rge. 5 - W4

**ELEVATION:** 675 m

**AERIAL PHOTOGRAPH NO.:** AS2551 242 to 244

**MAP NO.:** 73D/10

**DESCRIPTION:**

- strongly rolling sand dune terrain
- aspen and poplar woodlands, tall and low shrubbery, grassland and small active blowouts

**SIGNIFICANT FEATURES:**

- part of the largest and most diverse sand dune terrain in the Aspen Parkland region of Alberta
- diverse breeding bird habitat
- rare plants of sand plains in the Aspen Parkland including Houstonia longifolia and Asclepias ovalifolia
- key deer habitat
- Cyperus schweinitzii (David Lake South Dunes A, B), Lygodesmia rostrata (David Lake South Dune B) and Hudsonia tomentosa
- productive American Avocet pond east of David Lake South A
- large boreal fens with potential Sandhill Crane nesting south of David Lake South B
- for a complete listing of significant features in the David Lake North area see Cottonwood Consultants (1986a)

**HABITAT CHANGES:**

- since 1949, dozens of active dune faces have become stabilized

**RECOMMENDATIONS:**

- ecological reserve will protect David Lake North sites
- selective destabilization of the dunes would be beneficial to the rare plants
- retain natural habitat in David Lake South with no range improvement involving clearing and cultivation; mostly Crown land leased for grazing

#### 4. SUMMARY OF RECOMMENDATIONS

Based on literature, herbarium and field investigations, the plant and animal species surveyed this year have been divided into a number of categories:

1. extirpated
2. endangered; recovery and monitoring plans required
3. threatened
4. rare, but not threatened
5. classify as rare but more information required
6. uncommon
7. remove from rare lists
8. other species whose status has not been determined

Details of recommendations for each species can be found in the plant and animal species accounts in "3. Results". The recommendations are summarized in the following sections.

##### 4.1 Extirpated

The Greater Prairie Chicken is known to have been extirpated from natural habitats in Alberta. Despite the availability of apparently suitable habitat, no confirmed sightings have been made in recent years. The Suffield Military Reserve offers excellent possibilities for reintroduction of this species.

##### 4.2 Endangered; Recovery and Monitoring Plans Required

Two plant species and two wildlife species should be treated as endangered and detailed recovery and monitoring plans should be prepared for each:

Tradescantia occidentalis

Cyperus schweinitzii (Aspen Parkland only)

Plains Hognose Snake

Great Plains Toad

Tradescantia occidentalis is confined to one small population in the Pakowki North dunes. Formal protection for this site and appropriate management are recommended. Collection of seed and research into the biology of this species may be useful in attempts to establish other populations in the Pakowki North dunes.

Cyperus schweinitzii is confined to a very few sites in Alberta; however, it is only threatened in the Aspen Parkland region where extensive stabilization of active dunes has taken place since the 1950s. Selective destabilization of some dunes in the David Lake area would be beneficial for this species. Formal designation of Pakowki North dunes would protect significant grassland populations of this species.

Great Plains Toad breeding populations have dropped severely over the last decade. Only a handful of breeding sites remain, most of which are associated with irrigation developments. In addition to natural drought, Great Plains Toad breeding ponds have been drained, cultivated or had cattle-watering dugouts placed in them. Future problems in irrigated areas could be created by further conversion of native rangeland to cropland and by rehabilitation of canals to prevent seepage. Reintroduction of the Great Plains Toad from healthy populations into refilled wetlands in non-irrigated areas should be considered if natural recolonization does not take place within two years.

Plains Hognose Snake populations have continued to decline because of a number of factors, including disturbance at overwintering sites and road kills. This species has always been rare in Alberta, and its small and isolated populations can not afford further losses. Protection of key habitats in the Suffield-Remount-Dune Point and Lost River-Milk River Canyon areas and maintenance of substantial roadless areas, especially adjacent wintering sites, are seen as major requirements. Education programs to reduce road kills and killing at wellsites should also be introduced.

#### 4.3 Threatened

Four species of plants should be treated as threatened:

Chenopodium subglabrum

Abronia micrantha

Astragalus lotiflorus

Lygodesmia rostrata (Aspen Parkland only)

Principal threats relate to the encroachment of vegetation on active dunes. This is a long-term process which could be reversed with climatic changes or through human interference with selective dune destabilization. Recommendations are made to designate key habitats formally for these species at Turin, Lower Bow, Lost River, Dune Point, Empress and Wolf Island. Retention of natural habitats at Purple Springs, Suffield and Pakowki Lake would also be beneficial.

#### 4.4 Rare, but not Threatened

Thirteen species of plants and one mammal should be considered rare, but not threatened:

Cyperus schweinitzii (Mixed Grassland only)

Eriogonum cernuum

Draba reptans

Polanisia dodecandra

Astragalus kentrophyta

Franseria acanthicarpa

Lygodesmia rostrata (Mixed Grassland only)

Yucca glauca

Theellungiella salsuginea

Astragalus purshii

Psoralea argophylla

Oenothera andina

Asclepias viridiflora

Castilleja sessiliflora

Ord's Kangaroo Rat

Many of these species do not rely totally on active dune sand for their survival and their habitat generally seems secure. Continued stabilization of dunes could result in downgrading of the status of some species (Cyperus schweinitzii, Franseria acanthicarpa, Lygodesmia rostrata, Ord's Kangaroo Rat) to "threatened".

#### 4.5 Rare, More Information Required

Seven plant species should be classified as rare, but further research is needed to determine if they are "threatened" or "endangered":

Munroa squarrosa  
Sporobolus neglectus  
Cyperus squarrosus  
Oenothera serrulata  
Cryptantha minima  
Hedeoma hispidum  
Thelesperma marginatum

#### 4.6 Uncommon

Two plants which have been classified as rare should be considered uncommon:

Lupinus pusillus  
Antennaria dimorpha

These plants are widely distributed and are found occasionally in substantial numbers. Antennaria dimorpha is abundant in the Milk River Canyon-Lost River area and shows up in isolated areas northwards to Dinosaur Provincial Park. Lupinus pusillus populations fluctuate greatly, depending on climatic conditions. While it is somewhat localized in distribution, it inhabits a wide range of active and stabilized sandhill situations in numerous southern Alberta sites.

#### 4.7 Remove from Rare Species Lists

Three plant and one bird species occur in large numbers in most sandhill habitats, and should be removed from rare species lists:

Cryptantha fendleri  
Vulpia octoflora  
Androsace occidentalis  
Grasshopper Sparrow

#### 4.8 Status Undetermined

The Sharp-tailed Grouse was not classified. This species is locally fairly common in key sandhill habitats in the Mixed Grassland region, but it has suffered regional declines. No assessment of this species outside of Mixed Grassland sandhill habitats was made.

## 5. SUMMARY OF RECOMMENDATIONS ON HABITAT

Details of recommendations for each sand plain or sandhill habitat can be found in the habitat accounts in "3. Results". Those recommendations should be the cornerstone of a sandhill/sand plain habitat management strategy. This information should be combined with other environmentally significant features information and used by Crown land management agencies and regional planning commissions to conserve and protect representative and unique habitats.

Three classifications for the sandhill and sand plain habitats were developed:

1. formally designate
2. retain as natural habitat
3. no significance

The following summarizes the habitat recommendations based on 1987 analyses.

### 5.1 Formal Designation

Key sand plain and sandhill habitats, which lie principally on Crown land and which should be formally protected through legislation, include:

Dune Point  
Empress Dune C  
Lost River  
Lower Bow (at least Sites A and F)  
Pakowki Lake North  
Remount (Bindloss Depression springs)  
Suffield North, Centre and South  
Turin  
Wolf Island (D, E)

## 5.2 Retain as Natural Habitat

Key sand plain habitats which lie principally on Crown land and which should be retained in their natural condition are:

Atlee  
Barnwell (in part)  
Empress (in part)  
Hemaruka  
Hilda  
Lazy H  
Lonesome Lake  
Many Island Lake  
Old Channel Lake  
Pakowki Lake South  
Purple Springs (in part)  
Remount  
Sandy Point  
Wolf Island (in part)

Significant natural habitats which are on Indian Reserves or private land include:

Barnwell (in part)  
Gleichen  
Little Rolling Hills East  
Little Rolling Hills West  
Matzhiwin  
Purple Springs (in part)

It is suggested that landowner agreements be developed for the most significant of the sites in the Little Rolling Hills East (Great Plains Toad breeding ponds) and Little Rolling Hills West (Great Plains Toad breeding pond and rare plant habitat) areas.

## 5.3 No Significance

Sandhill and sand plain habitats which can be dropped from further consideration for significant wildlife, plant or landscape features include:

Carmangay  
High River  
Pearce  
Rosebud River  
Skiff  
Vauxhall





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