Native Vegetation Inventory/GIS Mapping: Parkland Natural Region

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Parkland Natural Region

- Covers approximately 9.5 % of Alberta (62,780 km^2)
- Broad transitional area between the dry grasslands and the moist boreal forest
- Characterized by productive soils, moisture and climatic conditions conducive to agriculture
- Region of intensive human activity
- This program focuses on the Central Parkland in orange (53,413 km^2)

Natural History of the Parkland

- Mosaic of aspen woodlands, fescue grasslands, wetlands and riparian areas.
- Variable landscape shaped by fire, dominant animal species (bison), the native people and climate.
- All of which has resulted in productive, diverse ecosystem

Native Peoples of the Parkland

- Settled by the Native peoples for its abundance of plant life and wildlife
- Harvested buffalo, deer, elk, and gathered berries.
- Shaped Parkland vegetation through fire
- The Natives have been a prominent part of the Parkland ecosystem for thousands of years

History of European Settlement

• 200 years of exploration and fur trade led to the initialization of settlement

•European settlement marked the beginning of rapid change on the Parkland landscape.

•1904 Red Deer

Effects of Settlement

- Many Parkland species were negatively affected by European settlement.
- Bison, antelope, elk, bear and wolf whom all once roamed the Parkland were virtually extinct by 1900.
- Native vegetation was lost to land clearing and monoculture crops
- Removal of factors that had previously influenced the landscape

Modern days in the Parkland

- Impacts of the past has intensified in the present
- Estimated 10-15% of the landscape remains as native vegetation
- Loss of 63% of wetlands to agriculture (Strong and Leggat 1993)
- Competing land resources place a high demand on remaining native land

Modern Impacts in the Parkland

Infrastructure

Cattle Operations

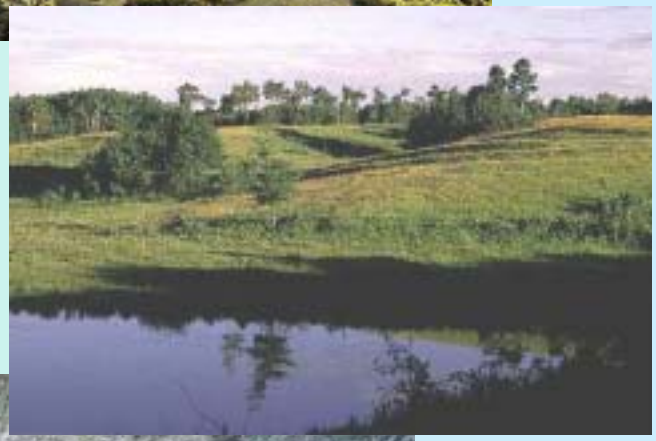
Clearing Native Vegetation

Monoculture Farming

Riparian removal

Major Biodiversity values still remain

- Only a limited portion (5-15%) of land still remains as land dominated by native vegetation
- The Parkland is a threatened ecosystem
- Extremely productive and diverse ecosystem, that supports a large diversity and abundance of life
- Conservation of remaining parcels is the key component to maintain ecosystem function



Parkland Biodiversity

Issues of Conservation to Project Initiation

- Rapidly changing land use patterns
- Limited native landbase remaining
- Large diversity and abundance of biota remain on landscape
- Need for immediate conservation.

- Issues initiated Parkland Native Vegetation Inventory and GIS Mapping project.

NATIVE VEGETATION INVENTORY AND MAPPING

To protect the biodiversity of the Parkland, our objectives needed to answer the following questions:

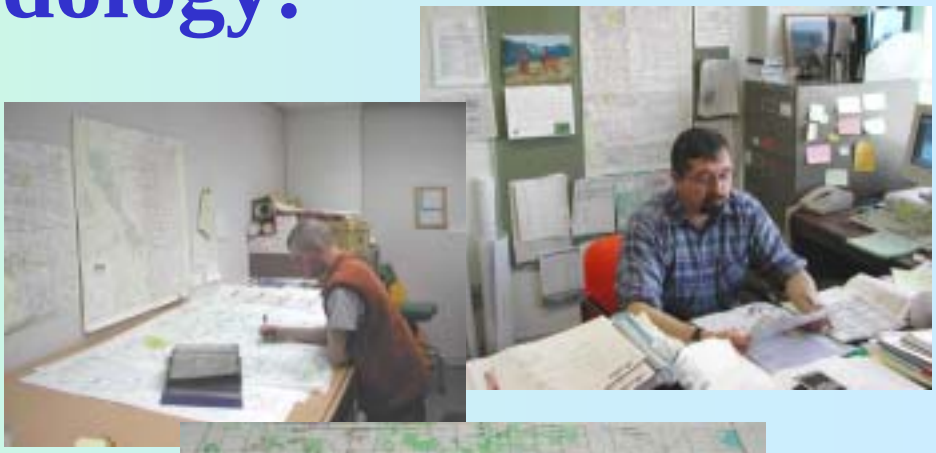
- a) Where is our native vegetation and how much is remaining?
- b) Where are wetlands located and how many are left?
- b) Are they located on public or private land?

Objectives:

- A) Determine the amount, type (grassland, deciduous, conifer,) and size of remaining vegetation patches
- b) Determine number, size, and distribution of wetlands
- c) Evaluate remaining vegetation and wetlands distribution on public versus private land (land ownership)
- d) Combine all native vegetation, wetlands and land ownership in a GIS database
- e) Analyze above parameters in relation to major geographic areas (WMU, watersheds, municipalities)

Methodology:

- Vegetation data layer derived from 1:30,000 photographs and classified Landsat TM 7 images,
- Wetland layer data derived from Access Hydrography, IRS imagery and 1:30,000 photographs
- Land ownership and Municipality layers derived from provincial archives
- Data QC'd at the conclusion of each phase
- Data layers analyzed according to geographic areas (WMU's, County, Maptile, etc.)



Results and Products:

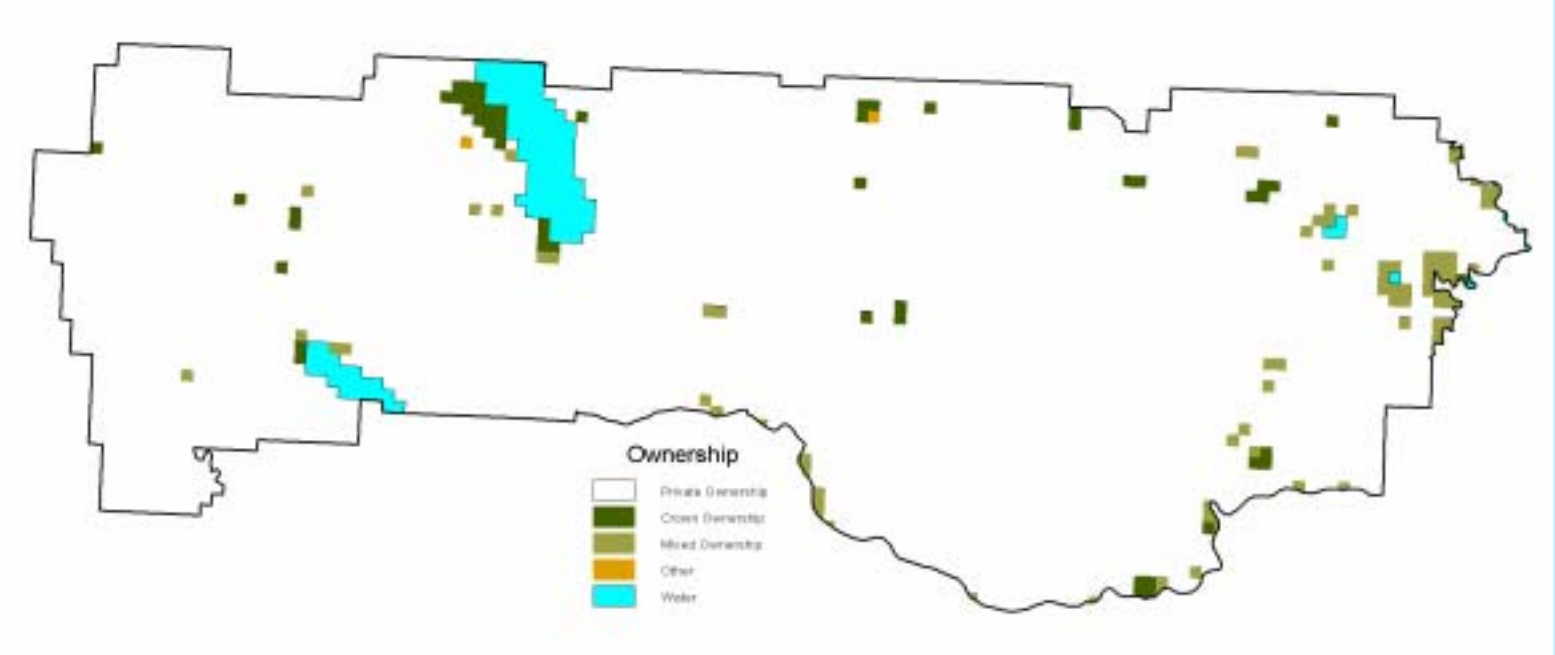
Lacombe County

- At this point we are:
  99% complete the water layer
  95% complete the grassland layer
  100% Land Ownership layer
  100% complete Landsat treed layer

- Remaining efforts include finalizing the water and grassland layers, combining the data layers and the analysis of results

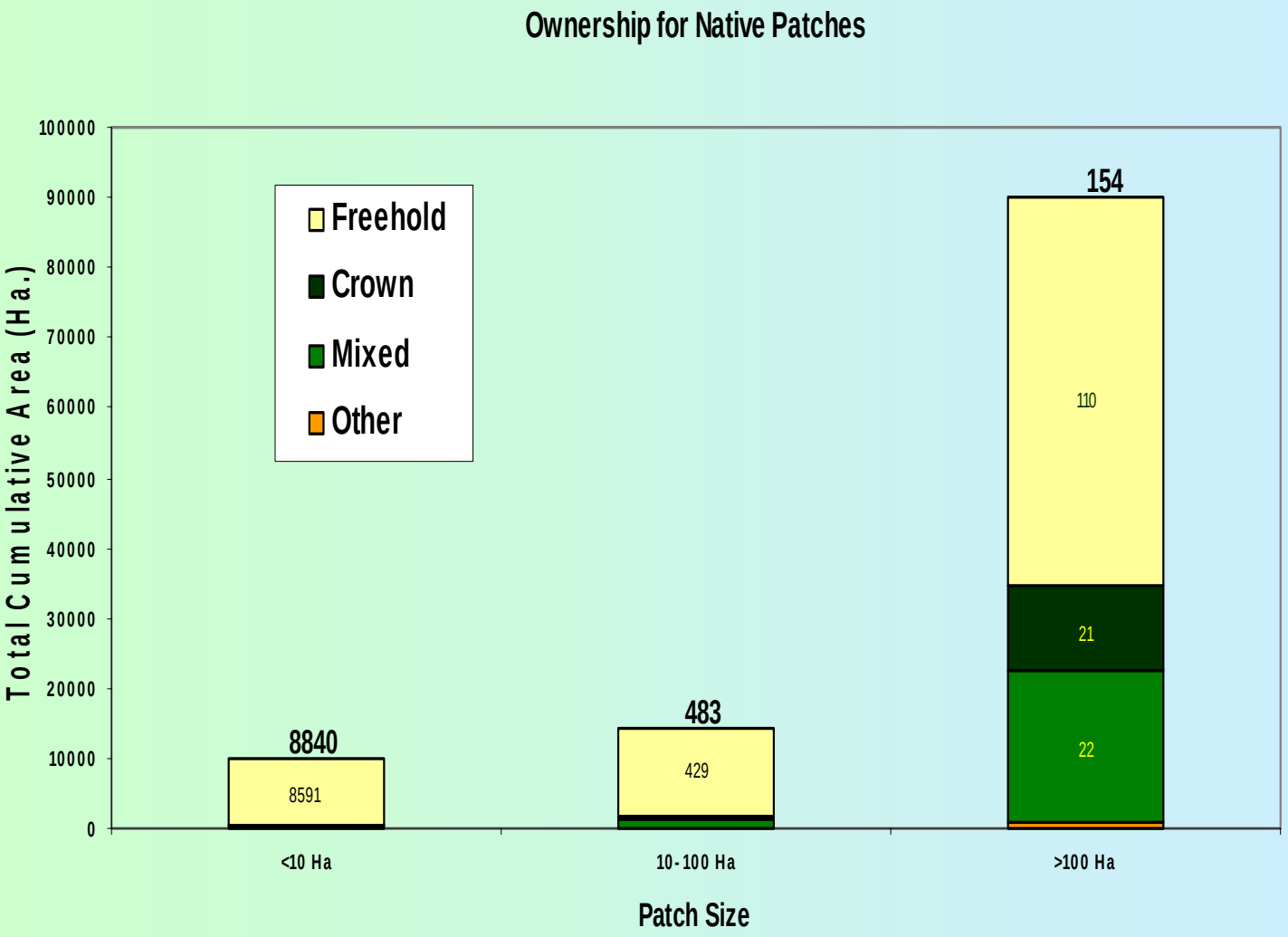
- Examples of vegetation/wetland layers from Pine Lake and Lacombe County

Ownership

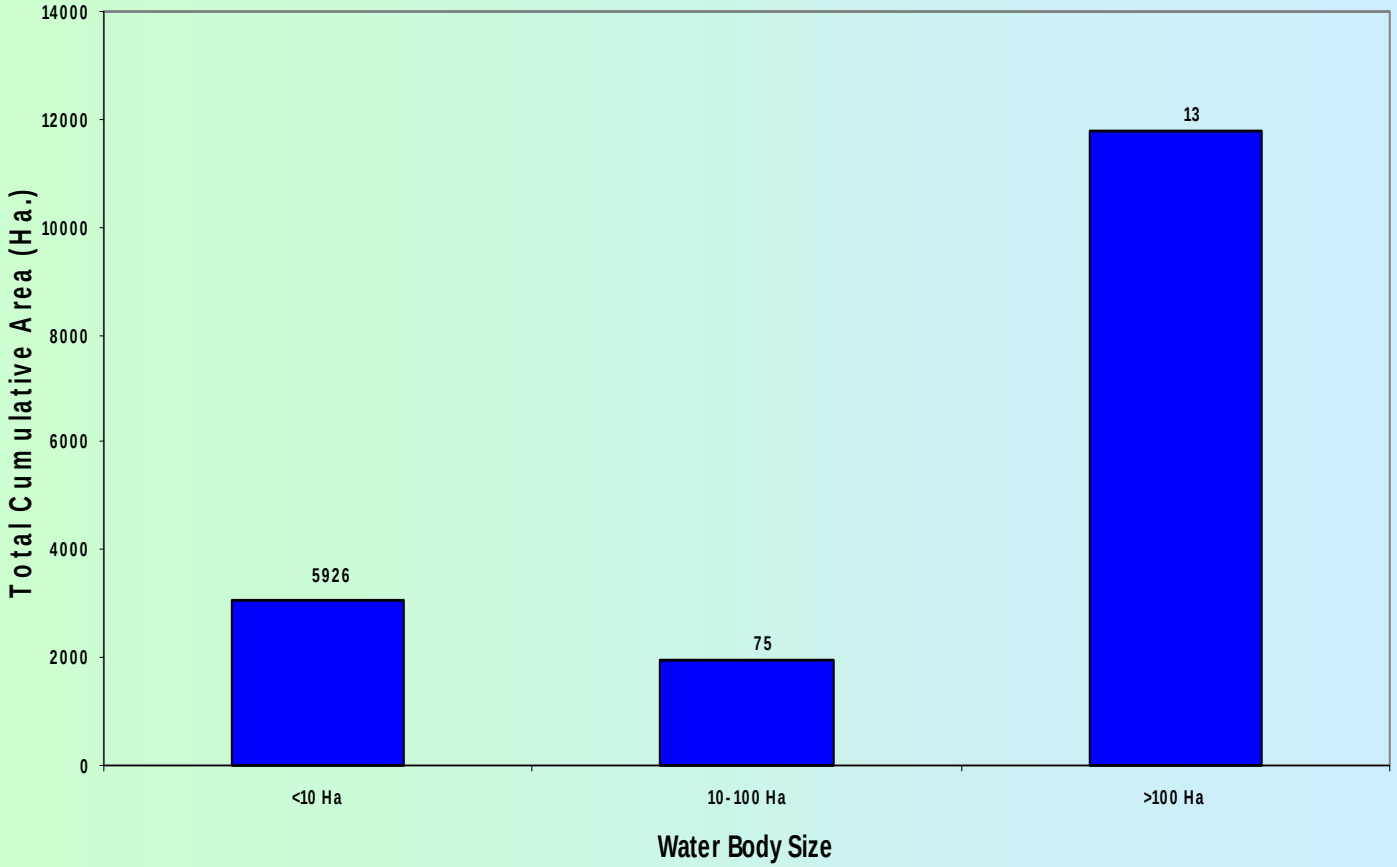


Ownership Class	Total Area (thousands of ha)	% of Area
Private Ownership	273.9	92.1
Public Ownership	2.7	0.9
Mixed Public and Private Ownership	3.5	1.1
Ownership Not Classified	0.5	0.2
Water	17.0	5.7

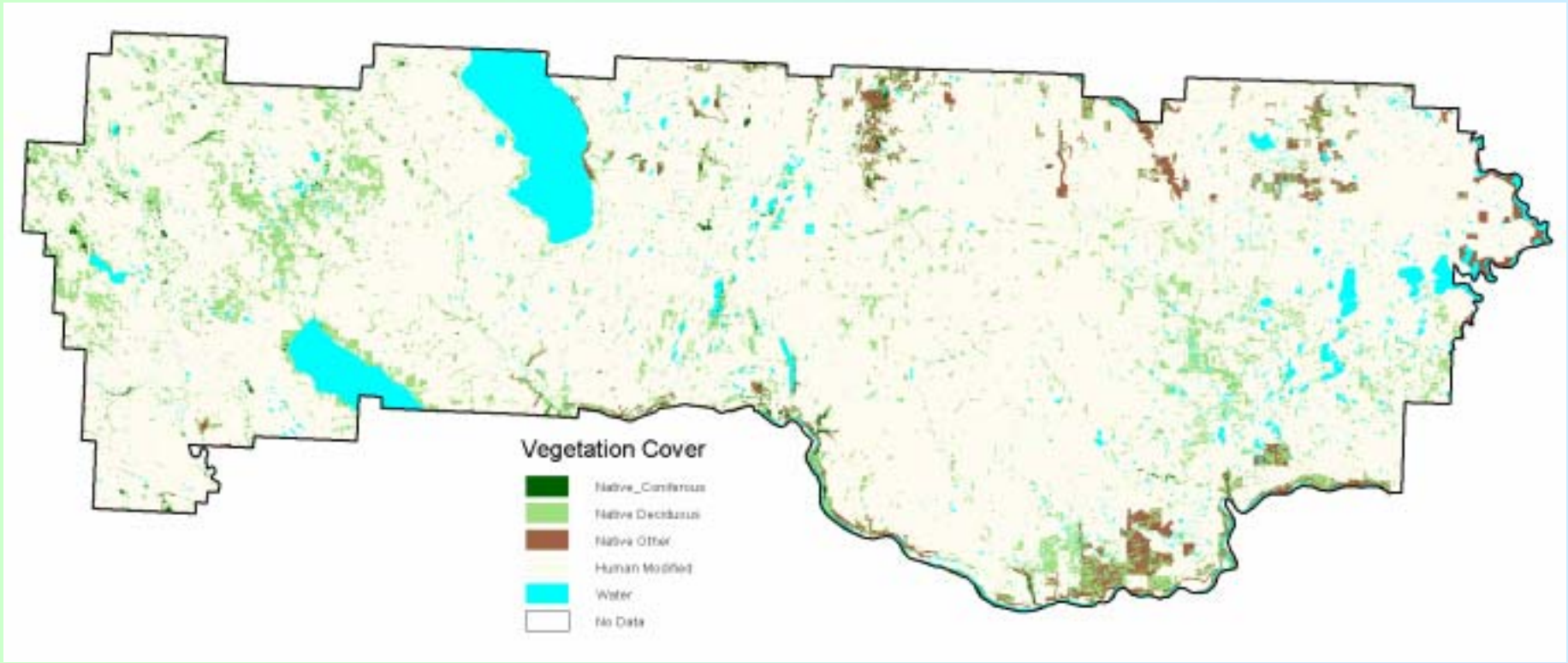
Public vs Private Ownership



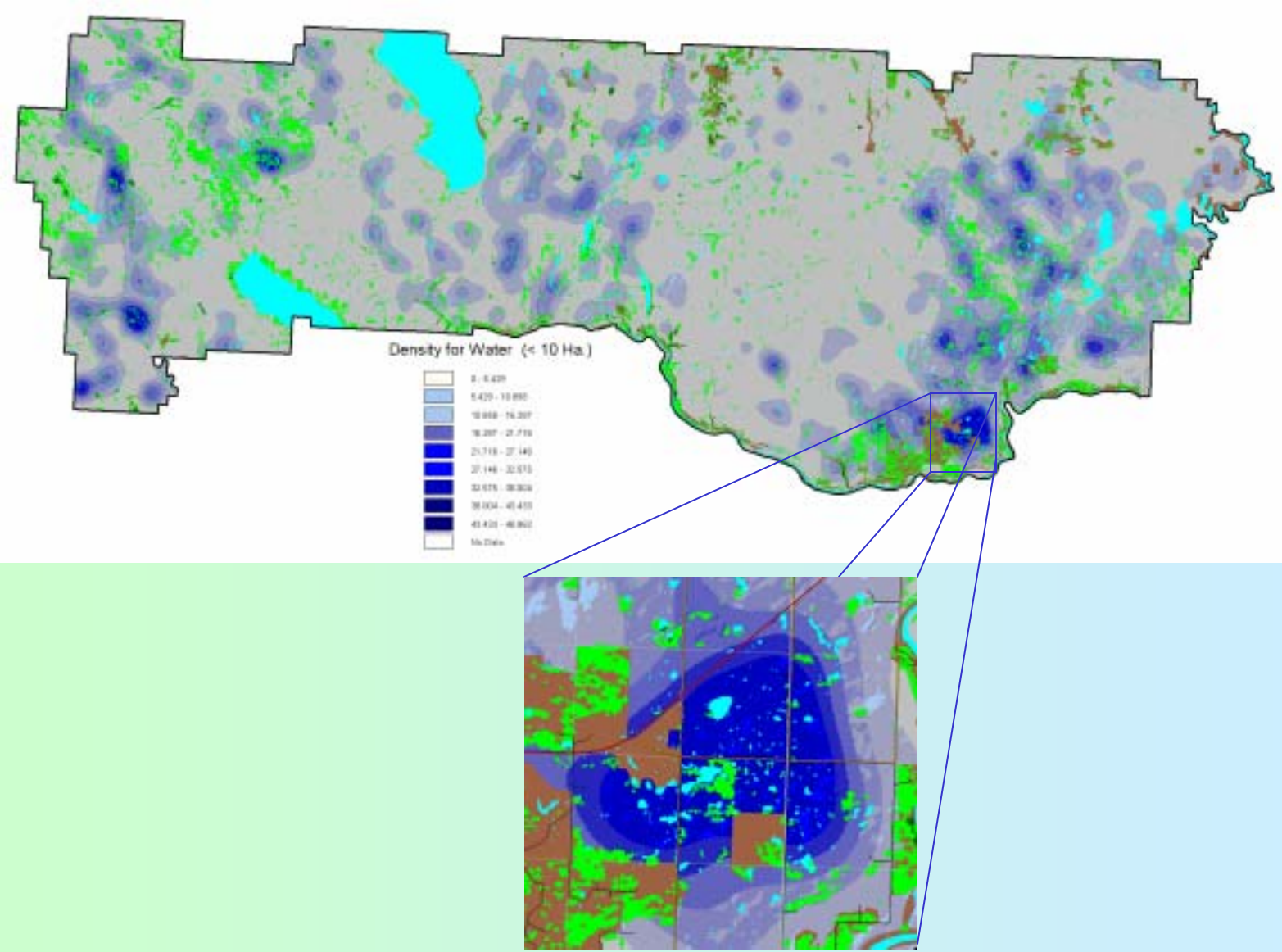
Water


14000
12000
10000
8000
6000
4000
2000
0
Total Cumulative Area (Ha.)
5926
75
13
<10 Ha
10-100 Ha
>100 Ha
Water Body Size

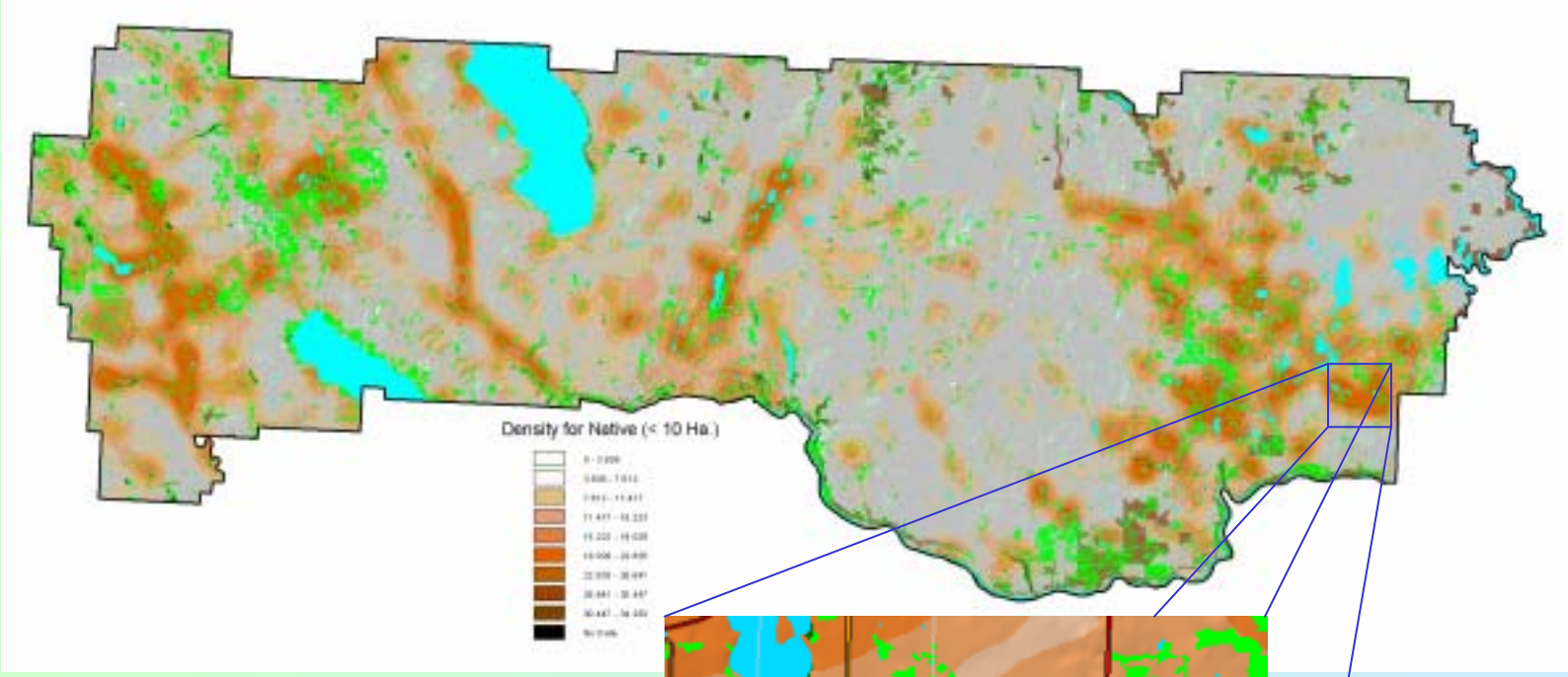
Vegetation Cover



Patch Density Analysis –Water

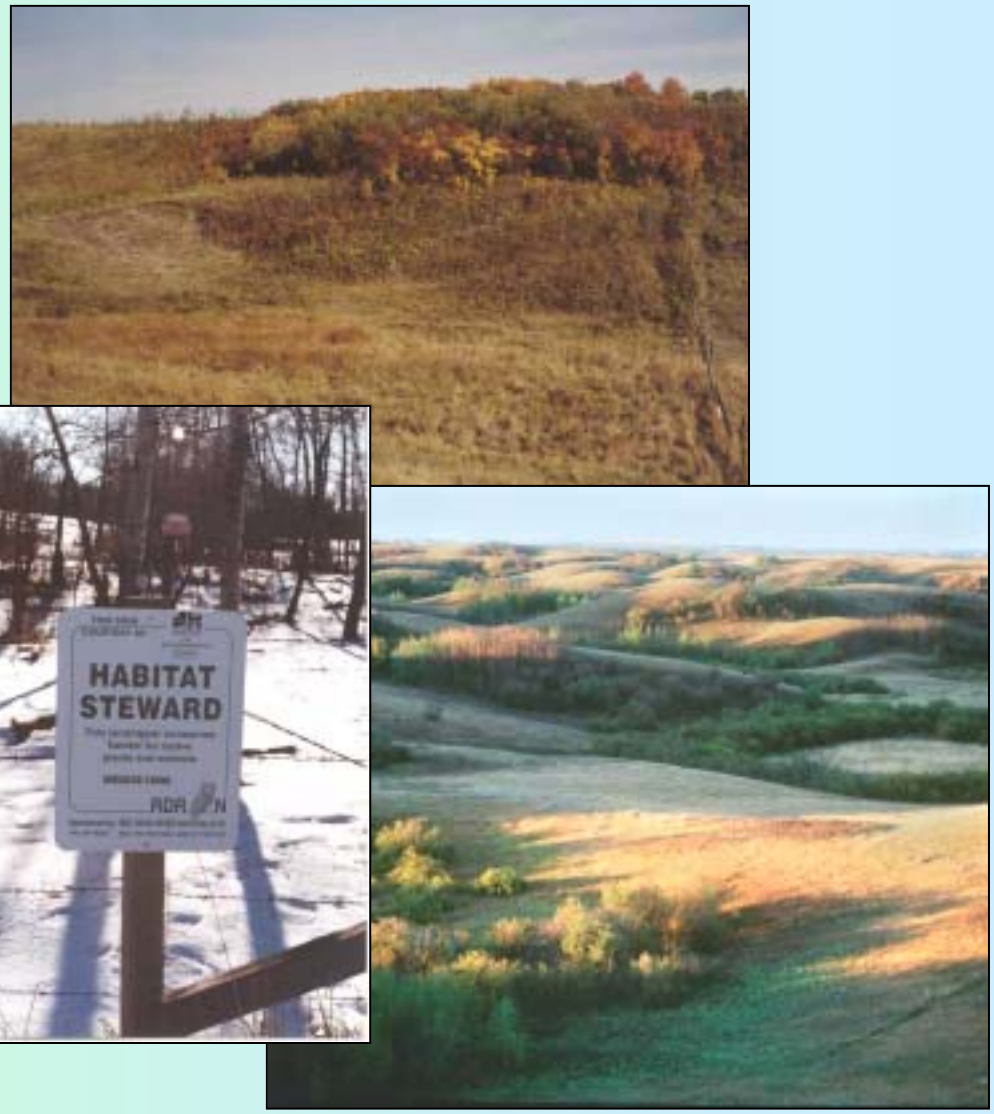


Patch Density Analysis – Native



Project Benefits

- Identification of remaining native vegetation and wetlands (biodiversity)
- Basis for stewardship programs
- Provides basis for proactive planning between resource users (i.e. petroleum industry) and resource managers
- Basis for monitoring change on landscape
- forms a database, from which to estimate numbers and distribution of wildlife
- Framework for subsequent ecological investigations and management



Thank-you

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  - -Resource Information Unit
  - -Fish and Wildlife Division
- Ducks Unlimited/NAWMP
- Canadian Wildlife Service
- Community Development – Parks

CAPP/ERAC Broad Industry Initiative

Alberta Conservation Association

The Nature Conservancy of Canada

Alberta Research Council