Environmentally Significant Areas of Alberta

Volume 3

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EXECUTIVE SUMMARY

Large portions of native habitats have been converted to other uses. Surface mining, oil and gas exploration, forestry, agricultural, industrial and urban developments will continue to put pressure on the native species and habitats. Clearing and fragmentation of natural habitats has been cited as a major area of concern with respect to management of natural systems.

While there has been much attention to managing and protecting endangered species, a consensus is emerging that only a more broad-based ecosystem and landscape approach to preserving biological diversity will prevent species from becoming endangered in the first place.

Environmentally Significant Areas (ESAs) are important, useful and often sensitive features of the landscape. As an integral component of sustainable development strategies, they provide long-term benefits to our society by maintaining ecological processes and by providing useful products. The identification and management of ESAs is a valuable addition to the traditional socio-economic factors which have largely determined land use planning in the past.

The first ESA study done in Alberta was in 1983 for the Calgary Regional Planning Commission region. Numerous ESA studies were subsequently conducted through the late 1980s and early 1990s. ESA studies of the Parkland, Grassland, Canadian Shield, Foothills and Boreal Forest Natural Regions are now all completed while the Rocky Mountain Natural Region has been only partially completed.

Four factors regarding the physical state of the site were considered when assessing the overall level of significance of each ESA: representativeness, diversity, naturalness, and ecological integrity. Each ESA was assigned a significance level: provincial, national or international.

Areas of provincial significance in Alberta include relatively undisturbed and sizable remnants of undisturbed upland and valley habitats; important waterfowl production and shorebird staging areas; and some of the most critical wildlife ranges (e.g. deer, Pronghorn, Caribou, Moose, Grizzly Bear) in Alberta.

Areas of national significance include staging habitats with nationally high concentrations of waterfowl and shorebirds, national parks, habitats for endangered species and concentrations of nationally rare plant and animal species.

Areas of international significance include sites of globally endangered species (e.g. Whooping Crane), RAMSAR wetlands; geological type localities; and extremely diverse grassland-valley complexes on international waterways (e.g. Writing-on-Stone).

ESAs, viewed in the context of protected areas, are anticipated to be the most cost-efficient and, in many cases, the only means available for maintaining adequate levels of biological diversity at appropriate scales. It is important at this time to note that ESAs are not characterized by protectionist policies. A site designated as an ESA is not a legislatively mandated protected area. However, the designation of an ESA does indicate the value of both biotic and abiotic resources within a site. By identifying ESAs prior to the development of land-use plans, biodiversity conservation can be incorporated into both private and public land management. The overall goal of employing ESA inventories into land use plans is to maintain viable populations and natural distributions of native species and communities in the landscape.

Various national and international programs and agreements commit Canada to completing a network of protected areas and to conserving biodiversity in the overall landscape. Special Places 2000 is the strategic plan which has been established by the Alberta government to provide direction for the identification and establishment of protected areas in the province.

ESAs have become a useful tool in the implementation of Special Places 2000, a strategic plan for identifying and protecting diverse and representative landscapes in Alberta. ESA inventories serve as a valuable source of information for future protected area selection and designation. ESAs of provincial or

greater significance are considered the most likely sites for identifying landscapes suitable for a provincial protected areas program like Special Places 2000.

The primary purpose of this ESA study was to evaluate and provide an overview of all ESA inventories completed to date in Alberta and to determine which areas were of provincial, national or international significance. An analysis of Level 1 Natural History Theme occurrence in each of the ESAs was a significant component of this project. From an analysis of aerial photographs and dominant surficial themes identified from the literature, surficial landform units were mapped and the percentage occurrence of the 20 Level 1 Natural History Themes defined by Alberta Parks Services was determined for every surficial landform unit within each ESA.

Each ESA is described in checksheet format, identifying:

1. name of the ESA study from which the information is derived;
2. name of the area;
3. general location;
4. NTS map sheet;
5. municipality in which it occurs;
6. natural subregions in which it occurs;
7. level of significance (provincial, national or international) and background for determining level of significance;
8. a description of the major features which characterize the area;
9. management considerations; and
10. references which will provide more scientific or detailed information should the user require it.

All information is stored in digital database and ARCINFO spatial files so it can be used in a variety of ways.

A set of 1:250,000 scale maps showing the location of ESAs and Natural History Theme (Surficial) units within each ESA accompanies this report.

TABLE OF CONTENTS

VOLUME 1

VOLUME 2

VOLUME 3

NATURAL HISTORY THEME REPRESENTATION IN ESAs

The following legend is used for codes in the following two listings (one as area in hectares -- AREAFINL, the other as a % of total area of the surficial unit -- ESA THEME SUMMARY) that have been derived from the computerized database:

SURF (AREAFINL) or SU (ESA THEME SUMMARY) - Surf_num -- the surficial unit number shown on the 1:250,000 maps and the Surf_num in the electronic database.
SIGN (AREAFINL) or SI (ESA THEME SUMMARY) - Significance Level - 1 = International; 2 = National; 3 = Provincial
SUB_TYPE (AREAFINL listing only) - Natural Subregion
TOT (in ESA THEME SUMMARY listing only) - percentage sum of all Natural History Themes = 100%)
TOTAL ha (AREAFINL listing only) - sum of areas of all Natural History Themes

Code (- ha = as hectares)	Natural History Theme
NL	Non-sandy Upland - Glacial Lake Bed
NG	Non-sandy Upland - Ground Moraine
NH	Non-sandy Upland - Hummocky Moraine
NB	Non-sandy Upland - Bedrock
SS	Sandy Upland - Sandy Plain
SD	Sandy Upland - Dune Field
SK	Sandy Upland - Kame Moraine
VX	Valley/Ridge - Exposed Slope
VP	Valley/Ridge - Protected Slope
VF	Valley/Ridge - Floor/Stream
VV	Valley/Ridge - Ridge/Valley Wall
VS	Valley/Ridge - Springs
WM	Wetland - Wet Meadow
WS	Wetland - Shallow Marsh
WD	Wetland - Deep Marsh
WA	Wetland - Alkali
WN	Wetland - Mineral
WO	Wetland - Organic
WL	Wetland - Lake
GS	Galcier/Snowfield
S	Special
R	Reservoir
D	Disturbed

GLOSSARY OF LEVEL 1 NATURAL HISTORY THEME TERMS

Grassland, Parkland, Boreal Forest and Canadian Shield Terms

Bedrock - applies only to upland Precambrian bedrock outcrops in the Canadian Shield, Kazan Upland Subregion. All other bedrock types occur under Valley/Ridge Natural History Themes.

Dune Field - sandy deposits arranged by wind into dune formations. Although there are minor dunes within the mountains, this Natural History Theme is not represented at Level 1 in foothill and mountain environments.

Exposed Slope - valley slopes with exposed bedrock at the surface; a Natural History Theme confined largely to southern Alberta and Mixedwood Subregions..

Floor/Stream - applies to stream-influenced valley bottoms including the stream channel and related riparian woodland and shrubbery.

Glacial Lake Bed - predominantly fine-grained glacial lake deposits in plains areas. It may also include ground moraines with a thin veneer of fine glacial lake deposits. This term does not apply in Foothills, Mountain and Canadian Shield environments.

Ground Moraine - flat to undulating moraine of low relief, including draped and stagnation moraine. While this term is generally consistent across all regions, some areas of hummocky moraine are lumped with into Ground Moraine in the Foothills Parkland since it is a minor component of this Subregion. Predominantly sandy phases are included under Sandy Plain. This term does not apply in Foothills, Mountain and Canadian Shield environments.

Hummocky Moraine - moderately to strongly undulating knob and kettle topography, including stagnation, ridged-end and ice-thrust moraine. This term does not apply in Foothills, Mountain and Canadian Shield environments.

Kame Moraine - hummocky sandy terrain that has been deposited in mounds by meltwater in contact with glacier ice; a group of interconnecting kames. This is a significant landscape in only the Central Parkland and Athabasca Plain Subregions.

Lake - any sizable body of water, whether fresh or alkaline.

Non-Sandy Upland - a variety of plains landscapes that are morainal or glaciolacustrine in nature. Note that there are sandy ground moraines and sandy glaciolacustrine deposits that are included under the Sandy Upland-Sandy Plain Natural History Theme.

Protected Slope - vegetated valley slopes; a Natural History Theme confined largely to southern Alberta and Mixedwood Subregions.

Sandy Plain - fairly level and sandy terrain derived from ice-contact fluvial or lacustrine deposits and, in rare circumstances, on sandy morainal materials. This Natural History Theme is not represented in foothill and mountain environments.

Sandy Upland - a variety of plains landscapes that are characterized by thick deposits of coarse sand. This includes some areas of sandy moraine, lake deposits as well as the more typical dune fields, kames and outwash plains. This Natural History Theme is not represented in foothill and mountain environments.

Springs - while not strictly a valley feature, most springs occur in valleys and are included under the Valley/Ridge Natural History Themes. There are some springs on upland sites adjacent to lakes and other wetlands.

Valley/Ridge - valleys in the plains area encompassing a variety of valley slopes, river terraces and springs Natural History Themes.

Wetland - in southern Alberta plains, refers largely to non-woody meadow and marsh vegetation. In northern Alberta, it refers mainly to mineral and organic wetlands, many of which have woody cover. It also includes the Lake Natural History Theme which is widely distributed.

Foothills and Mountains Terms

Floor/Stream - applies to stream-influenced valley bottoms including the stream channel and related riparian woodland and shrubbery.

Glacier-Snowfield - occurs only in the Alpine Subregion

Lake - any sizable body of water.
Mineral - wetlands with minimal peat accumulation. Includes marsh and swamp vegetation in areas outside the Parkland and Grassland Natural Regions.
Organic - wetlands with significant peat accumulation. Includes bog and fen vegetation.
Ridge/Valley Wall - a strictly non-plains term that applies largely to Foothills and Mountain Natural Regions but also to "foothills" portions of the Foothills Fescue and Foothills Parkland Subregions.
Valley/Ridge - includes most of the uplands in the Foothills and Rocky Mountain Subregions.
Wetland - refers mainly to mineral and organic wetlands, many of which have woody cover. It also includes the Lake Natural History Theme which is widely distributed.