

COMMUNITY CONSERVATION PLAN
for the
Manitou Lake Important Bird Area

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Executive Summary

This Community Conservation Plan for the Manitou Lake area was prepared as part of Saskatchewan's Important Bird Area (IBA) Program. In this program, special areas are awarded an Important Bird Area designation for conservation purposes if the areas are used by large concentrations of birds, if birds present are at risk, or if the sites represent intact biomes and their natural bird inhabitants with restricted ranges.

The Manitou Lake area lies in the Aspen Parkland ecoregion of west-central Saskatchewan. This area includes Manitou, Freshwater, Reflex (locally known as Artland and Salt lakes), and Wells lakes, and the sand hills between them. The diverse aquatic systems ranging from freshwater to saline are critical in the lives of many species of shorebirds, waterfowl and terrestrial species. Shorebirds use the sites for breeding or only briefly to refuel while *en route* from their South or Central American wintering areas to Canadian Arctic breeding grounds. Changes in water quantity and quality influence this semi-arid ecosystem.

The Manitou Lake area satisfies the IBA 'congregatory' and 'threatened' criteria and is ranked 'globally significant.' The area includes four lakes (Freshwater, Manitou, Reflex and Wells), three of which are saline. These lakes lie in a 14,000 year old glacial lake plain, near Marsden, Saskatchewan. The southern part of the area consists of sand and silt which has been moved by wind, and may originally have been located at the mouths of rivers feeding into the glacial lake.

Bird species present include the endangered Piping Plover which breeds in the area. Up to 119 pairs have been counted within the last decade. Other IBA species include Red-necked Phalaropes, Sanderling and Stilt Sandpiper, which stop to feed during spring migration. As many as 81,000 shorebirds have

been counted there at a time. Other prominent birds include geese and ducks, and grassland and parkland species in the surrounding area.

This IBA plan builds on the foundations laid through the Manitou Sand Hills integrated land use management plan. Promising conservation opportunities arise out of an awareness by local residents, biologists and conservation organizations about the value of the region. It is recognized that the land and ecosystem is far more valuable in the long term left intact rather than disrupted. Cattle grazing is a primary land use. Under proper management, this can be sustained in perpetuity, barring serious disruptions from climate change or other forces.

The objectives that are specified in this plan draw attention to the importance of these lakes for birds, the objectives discourage any disruption of the ecosystem, they recognize that these lakes have little economic value but are critical for wildlife. The plan brings stakeholders together to chart a future course and to intervene in the event of future threats. Specific recommendations are:

- Maintain or enhance parkland habitat or other permanent cover and their sustainable uses around the lakes.
- Facilitate locally driven sustainable tourism potential in the area.
- Assist schools and other organizations in quality nature-related education.
- Continue or increase monitoring of bird numbers and reproduction, and related ecosystem parameters.
- Conduct research in those specific areas that satisfy information needs or relate to future management and potential threats.

The IBA Program was launched initially by BirdLife International in the UK. Today there are BirdLife Partners in over 100 countries. In Canada the national partners are the Canadian Nature Federation and Bird Studies Canada. In Saskatchewan, the conservation component of this program is being delivered by Nature Saskatchewan. Funding partners of the

Community Conservation Plan for Chaplin, Old Wives and Reed lakes include Canadian Adaptation and Rural Development Saskatchewan (CARDS), the University of Saskatchewan, Saskatchewan Environment and Resource Management (SERM) and the Canadian Millennium Partnership Program. An IBA dedication ceremony for Chaplin Lake took place in Chaplin on 9 June 2000, as part of Chaplin Tourism Inc. social event. Similar ceremonies are planned for Reed and Old Wives lakes.

Vision

Our vision is to integrate bird and ecosystem needs with grazing, recreation and aboriginal values

1. Introduction

Bird conservation is not 'just for the birds.' In a widely acknowledged and visionary treatment of the causes, human uses and the state of decline of diverse life forms on Earth, E.O. Wilson (1992) suggests that certain species will and should receive special attention. Wilson points out that individual species which may be large and colourful or otherwise charismatic, often are conservation favorites even though they represent a small fraction of living things. Such species, Wilson claims, can motivate conservation at many levels, from individual to government. Since no species exists in isolation from other species or its environment, such conservation efforts already in the first instance serve to protect elements of a functioning life support system. If human economic, cultural and social values are adopted in addition to species and systems concerns, the

conservation efforts will come 'full circle' and have gone well beyond the birds.

It is hoped that this report may provide a significant impetus for further conservation by:

- i) explaining why the Manitou Lake area is 'important;'
- ii) describing the lakes' ecosystems of which the birds are a part;
- iii) reviewing appropriate literature, considering what is known but also speculating as to the potential impact of what is not known;
- iv) anticipating opportunities and concerns across as many elements of the natural system as possible; and
- iv) outlining opportunities and challenges for conservation and listing potential stakeholders and contact people (Appendix 1).

1.1 Why protect birds

Surveys of human values and economic impacts have shown that birds have attracted the attention of many people in Saskatchewan and around the World. In a 1991 survey, 83.3% of Canadians reported that "maintaining abundant wildlife is very or fairly important" (Filion et al. 1993). Globally, 62% of people surveyed in 1990 in 42 countries reported "strong approval" for the ecology movement (Nevitte 1996). These human values are more than wishful thinking to many people. A survey in Saskatchewan in 1996

showed that 74% of the population was involved in indirect nature-related activities (through media, visiting zoos, purchasing art and the like), and 15% of the population participated in trips specifically to view wildlife (<http://www.ec.gc.ca/nature.html>). These data signal a change in values by which we rank the worth of humans vs. wildlife, an expansion of the 'human-animal boundary' (Cartmill 1993; e.g. Sect. 2.2.2). These changing world views represent both a responsibility and an opportunity. It will be the conservation planner's role to help formulate a scenario in which these new opportunities are realized.

This community conservation plan focuses on the Manitou Lake area, in the aspen parkland ecoregion of west-central Saskatchewan (Fig. 1). The area lies at the transition between black Chernozem and dark brown Chernozem soil regions, but specifically includes sandy (regosolic) soils in between the Chernozem regions. Important bird resources that occur on the lakes include the nationally and provincially endangered Piping Plover (*Charadrius melodus*), other shorebirds, waterfowl and songbirds.

1.2 Possible approaches to bird protection

Given the critical role which the Manitou Lake area plays for birds, the lakes' ability to

provide this function should be protected. The birds' use of these areas is not an accident. If this environment is seriously altered, the consequences will be severe for several of the species that use the lakes for breeding and feeding on migration.

Effective conservation will require considerations of water levels, land use and ecological monitoring of potential changes in surrounding areas. The people of the Manitou Lake area exhibit a pattern of lifestyle and land use that is an outcome of complex forces which often change over time. Such forces include personal choices, social and economic necessity, and regulations and incentives.

The IBA planning process should be sensitive to the complex cultural forces and could enhance bird-people coexistence in three major ways. First, the process brings major stakeholders together and helps find opportunities for the future that complement one another. Second, the process recognizes that cooperation can involve compromise. Toward this end, the planning process will be directed toward alternatives that protect ecosystem function and respect a quality of life for the people involved. Third, this process should be vigilant to ensure that any future changes in the region are consistent with bird conservation. Toward this end, the IBA process should enhance or protect an environment which by being healthy for birds will also protect the health and aspirations of people.

Effective conservation should include all elements of the system, and in particular the

human elements. A participatory, community-based research and management system might be

adopted. Kramer's (1986) model of community-based research and action outlines several stages that cannot be skipped: need -> interest -> involvement -> ownership -> commitment -> collaboration. An important characteristic in this process is the sharing of power. Weeks and Packard (1997) have illustrated how several barriers arising from a top-down management style have hampered conservation success.

Every attempt will be made in this project to respond to local issues and to represent the aspirations of the local people, making this endeavor a community-based, and interactive process with wide stakeholder involvement. While local involvement is critically important, 'community' and 'stakeholder' should also be broadly defined. The stakeholders and the community involve the local community first. However, because natural systems are inextricably connected, these obligations extend eventually to all Canadians and in some small sense to all citizens on Earth. In many respects, Canada has a tradition of collective goals with both local and regional input in decision making (Raad and Kenworthy 1998). Furthermore, Canada as a nation participates in international agreements such as the Biodiversity Convention (Anonymous 1995) and many others listed below.

2. IBA Site Information

Manitou Lake¹ itself lies in a 14,000 year old glacial lake plain. This plain apparently experienced glacial melt water inflow from the NW, where Wells lake is now located, and from SE. South of the Manitou Lake area is sand and silt which has been moved by wind, and may originally have been located at the mouths of rivers feeding into the glacial lake. Reflex and Freshwater lakes are now surrounded by these hilly, sandy deposits. The sizes of lakes and the sand hill area are shown in Table 1.

Table 1. Size of the Manitou, Freshwater, Reflex and Wells lakes IBA. Source: IBA database.

Site	km ²
Freshwater Lake	7
Manitou Lake	78
Reflex Lake	14
Wells Lake	<u>5</u>
Subtotal	104
Sand hills	<u>500</u>
Total	604

Current day hydrology in the Manitou Lake area is such that the lakes and Eyehill Creek do not connect to any other river. They are

¹At one time there were three Manitou Lakes in Saskatchewan, but only two names survived. Manitou comes from the Algonkian meaning creator or spirit. Manitou Lake was well known to Indian Peoples with references back in the 1750s. The next use of the name was "Manito" Lake School District in 1908, which became Neilburg in 1975. The federal government had designated a Manito Forest south of Manitou Lake, which survives as Manito Cattle Breeders Co-op created in 1951. The name is spelled Manito in the Gazetteer of Canada, but the R.M. was spelled Manitou already in 1910 (Barry 1998).

internally drained and represent their own, roughly 3,000-km² watershed. Not that there is excess water to export from this watershed. Average annual precipitation is 40-45 cm, and given the regional climate and drying potential summed over the year, there is more drying than precipitation, resulting in a 10 cm water deficit (Fung et al. 1999).

The towns of Evesham, Neilburg, Macklin Marsden and Senlac lie in the Manitou Lake watershed, which also extends across the boundary into Alberta.

2.1 The aspen parkland ecoregion.

The Manitou Lake watershed lies within a most northern band of the prairie zone, the aspen parkland ecoregion. Here, prairie is still an important vegetation zone, but aspen woods are interspersed with grassland. In Saskatchewan, aspen parkland comprises 81,500 km², or 13% of the province. Thorpe (1999:136) states: "this dynamic transition zone (between the southern boreal forest and the mixed prairie) has changed over the centuries. Historically records from the 19th Century show that many areas in the aspen parkland had less tree cover than they do now. The regime of frequent fires which prevailed before settlement favoured grassland over woodland, and kept the aspen groves smaller and shorter. Elimination of prairie fires has allowed groves to expand into the prairie, although not all the way to the hilltops and south-facing slopes, where the soil is too dry for tree growth."

"Most woodlands in the aspen parkland are dominated by Trembling Aspen. Aspen stands tend to be short compared to those in the

boreal ecoregion to the north. Many stands on the southern edge of the parkland are no taller than 10 m, while heights reach to 15 to 20 m at the northern edge. Especially toward the south, aspen stands tend to be dome-shaped, reflecting the fact that the oldest trees are in the centre, while expansion of the stand has produced shorter and younger trees toward the edges. Most aspen stems are produced by sprouting from the roots of parent trees, so a small stand may be a clone of genetically identical trees.

The ground vegetation under aspen stands is made up of species almost totally different from those in the nearby grassland. In the moister northern part of the region, the ground vegetation is often similar to boreal aspen stands, with Beaked Hazelnut and Sarsaparilla. Southward, the ground vegetation becomes shorter but more diverse, with the most common species being Snowberry, Rose, Saskatoon, Chokecherry, and a variety of herbs.

Aspen stands on sandy soils tend to have lower shrub and herb cover than those on loamy soils. Most of these species are similar, but the prostrate shrubs, Creeping Juniper and Bearberry, are much more abundant on sand than on loam. Meadowsweet and Poison-ivy appear in the shrub layer, along with the usual Snowberry, Rose and Chokecherry, while Hay Sedge is often an important herb."

"Over much of the aspen parkland, the grassland patches are made up of fescue prairie. This is dominated by a single species, Plains Rough Fescue. The high productivity and persistent litter of rough fescue give taller, denser appearance compared to other grasslands. Subordinate species are mainly those of the mixed prairie to the south, especially Western Porcupine Grass, June Grass, and sedges. Of a variety of common forbs, the presence of species such as Northern Bedstraw and Three-flowered Avens distinguishes fescue prairie from drier grasslands.

Most of the fescue prairie which has not been broken is used for livestock grazing, for which it is highly productive. However, rough fescue is sensitive to overgrazing and has been

eliminated from many pastures, leaving a community similar to that in the mixed prairie. Sandy soils also reduce the dominance of rough fescue, in favour of spear grasses and Sand Reed Grass, and shrubs such as Creeping Juniper and Chokecherry. The largest block of dune sand in the aspen parkland is the Manitou sand hills, much of which is blanketed with low aspen woods, although grassland occurs on the rugged dunes. In the southern part of the aspen parkland, where it overlaps the dark brown soil zone, mixed prairie appears on the upper slopes. At the eastern end of the region, fescue prairie becomes increasingly hard to find, and many areas are dominated by Western Porcupine Grass or by the invasive Kentucky Blue Grass. It is not known whether fescue prairie was naturally less dominant in this area, or has been reduced by a longer period of human impacts such as livestock grazing."

2.2 Existing conservation measures

The ecosystems, shorebirds, waterfowl and other birds of the Manitou Lake area owe their persistence in large measure to their own ingenuity but also to past conservation values among people, and legal protection. Historic statutes have been complemented by many direct conservation initiatives which have gained the support of people. Some of the major initiatives that relate to the Manitou Lake area in a general sense are outlined below. Specific actions and programs are outlined in Section 6.4.

2.2.1 Federal and provincial acts. In the late 1800s and early 1900s it became increasingly clear that migratory waterfowl and shorebirds were on the decline. Market hunting was quickly

identified as a cause, but the other major cause, habitat loss, was not well recognized. Legislated migratory bird protection passed the United States Senate in 1913. In 1916, Canada and the United States signed the Migratory Birds Treaty. The *Migratory Birds Convention Act* passed Parliament in 1917. Mexico signed the Migratory Birds Treaty in 1936 (Foster 1978).

The *Migratory Birds Convention Act* and its regulations give Environment Canada the authority to protect migratory birds, and control seasons and bag limits for hunted species (Sect. 4.1.4). Soon after the Act passed Parliament, the first Dominion ornithologist was hired. Bird management was under the Parks Branch until the section of the branch administering the Act became the Canadian Wildlife Service in 1947.

The province of Saskatchewan brought its legislation quickly into line with the *Wildlife Act*, as did most of the other provinces. The *Canada Wildlife Act* of 1973 fostered a partnership in conservation between the federal government, and the provinces and territories.

In addition to its traditional responsibilities in the area of fish, wildlife and parks management, the Government of Saskatchewan has recently passed the *Wildlife Act 1997* (replacing the *Wildlife Act*, Sect. 6.4.1) to include Species at Risk. The province has also created *The Conservation Easements Act 1997* (Sect. 6.4.2) and introduced the Representative Areas Network program (Sect. 2.2.4).

2.2.2 The proposed Species-at-Risk Act.

Environment Canada Minister David Anderson introduced the newest version (Bill-C5) in January 2001, which replaces Bill-C33. Previous versions of this act expired when elections had been called. The new act prevents the direct killing of endangered species anywhere in Canada, and offers protection for the species and its 'home' on federal land. On lands of other jurisdictions, protection is a matter of negotiation. Provinces were encouraged to implement their own act. Saskatchewan has done so in 1997 (Sect 2.2.1).

The main objective of this proposed legislation, according to Minister Anderson, is to help prevent wildlife in Canada from becoming extinct and to provide for the recovery of species at risk. However, the proponents of stronger legislation point out there are a series of political loopholes that reduce its effectiveness. For example, the Environment Minister and Cabinet, not biologists, will have the final say about which species are placed on the list. When the listing of a species is approved by Cabinet, species recovery plans will be prepared, but the implementation of such plans is again at the discretion of the government. Therefore, the preservation of habitat which is usually identified in recovery plans and an integral part of any meaningful action, is not mandatory, but subject to a political decision.

The Act recognizes the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as the body to provide a public

record of species recommended for listing. However, the final say as to which of the species will actually receive protection rests with the Environment Minister and Cabinet, not biologists.

The proposed act is to prohibit unequivocally the killing of endangered or threatened species under its jurisdiction (migratory species, aquatic species and species on federal lands). When it comes to habitat, there is ample opportunity for political intervention and this, critics claim, may lessen the effectiveness of the legislation. The Minister recognized these shortcomings but felt that it was important to make some concessions to obtain greater buy-in by stakeholders.

Minister Anderson has accepted a proposed mechanism of compensation for landowners in the event that species protection comes into unequivocal conflict with resource use. The Government's 2000 budget contained a commitment of \$90 million over three years, and stabilized funding of \$45 million in subsequent years for the protection of species at risk. Also, a new habitat stewardship program, has already started to contribute approximately \$5 million to over 60 partnership projects. Provisions will also make it easier for Canadians to donate ecologically sensitive lands and easements by reducing the capital gains arising from such donations through the EcoGifts Program.

A recent survey by Pollara indicates that many Canadians are willing to restrict mining and logging activities, leave lands undeveloped, and even accept fewer tax cuts to protect wildlife;

45% stating that "...tax cuts are nice, but legislation to protect wildlife is more important." Of those surveyed, 66% said they "strongly supported" a law to protect endangered species, while another 28% said they "somewhat supported" such a law -- for a total support of 94%.

One of the concerns from an conservation point of view is that already stretched resources for environmental management may be diverted from ecosystem projects to boost few but high priority endangered species. Despite its need, endangered species management is more often a treatment of ecological symptoms than fundamental causes.

2.2.3 Canadian Biodiversity Strategy. The authors of the Canadian Biodiversity Strategy defined "biodiversity" as "the variety of species and ecosystems on Earth and the ecological processes of which they are part" (Anonymous 1995). Diversity is broadly defined including genetic and species diversity, diversity in ecological function (e.g. ground water recharge, crop production, soil building/conservation) and diversity among ecosystems (e.g. land-based, water-based).

The goals of the Canadian Biodiversity Strategy are to:

- conserve biodiversity and use biological resources in a sustainable manner;

- improve our understanding of ecosystems and increase our resource management capability;
- promote an understanding of the need to conserve biodiversity and use of biological resources in a sustainable manner;
- maintain or develop incentives and legislation that support the conservation of biodiversity and the sustainable use of biological resources; and
- work with other countries to conserve biodiversity, use biological resources in a sustainable manner and share equitably the benefits that arise from the utilization of genetic resources (Anonymous 1995).

2.2.4 Saskatchewan's Representative Areas Network. Text in this section was provided by Nancy Cherney, Fish and Wildlife Branch, Saskatchewan Environment and Resource Management.

Saskatchewan has established a network of ecologically important land and water areas across the province, through a system called the Representative Areas Network (RAN). This system started with a base of sites totaling nearly 3 million hectares (7.4 million acres) including national and provincial parks, wildlife refuges, ecological and other reserves in the province. Working from this solid foundation, Saskatchewan's Representative Areas Network

expanded by about 50 per cent in less than three years!

One of the primary goals of the RAN program is to protect biodiversity - the richness and variety of life - by selecting and designating areas representative of Saskatchewan's natural ecological diversity. An objective and consistent method for assessing this diversity was developed to guide representative area identification. Notably, an enduring features approach to define the range of diversity in Saskatchewan was selected. Enduring features, such as specific rock, soil and land form patterns, are considered to be very stable over long periods of time and are likely to contain characteristic plant and animal communities. Classifying the province into different enduring feature groupings and measuring the level of protection already afforded to specific landscape types (and associated plant and animal communities) highlighted deficiencies in terms of protection. Landscape types with little or no protection were rated a high priority for action in the RAN.

This scientific approach for selecting representative areas was blended with the wealth of local knowledge gathered through land use planning and other community-based consultation processes. Suggestions and needs identified through these processes also help determine the kinds and levels of activity that may occur within designated sites. Regulations developed as a result govern activities in each site and are intended to reflect the diversity of goals and values that are meant to be protected.

Representative area designation is flexible, supporting many resource pursuits such as trapping, hunting, and fishing. However, site management seeks to curb activities like commercial logging, road construction and mining or petroleum exploration and development, particularly within Crown land sites. The intention is to ensure long-term resource protection within representative areas by minimizing disturbance and degradation.

Crown lands administered by Saskatchewan Environment and Resource Management may be designated according to any one of a number of legislative options. Depending on features/values to be protected and the level of use to be continued within a site, choices include Ecological Reserves, Provincial Parks (several categories), Protected Areas or Wildlife Refuges. From August, 1997 to March 31, 2000, about 500,000 hectares of Crown land were formally designated and added to the Network - 4 ecological reserves, several parkland reserves, 1 protected area, and 1 wildlife refuge.

Private lands and lands not under Environment and Resource Management's administration are also important within the network and can be managed or guided through the use of partnership agreements, memoranda of understanding or conservation easements. These types of arrangements enable the department to work closely with partners and private landowners to ensure maintenance of the long-term health of the soil, water, plants, animals, and other parts of the ecosystem. From August, 1997 to March 31,

2000, some 1.2 million hectares of private land and lands not administered by SERM were included in the Network through voluntary partnerships.

Government commitment to live up to the challenge of establishing a Representative Areas Network for the people of Saskatchewan remains strong. Public discussions for proposed representative areas are proceeding in order to bring together a mix of perspectives on the particular lands and to identify the full range of values that may need long-term protection. As these discussions conclude and site boundaries are finalized, the Network will continue to grow and offer opportunities for education, research and the enjoyment of Saskatchewan residents, today and for generations to come.

2.2.5 North American Bird Conservation Initiative. Conservation plans, including the present one, are wish lists - but not without important functions. They can coordinate the will and strategies between different people/programs. The North American Bird Conservation Initiative is a 'super strategy' that attempts to unify various bird conservation initiatives and create national and international partnerships (Fig 2). It is the role of IBA and others to foster complementary local partnerships.

Different conservation plans focus on different levels (national vs. provincial, birds vs. biodiversity, disturbance zones vs. ecosystems). When combined with local context and

stakeholder participation, these plans can lead to meaningful action. This North American Bird Conservation Initiative hopes to provide serious impetus for cooperative solutions, and joint action taken in Canada, the United States and Mexico. This continental initiative is supported in principle by the Commission on Environmental Cooperation, which was established as a companion to the North American Free Trade agreement.

In regard to cooperation in conservation, Figure 2 also shows that birds have a long tradition of care by many people. It is noteworthy that in addition to bird monitoring projects by professional biologist, an even larger amount of data is gathered by thousands of bird watchers each year (e.g. bird feeder watches, and Christmas bird counts;² Fig. 2). This is tangible evidence of a widespread personal will to conserve this charismatic component of nature (e.g. Sect. 1). This public will and public power

² Cannings (2001) describes the 100 year old counting tradition: "At its heart, the CBC [Christmas bird count] has always performed a dual role. One the one hand, it is probably the main social and sporting event for the birding year in North America, with many inter-city rivalries for high species totals and even more jovial pot-luck suppers with tall tales of rare birds and winter misadventures. For many birders, Christmas counts are an integral part of the holiday season, as important as roast turkey with cranberry sauce or stockings hung by the fireplace. On the other hand, the CBA also puts the spotlight on conservation issues surrounding the birds that winter in North America and provides biologists with a huge annual database.

Canadians have always been involved in the CNBC - two of the founding counts were in Toronto, ON and Scotch Lake, NB. Participation grew slowly at first, then took off in the latter half of the century. going from 24 Canadian counts in 1954 to 257 (and 10,000 participants) in 1999. indeed, Canadians seem to have a tremendous growth spurt in the number of counts submitted..."

has been harnessed effectively for data gathering, it is starting to be harnessed in a tourism-economic sense, but many opportunities may have

been ignored thus far. How could this power be harnessed for instance by farmers and ranchers in IBAs (Sect. 7.7)?

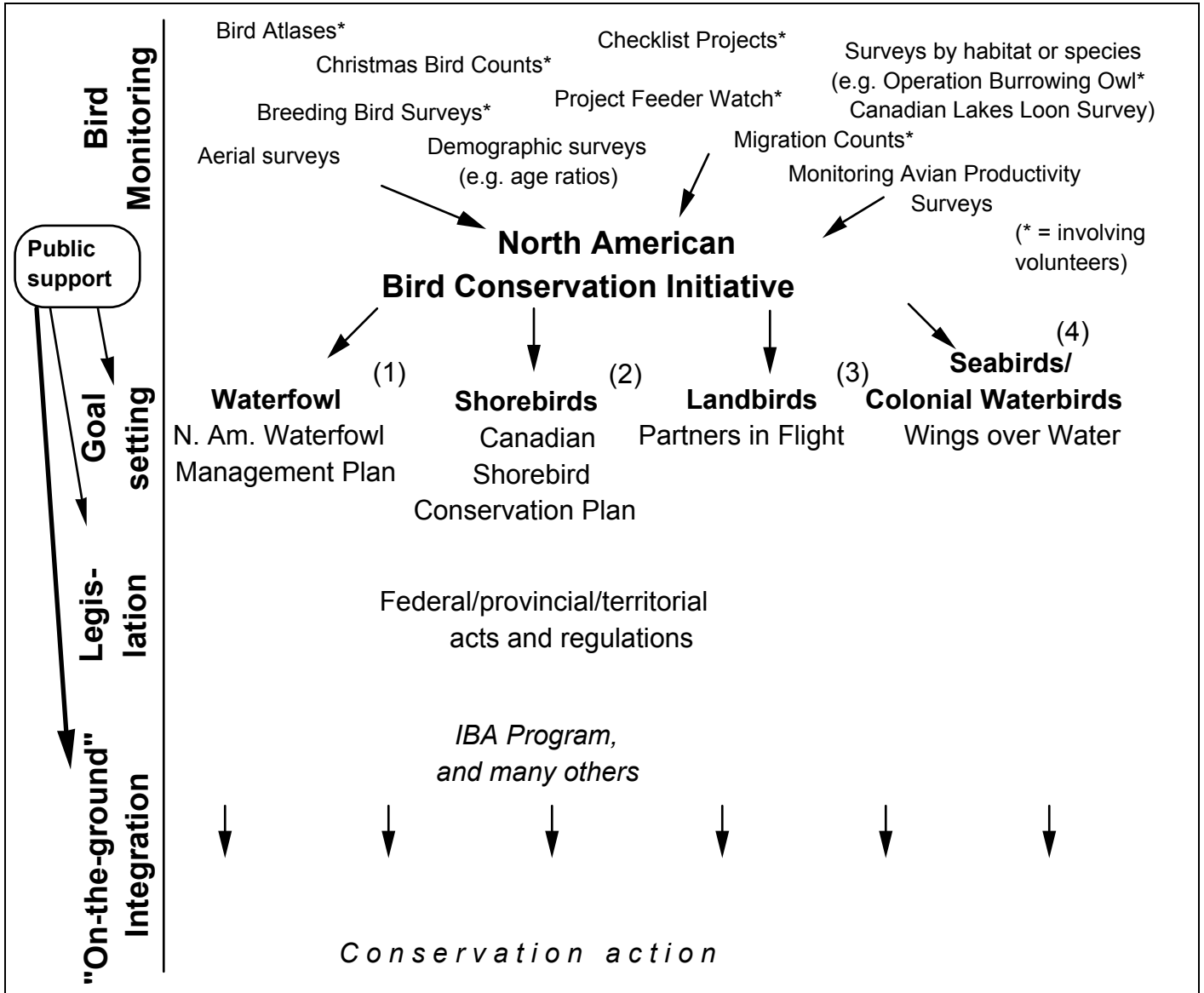


Figure 2. A schematic diagram to show the relationships among bird conservation plans and strategies. Combined with monitoring strategies, these plans are intended to lead to meaningful action. References: (1) North American Waterfowl Management Plan Committee 1998, (2) Anonymous. 1999, (3) Canadian Landbird Conservation Working Group 1996, (4) in preparation.

2.2.6 Prairie Canada Shorebird Conservation Plan.

The goals of the Prairie Canada Shorebird Conservation Plan (Gratto-Trevor et al. 2000) are similar to those included in the Canadian Shorebird Conservation Plan. Goals are to:

- acquire sufficient information about population dynamics, population trends, migration and staging strategies, and habitat preferences of prairie Canada shorebirds to make knowledgeable management recommendations;
- sustain and enhance sufficient high quality habitat to support healthy populations in prairie Canada;
- inform the public, decision-makers, and all those involved in land management in prairie Canada about the importance of prairie Canada to shorebirds, and about shorebird species, biology, trends and management; and
- ensure that coordinated conservation efforts (regionally, nationally, and internationally) are in place to address the key conservation priorities for shorebirds in prairie Canada.

Implementation will be encouraged and guided by a management board in cooperation with government and non-governmental organizations. A technical advisory committee was struck to encourage actions based on sound ecological knowledge and to address information gaps.

A companion plan exists in the United States. A Mexican shorebird plan was in draft stage at the time of writing (Mcknight 1999).

2.2.7 International Shorebird Survey.

The highly migratory nature of shorebirds requires international cooperation. There is a tendency for countries to focus on the birds that breed there and pay comparatively little attention to species that pass through on migration. The tremendous length of shorebird migrations and the need to 'short stop' and find high energy food (Sect. 4.1.4) makes shorebirds vulnerable. Many of the shorebirds are small in body size and therefore have high metabolic demands.

Most conservation actions presuppose effective monitoring (Fig. 2) of shorebird numbers, the timing of passage and threats. The Manomet Center for Conservation Science (www.manomet.org/) in Maine started to organize an international shorebird survey in 1974. To date, this survey has fostered some 50,000 counts at more than 600 strategic sites by more than 900 observers. This survey also formed the basis for the formation of the Western Hemispheric Shorebird Reserve Network. Survey cooperators are asked to census a location of their choice three times per month during the migration period.

2.2.8 North American Waterfowl Management Plan.

This plan was approved in Canada in 1986 by the Minister of Environment, and by Mexico in 1994. The plan was envisioned as an extension to the Migratory Birds Convention Act and to coordinate effective management between the

three signatory countries, including the United States. The plan was intended to help restore waterfowl populations to 1970s levels, to perpetuate waterfowl habitats, to employ management strategies according to subpopulations or flyway populations, and to incorporate subsistence and recreational hunting into management strategies. The prairie Canada portion of this plan came to be known as the Prairie Habitat Joint Venture (Anonymous 1986, Dickson and McKeating 1993).

In their 1993 analysis of the Prairie Habitat Joint Venture, Dickson and McKeating compliment the program for its achievements in waterfowl management, but they also conclude that more must be done to include species other than ducks. They point toward initiatives that were promising and suggest that multi-species management should be included more often than was usually the case in the early stages of habitat management.

In 1998, the management plan was updated to recognize the "changing context of waterfowl conservation" (North American Waterfowl Management Plan Committee 1998). Aspects in need of adaptation include: i) more than 60 million people watch migratory birds and only 3.2 million hunt waterfowl, ii) the signatory countries are also part of other alliances that create obligations (e.g. the Biodiversity Convention), iii) initiatives for migratory birds other than waterfowl exist (e.g. Western Hemisphere Shorebird Reserve Network, IBA), iv) an increasingly suburban existence and

increasing demands for food globally brings new challenges.

Under this waterfowl management plan, Ducks Unlimited Canada operates approximately 10,000 wetland and upland segments within the Prairie Habitat Joint Venture. Waterfowl and shorebird habitat management are seen as complementary, not exclusive. Many properties are specifically managed for both. "Cooperative partnerships are the key to better shorebird conservation in prairie Canada" (Sadler 1999).

2.2.9 Prairie Conservation Action Plan. The Prairie Conservation Action Plan was an initiative spearheaded by World Wildlife Fund Canada. The plan was released in 1987, Canada's Wildlife Centennial year commemorating the 100th anniversary of North America's first wildlife sanctuary, the Last Mountain Lake National Wildlife Area. The plan's main focus, delivered under "Let's leave some wild in the West," was identifying critical habitat and its threats, preparing status reports for species at risk of extinction, and executing conservation action for these species.

Since the formulation of the Prairie Conservation Action Plan, many named or unnamed and large or small initiatives led to prairie conservation. Most important was an increasing awareness of the values of native prairie and also awareness of its imminent threats.

It was during this time, for instance, that government-subsidized re-grassing programs were phased out. New extension programs were created or existing programs brought into line with the increasingly mature perceptions of native prairie and its role in a ranching economy and in the biosphere.

In the late 1990s, the Prairie Conservation Action Plan was re-invigorated through collaborative partnerships in each of the prairie provinces with some cross-coordination. In Saskatchewan, leadership was undertaken by the Saskatchewan Stock Growers Association and Saskatchewan Environment and Resource Management, with headquarters for the plan housed in the offices of the Saskatchewan Stock Growers Association in Regina (www.pcap-sk.org). A coordinating committee includes approximately 20 agencies. Funding partners of the program are: Canadian Adaptation and Rural Development Saskatchewan, Canadian Wildlife Service, Ducks Unlimited Canada, Prairie Farm Rehabilitation Administration (under the National Soil & Water Conservation Program), Saskatchewan Agriculture and Food, Saskatchewan Environment and Resource Management, and the Saskatchewan Wetland Conservation Corporation. Goals are to sustain a healthy native grassland grazing resource, to maintain biological diversity, to promote a sustainable use of the resource and a quality of life for people, and to disseminate quality information.

The change in this scenario from a non-government/government conservationist's initiative to one co-driven by a production sector is a welcome sign of our time. The challenge will be to move from a narrow focus on individual components of the native ecosystem (e.g. rare plants) to incorporate conservation values systematically in the full food production and consumption chain.

2.2.10 Community pastures. There are three ways by which sustainable grazing of Crown lands is permitted; via community pastures, co-op pastures and individual leases. Community pastures are owned by the Crown, but administered either federally through the Prairie Farm Rehabilitation Administration, or provincially by the Saskatchewan Pastures Program.

The Community Pastures Program in general receives its funding partly or entirely from the patrons' grazing fees. Local staff (pasture managers assisted by range riders) manage all day-to-day affairs of the pasture, such as livestock care and handling, and facilities maintenance. Stocking rates and the timing of rotations are set jointly by an agrologist and the pasture manager. An advisory board composed of patrons helps by providing local input and may administer parts of the program such as the cattle breeding. In grazing co-ops, a group of ranchers have formed an administrative co-operative and manage all aspects of a pasture. A lease fee is paid by the

group. Finally, in this continuum of management styles for crown-owned grasslands, some land is leased directly to the rancher who is expected to observe stocking rates set according to the carrying capacity of the land.

The Saskatchewan Pastures Program of Saskatchewan Agriculture and Food was established in 1922. Today there are 56 pastures comprising slightly more than 800,000 acres (3,238 km²). The program's mandate is to provide livestock business opportunities while promoting the public objectives of integrated land use and a sustainable resource base. The goals are to provide supplementary grazing and livestock management services to enhance livestock diversification; to improve environmental and agricultural sustainability of Crown Land; and to implement new enterprise opportunities.

In the Manitou Lake area there are no community pastures. The nearest Prairie Farm Rehabilitation Administration pasture straddles the Battle River 50 km NE. There are 12 co-op pastures, one First Nation pasture, and leases to three different ranchers (see Table 6 below).



3. The IBA Program

The IBA program is an international initiative coordinated by BirdLife International (Appendix 2), a partnership of over 100 countries seeking to identify and conserve sites important to all bird species worldwide. Through the protection of birds and habitats, it also promotes the conservation of the world's biodiversity. There are currently IBA programs in Europe, Africa, the Middle East, Asia, and the Americas. The Canadian IBA program is part of the Americas IBA program which includes the United States, Mexico, and 17 countries in Central and South America.

The Canadian BirdLife co-partners are the Canadian Nature Federation and Bird Studies Canada (Appendix 2). Bird Studies Canada is primarily responsible for site identification and designation. The Canadian Nature Federation facilitates conservation planning and implementation, working with its provincial partners.

The goals of the Canadian IBA program are to:

- identify a network of sites that conserve the natural diversity of Canadian bird species and are critical to the long-term viability of naturally occurring bird populations;
- determine the type of protection or stewardship required for each site, and ensure the conservation of sites through partnerships of local stakeholders who participate in development and implementation of appropriate on-the-ground conservation plans; and

- establish ongoing local involvement in site protection and monitoring.

IBAs are identified by the presence of birds falling under one or more of the following internationally agreed-upon categories:

- Sites regularly holding significant numbers of an endangered, threatened, or vulnerable species.
- Sites regularly holding an endemic species, or species with restricted ranges.
- Sites regularly holding an assemblage of species largely restricted to a biome.
- Sites where birds concentrate in significant numbers when breeding, in winter, or during migration.

3.1 IBA Saskatchewan

Nature Saskatchewan is working with the Canadian Nature Federation and Bird Studies Canada (Appendix 2) to deliver the conservation planning component of this program in Saskatchewan. IBA Saskatchewan was launched on 1 February 1999. Conservation plans for 13 sites (Appendix 3) will be completed by March 2001.³

³ About the author: Joe Schmutz is internationally known for his research and conservation of prairie birds of prey, and he participated in a nationally sponsored interdisciplinary ecosystem and community-based research program. Joe was contracted by Nature Saskatchewan as IBA Community Conservation Planner. In addition, Joe has been appointed as a Research Fellow and taken up residence in the Centre for Studies in Agriculture, Law and the Environment (CSALE), College of Agriculture, University of Saskatchewan.

IBA Saskatchewan has two homes, one in Nature Saskatchewan's office in Regina (Appendix 2) and one at the Centre for Studies in Agriculture, Law and the Environment (CSALE), at the University of Saskatchewan in Saskatoon. CSALE is a newly formed strategic partnership integrating the disciplines of science, law and economics to conduct research into environmental issues related to agriculture. CSALE undertakes studies, provides education and develops policy options so as to enhance prairie and other agroecosystems.

4 IBA species information

Birds that occur in sufficient numbers in the Manitou Lake area to satisfy the IBA criteria are reported in Table 2, along with some other prominent species. The data (Table 2) are based on a series of single day counts, which must be considered a 'narrow window' into the importance of these three lakes for shorebirds.

Table 2. Birds satisfying the IBA criteria, their significance status (Global, Continental or National) and season of main use at Manitou, Freshwater, Reflex and Wells lakes. Some other birds prominent in the IBA are also listed. Data are taken from the IBA database, and originally derived from surveys by federal and provincial biologists and other sources.

Species	Bird Numbers	Year	N. Am. %	Season	IBA Significance status
IBA birds					
Piping Plover	av. 96	1994-98	2.0	Breeding	Global

Red-necked Phalarope	70,000	1995	3.5	Spr. migration	Global
	47,000	1996	2.3	Spr. migration	Global
Sanderling	6,000	1995	3.0	Spr. migration	Global
	5,100	1996	2.7	Spr. migration	Global
Stilt Sandpiper	3,000	?	6.0	Spr. migration	Global
All shorebirds	81,000	1995		Spr. migration	
	58,000	1996		Spr. migration	
Other species					
Geese	1,000-2,000			Migration	
Ducks	8737			Migration	
Ducks (Moulting)	7605			Summer	
Lesser Scaup (Moulting)	730			Summer	
Redhead (Moulting)	1575			Summer	

4.1 Natural history of IBA species

The Manitou Lake IBA contains requisite sites for bird migration and reproduction. This is the case even though migrants reside there only briefly. If these sites were taken away or made unsuitable in some way, the impact, by all accounts, would be disastrous especially for shorebirds for which the lakes serve as breeding, roosting and feeding sites.

In addition to spectacular congregations of birds, the Manitou Lake area also supports many grassland and parkland species including Red-tailed Hawks, Sharp-tailed Grouse, Least Flycatcher, House Wren, Mountain Bluebirds, Gray Catbirds, Warbling Vireos, the spotted race of the Rufous-sided Towhee and Baltimore Oriole.

4.1.1 Red-necked Phalarope. The Red-necked Phalarope (*Phalaropus lobatus*) is smaller than a robin, whitish below and tan and grey uppers. As the name suggests, there is a rusty red neck on females in their summer plumage.

Red-necked Phalaropes nest on the Tundra and Boreal Forest edge in Canada and Alaska. There are isolated sightings of breeding pairs on northern Saskatchewan Lakes (Smith 1996), but

this birds is generally only common on migration. They winter in Central America, where they frequent sea shore and the open ocean primarily.

Nests are located on the ground in the vegetation margin of freshwater ponds. Four eggs are usual, as is the case for many other shorebirds.

Phalaropes as a group are most unusual in two ways, their spin-swimming and the 'reversed' role of the sexes. In this family of shorebirds, with some variation among species, females court aggressively to attract males. After copulation and egg-laying, the male assumes all incubation and brood-rearing duties. The female may lay for yet another male in the same season, and finally may or may not raise a brood of her own. Corresponding with this role-reversal, the female is brightly coloured, while the male is drab and well camouflaged during incubation.

Phalaropes are also the only shorebirds that show sustained swimming. This allows them to stay and feed in the open ocean, where they swim in circles, always alert for an invertebrate prey animal that has been disoriented by the water current thus produced and falls easy prey. For effective swimming, phalaropes have partial lobes between their toes (Godfrey 1966).

At the Manitou Lake IBA, Red-necked Phalaropes are most common in spring. In the late 1980s, concentrations of 26,000 Red-necked Phalaropes have been recorded here on 26 May and 29,000 at Big Quill Lake on 28 May,

4.1.2 Sanderling. The Sanderling (*Calidris alba*) makes the world seem small. It breeds in the Arctic and high Arctic of North America, Greenland, Europe and Asia, and winters on all three continents of the southern Hemisphere except Antarctica. Sanderlings winter along the Atlantic and Pacific coast of North, Central and South America, from southern British Columbia and Maine on southward (Richards 1988). They seem to be most common on the Pacific coasts in South America in winter (Smith 1996).

The Sanderling is a bit larger than the sparrow-sized Semipalmated Sandpiper and distinctly more chunky in appearance. The short and stout black bill and the black legs are distinct against the pure white under parts of the Sanderling. The rusty head, mantle and breast in breeding plumage facilitates identification in spring. On its upper side, the Sanderling shows a mix of gray and brown, but is rather paler in winter. Sanderlings fly fast and erratic, showing a conspicuous white bar on the wing (Richards 1988).

Sanderlings feed by pecking and probing. Sanderlings eat adult and larval flies, small beetles and burrowing amphipods. Sanderlings lay their four greenish-olive eggs in a scrape near the shores of Arctic lakes, where they take four weeks to hatch. Females often lay and incubate a second clutch while the first is incubated by the male. In these cases, the broods are reared separately. After 2.5 weeks the young can fly and become independent of their parents. Adults

leave their breeding grounds as early as mid-July with young following later (Richards 1988).

Sanderlings are common migrants in Saskatchewan and can be seen here somewhat longer than other shorebirds. Roy (1996) has observed Sanderlings at various sites from early May to early June, with peaks in late May/early June. Return flights occur between mid-July and mid-October. Groups of up to 50 Sanderlings have been observed in mid-summer for several years in a row at Last Mountain and Luck lakes (Roy 1996).

According to Roy (1996), Sanderlings are most common along the sandy shores of lakes and sandbars of rivers. In the mixed-grass ecoregion this often includes Lake Diefenbaker, the South Saskatchewan River and many saline lakes in the region. Sanderlings appear less frequently on mud flats, and "rarely, if ever, on sloughs unless they have broad, near-dry margins."

4.1.3 Stilt Sandpiper. The Stilt Sandpiper (*Calidris himantopus*) is a medium size sandpiper whose slender body, longish (greenish) legs and bill, white rump, and chestnut ear patch distinguish it from other medium or small sandpipers (Godfrey 1966).

'Stilts' winter in central South America, many in Argentina. Some also remain in Central America. They nest on the northern coasts of Alaska and Canada eastward to the western coast of Hudson Bay. Stilts migrate both in spring and

fall in a narrow band along the eastern edge of the Great Plains. Most flocks contain less than 100 individuals but some flocks over 10,000 (Skagen et al. 1999).

Stilt Sandpipers obtain their invertebrate food by collecting it off the shore or water, and by probing in soft mud. They are most commonly seen on those parts of the shore that include wet soil devoid of vegetation to water up to 8 cm deep (Skagen et al. 1999).

4.1.4 Migrating-staging shorebirds in general.

The conservation of sites important for 'staging' shorebirds is essential year-round, but there may be special considerations needed during the time that these transients are actually in Saskatchewan.

Arctic-nesting shorebirds can be expected in Saskatchewan including the Manitou Lake area, from late April to early June, and again from late August through October.

The Migratory Birds Convention Act (1917) was a pivotal instrument for bird conservation by introducing year-round protection for many species, and regulated hunting including bag limits for others. Shorebirds once were favorite game for market- and presumably also 'sustenance-hunters.' This practice was slow to be regulated through hunting seasons, or closure, and bag limits. According to Alexander Wetmore (*in* Houston 1999), the Upland Sandpiper and Eskimo Curlew were still on the menu in upper class restaurants in Buenos Aires in 1921. The

protection that had been afforded in North America by the Migratory Birds Convention Act was slow to reach countries in Central and South America, where shorebirds reside in winter. In Colombia for instance, the Upland Sandpiper gained protection by law only in 1940 (Houston 1999). In many cases, protection by law satisfied a formal requirement but hunting for sustenance continued, in some cases possibly to this day.

4.1.5 Piping Plover. The following description of the natural history of this plover is largely based on Haig (1992). The Piping Plover took the name 'shorebird' literally. It spends virtually its entire life on the beach, at ocean shores, in bays, on inland lakes and rivers, and temporary ponds. It uses primarily the very edge of the water and a narrow upland strip. Bathing seems to be the only time when it gets deliberately wet.

Piping Plovers feed on aquatic and terrestrial invertebrates. At the water's edge, they capture those invertebrates that are vulnerable after having been whipped up by wave action, or left behind in the film of receding water. On the Great Plains, aquatic invertebrates include mostly aquatic insects in the larval stage. The plovers also run down terrestrial insects on the beach and seem not to take them in flight.

To raise their brood, Piping Plovers begin by making a depression in the sand. This inconspicuous depression is then lined with items found nearby, including pebbles and sometimes broken shells from snails or clams. The male and

female appear ritualistic when they line their nest, tossing items with their bill. During egg laying and the 4-week incubation period the plovers are 'tied' to this spot, but soon after the young hatch, the family is able to move to other areas on the beach. The young fledge at three weeks of age.

In some areas, Piping Plovers apparently can raise a second brood (Bottita et al. 1997), which illustrates a high reproductive potential when conditions are appropriate. Two-broods per year have not been observed in any Canadian populations (East Coast, Sabine Dietz and Roland Chiasson pers. comm.; Prairie, Wayne Harris and Margaret Skeel pers. comm.).

Concealment and camouflage are essential features in the Piping Plover's life, especially during nesting. Nests are sometimes near larger objects such as logs or boulders, presumably selecting rough areas which large animal might avoid. Piping Plovers have many predators of eggs and young, including mammals and birds (Sect. 8.7). Their reliance on shores predisposes the plovers to predation, because these water bodies are visited by many animals in an arid landscape where water bodies can be rare. Human activity also is often concentrated at shores and this can result in conflicts. Rushing storm water sometimes washes away nests, and others are flooded when water levels are drastically altered in reservoirs.

4.1.5.1 Population status and requirements.

Attempts to protect the declining Piping Plovers have been many. Plover numbers on the Great Plains continue to decline (from 3,469 in 1991 to

3,284 in 1996), but they increased in Saskatchewan from 1,172 to 1,348 over this period (Skeel et al. 1996). Along the Atlantic Coast, numbers are maintained, no doubt due to the intensive protection measures including limiting human, vehicle or other recreational travel along shores. Plovers of the Great Lakes are showing an increase in recent years (Paul Goossen, pers. communication).

In Saskatchewan, Piping Plovers are widely distributed (Smith 1996), often with only a few pairs at any one lake. Also, as habitat changes, the plovers are often forced to select different sites. Suitable Piping Plover habitat is dependent on water level fluctuation. If water levels are low for successive years, vegetation invades the broad beaches and Piping Plovers move away, apparently due to a shortage of exposed beaches. A broad beach or mud flat with nearby water is a requirement (Skeel and Duncan 1998).

4.1.5.2 Plover numbers in the IBA. Piping plover numbers have been more carefully monitored in recent years. Detailed surveys were identified as a priority in the recovery plan which was first approved in 1989, and confirmed in the updated plan prepared in 1997.

The numbers of plovers (Table 3) show three things. i) Manitou Lake and the smaller lakes in the sand hill complex are an important area for plovers, and ii) although numbers fluctuate they continue to go down. iii) The

considerable number of single birds may also be of concern, possibly reflecting early nest losses, an imbalanced sex ratio, that habitat suitable for breeding is declining or a combination thereof. The western (Alberta) portion of Salt lake supports particularly high densities of Ping Plover (Table 4).

Reflex Lake is located entirely in Saskatchewan and known as Artland Lake. In most years adults were counted both in late May and again when broods had hatched, and these counts generally differed.

	<u>Salt Lake</u>		<u>Artland Lake</u>
	Adults	Nests	Adults
1984	15+		
1985	5-28	5	
1986	28-46	8	
1987	35		
1988	9-15	1	
1989	7-20	4	
1990	21-34	6	
1991	1-21	3	0
1992	2-12	2	
1993	14-31	2	
1994	14-26	18	
1995	1-37	19	1
1996	26-36	19	2
1997	12-33	17	
1998	27-69	9	
1999	37-69	34	
2000	44-56	23	

Table 4. Number of adult Piping Plovers and their nests observed at Reflex Lakes. West Reflex Lake straddles the Alberta-Saskatchewan boundary and is locally known as Salt Lake. East

Table 3. Complete (bold) and incomplete counts of Piping Plover in the Manitou Lake area during the years of the international census 1991 & 1996, and some intervening years. Reflex Lake includes the SK portion of the west portion, the eastern portion and Schopfer Slough. Data from Skeel et al. (1996).

Year	<u>Manitou</u>			<u>Wells</u>			<u>Freshwater</u>			<u>Reflex, SK</u>			Total
	Pairs	Single	Total	Pairs	Single	Total	Pairs	Single	Total	Pairs	Single	Total	
1979	≥1	?	≥20 ^a										>17
1982	1	1	≥3 ^a										> 3
1984	11	5	>27 ^a										>27
1985												2	> 2
1986	≥20	?	>44 ^a										>44
1988												>2	> 2
1990							1	0	2				> 2
1991	51	9	111							3	2	8	119
1993	≥5		17										>17
1994	21	7	49										>49
1995	?		83	?	?	2	?				1	1	>86

1996	21	21	63	0	1	1	10	1	11	4	1	9	84
a Only parts of lake shore searched.													

The Manitou Lake area is part of a band of prime Piping Plover habitat that stretches across Saskatchewan, from south-central to mid-west. This band coincides with the Missouri Coteau, or the eastern edge of the '2nd Plain' (2nd Step) rising toward the Rocky Mountains. Finally this band also coincides with locations of major saline lakes in Saskatchewan. This context should be further examined from an ecosystem perspective, especially considering that water levels are declining in some of these lakes (Sect. 8.4) and in view of potential climate change.

4.1.6 Ducks. The four pillars of waterfowl management and conservation are: habitat protection and enhancement, facilitating reproduction, minimizing losses to disease and regulating harvest. The Manitou Lake area is ranked regionally important for breeding ducks, regionally important for moulting and migrating ducks, by Poston et al. (1990). For geese, it is ranked locally important for breeding and regionally important on migration. The area did not achieve national importance for waterfowl.

There is one waterfowl management project in the Manitou Lake area, the Marsden project (Sect. 6.4.6).



5. Other elements of high conservation value

According to Thorpe and Godwin (1993), the Manitou Lake area is rich in plant biodiversity. Based on their in-depth survey, they concluded that

"...the areas surveyed were grouped into 17 broad vegetation types. These included upland grasslands, shrub lands, aspen forests, moist woods, wetlands dominated by shrubs and herbs and saline areas."

Almost 400 species of plants were identified, including nine species that are considered rare:

- Sand-dune Wheatgrass
- Crawe's Sedge
- Porcupine Sedge
- Sand Nut-grass
- Marsh Felwort
- Annual Skeletonweed
- Small Yellow Monkeyflower
- Elephant'shead
- Common Butterwort

"Rare plants occurred mainly on active sand dunes or wetlands. The entire area is significant for conservation because of their largely natural character of the vegetation, the high diversity of species and vegetation types, and the interesting mixture of southern grasslands with northern boreal vegetation, including peat lands. Features considered

particularly significant for conservation included certain large and diverse wetlands, areas with active dunes, and saline areas."

Lake	% Crown	% Private
Manitou	50	50
Wells	0	100
Reflex	50	50
Freshwater	100	0

6 Human Context

6.1 Land Ownership

Permanent water bodies such as the series of lakes in the IBA are Crown owned. In cases where there is no river involved that crosses provincial boundaries, the management responsibility for the lakes lies with the province.

More than 90% of the privately owned land in the Manitou Lake area has been cultivated (Fig. 3). Public ownership and the presence of native vegetation (e.g. Sect. 7.5) coincide closely. On average, the privately owned land is also more suited to cultivation ("moderate limitation;" Fung et al. 1999) than are the sand hills ("extremely severe limitation"). The lands surrounding all four lakes (Table 5) favoured by birds are either privately owned, going north and east, or consist of Crown land operating as Co-op Pastures (Sects. 2.2.10, 6.4.3). The Co-op pastures involved are listed in Table 6.

Table 5. Land ownership around the various lakes in the IBA. Percentages are approximate.

6.2 Historical land use.

The Manitou Lake area holds special significance for different groups of aboriginal peoples. The diverse historical uses are documented by the Manitou Lake Historical Association Inc. The Association has documented local history through oral histories revealed by both First Nation and non-First Nation Elders from the area. This historical background was provided by Murray Ball (Appendix 1).

While the Manitou Lake area became part of a large block of land claimed under Treaty No. 6 signed in 1876, the area apparently had been used by different aboriginal groups on and off as part of their traditional movements. The area had been settled by a small band of Cree and Saulteaux in 1774 when other Cree and Saulteaux signed Treaty No. 4 in SE Saskatchewan. This group, later known as the Manitou Lake Band did not take either treaty, and occupied the area until 1939, at which time the last of them were forced off.

Poundmaker First Nation held traditional uses on some lands in the Manitou Lake area, through Eva Antoine, mother of current Chief Antoine. Eva Antoine was originally from the Manitou Lake Band and has sponsored a feast at the First Nation graveyard at Manitou Lake most if not every year, for the past several decades. Poundmaker First Nation sent a representative to participate in the Integrated Resource Management process (6.4.3). The band also has purchased land near Manitou Lake (Fig. 3).

In addition to Poundmaker, the current Chief of the Saulteaux First Nation, Fred Gopher,

is also descended from the Manitou Lake Band. Fred Gopher's aunt on the Saulteaux reserve has

also sponsored many feasts at the same grave yard. Similarly, the Chief of Little Pine First Nation is descended from the Manitou Lake Band, and several Elders have been conducting sweat ceremonies at Manitou lake continuously for at least the past 50 years.

Finally, the direct descendants of the most powerful historical chief of the Manitou Lake Band, Chief Opwam, are respected members of Sweetgrass First Nation. The Manitou Lake Historical Association Inc. has similar documentation of their continuous use of this land for traditional and spiritual purposes. In addition to all this, aboriginal peoples continue to travel from other First Nation communities to conduct sweat ceremonies and vision quests at Manitou Lake.

As mentioned above, the area south of Manitou Lake was settled in 1874, by the Cree and Saulteaux who first raised horses and then cattle. These people built log houses and barns and even a community hall along the banks of Eyehill Creek.

The Manitou Lake region was known as a source of fur by 1800. It was explored by John Palliser in 1857-59, and in 1879 by John Macoun (Fung et al. 1999). Macoun is known for 'painting a rosy picture' of the capacity of the prairies for European style agriculture.

The first non-First-Nation settlers arrived in 1905.⁴ The strongest wave of settlement took

place after the Grand Trunk Pacific Railway arrived in 1909. The Immigration Hall at Yonker was built in that year also. The next railway line to reach the area was laid in 1927 through Neilburg and Marsden. Settlement was nearly complete by 1918 (Murray Ball, pers. communication).⁵

The Manitou Lake - Eyehill Creek watershed lies close to the eastern edge of Palliser's Triangle, an arid region of southern Saskatchewan and Alberta which Palliser declared as marginally - if at all - suitable to European-style agriculture.

Table 6. Pastures in the sand hill complex of the Manitou Lake area, operated as First Nation or Co-op pasture, or single-ranch grazing leases.

Pasture	Km ²	Lake
First Nation		
Poundmaker	15	Manitou
Grazing Co-op		
Airdale	23	Little Manitou
Alpine	23	
Artland	48	Manitou
East Manito	17	
Gordon	17	
Island	18	
Little Manito	11	
Lodge Lake	29	
Manitou	77	Freshwater&Reflex
North End	29	
Vera	46	
Yonker	33	
Grazing lease		
Bush	6	
Charann	5	Manitou

⁴ Murray Ball's grandfather settled north of Manitou Lake in 1905, and the Schopfer homestead N of Reflex Lakes, was settled in 1906.

⁵Settlement history is summarized by Marion L. Jouan in her three books entitled Big Manitou country, A lily bloomed, and Grahams of Montrose.

Graham (Island)	9	Manitou
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6.3 Current land use.

On privately owned land, the dominant crop grown is wheat (50%), followed by other grains, oilseed, forage and specialty crops in descending order of importance. There are apparently no large ranches in the region but more than 25% of the farms include cattle⁶ (Fung et al. 1999; Sect. 7.4).

6.3.1 Oil and gas extraction. There are pockets of oil in the region but the resource is not as concentrated as it is further north, near Loyminster, or south, near Kindersley. Oil extraction is taking place primarily outside of the region with limited development at the sand hill fringe (Sect 6.4.3).

6.3.2 Tourism.⁷ Two towns exist in the Manitou Lake area. Marsden includes 250 residents and Neilburg 350 (Fung et al. 1999). According to Fung et al. (1999), Neilburg has fewer than 5 businesses offering accommodation, Marsden has none. There is one museum in Neilburg. Two regional parks exist in the region, one at the north

⁶ Recently, adequate market prices for cattle have encouraged an expansion in production. Now this percentage may be considerably higher.

⁷"Tourism in Saskatchewan generates \$1.14 billion annually for the provincial economy, employs 42,000 Saskatchewan people, and is the province's fourth largest economic sector. By 2010, it is expected to employ 65,000 workers and to generate revenues o \$2 billion annually. " (Saskatoon Sun, 4 June 2000, p. 17).

shore of Manitou Lake and one at Sufferin Lake (Fig. 3), with a campground at each. A third park exists immediately across the boundary in Alberta, at Reflex Lake. Three outfitters in the Marsden and Neilburg area offer trail rides, and outfit for waterfowl hunting. There is one golf course near Marsden.

6.4 Conservation management achieved at the sites

This section highlights activities by some organizations that are active and visible in the watershed. This list is likely far from complete even including the initiatives described in Section 2.2. Most of all, this list does not give due credit to the day-to-day choices people make in their own lives that advance - or discourage - conservation one step at a time. One is reminded by the sage advice of unknown origin '...to heed only the important things in life, but to know that all things important are small.'

6.4.1 The Wildlife Habitat Protection Act is one conservation tool protecting 3.4 million acres of public lands. This Wildlife Habitat Land ensures that the land cannot be sold by the government, but allows oil and natural gas extraction, electrical-, radio-, and telecommunication transmission lines, livestock grazing, haying, and cultivation where the land

had been cultivated prior to inclusion in the 1970s or 1980s. This designation only offers nominal protection, but the concern was that more far-reaching protection would not have passed cabinet at the time (Thornton et al. 1995).

6.4.2 Conservation Easements Act. The Saskatchewan Environment and Resource Management web site states: "A conservation easement is a voluntary legal agreement between a landowner and a qualified conservation agency. Under this agreement, the landowner continues to own and manage the land with benefits to both the landowner and the environment. As a landowner, you can take steps to preserve your property's conservation values, retain use of the land, and at the same time receive income tax benefits.

A conservation agency of your choice can assist you in preparing an agreement. A conservation easement can be granted for a specified time, or in perpetuity.

Granting a conservation easement means you are preserving the environment value of your land for the future. If the easement is granted in perpetuity, the natural values of the property will be protected indefinitely, no matter who owns the land in the future. The donation of a conservation easement is viewed by Revenue Canada as a charitable gift. The value of the gift is the difference between the land's value with the conservation easement and the best land-use value without the easement. This taxable benefit may be observed at the time of donation or extended over five years.

If the land is sold, the conservation easement will be transferred with the property, and terms of the easement will remain. These arrangements may also ease the financial burden of inter-generational land transfer. In some instances, conservation agencies may be willing to purchase an easement on privately-owned lands."

6.4.3 Manitou Sand Hills: Integrated resource management plan. The plan divides the region into a prime conservation area, a special management area and a multiple use zone with permitted and not permitted land uses and activities (Fig.4).

In their plan summary, the Manitou Sand Hills Land Use Planning Committee (1996) states: "The Manitou Sand Hills are located in the west-central part of the province. The area is environmentally sensitive, is biologically diverse and has a number of rare and endangered species. The area supports a broad range of land and water uses including agriculture, grazing, oil development, and recreation. Abundant wildlife, freshwater lakes and a scenic environmental setting provide ample opportunity for a host of recreational activities such as fishing and hunting.

The competing use of land and increased pressure on government agencies to protect local environment provided the incentive to develop an integrated Resource Management Plan for the Manitou Sand Hills. As part of the land use planning process, public meetings were held to identify local concerns and provide stakeholder input. These concerns provide a basis for developing the plan. Information was collected on local resources and land use, and incorporated in the plan as background material. The plan is also supported by an independent bio-physical study of the Manitou Sand Hills.

The plan focuses on three land use policy (planning) areas which include the Prime Conservation Area, Special Management Area, and Multiple Use Area. The Prime Conservation Area provides the highest level of environmental protection and control over land use activities and developments. The intent is to preserve and maintain a representative area. The Special Management Area provides a high degree of environmental protection, but allows

flexibility for land use activities and development located outside of extremely environmentally sensitive areas. The Multiple Use Area provides for sustainable management of a broad range of land use activities and development. The Multiple Use Area encompasses the majority of Crown

land in the planning area and provides the lowest level of restriction on development.

Land use policies focus on development and land use activities, water resources, archeological and heritage resources, tourism and recreation, wildlife, range management, oil and gas exploration and development and reclamation. Combined, the three land use policy areas support and assist in the continuation of traditional land uses and activities, and support new land use and development where it is environmentally and economically sound.

Implementation will be a key component of the plan. The plan identifies the government agencies and interest groups which will assist in implementing the plan. Further work will be required in development of specific management plans (e.g. wildlife and range management plans). A report is to be prepared by the Ecological Standards Committee which will address the possible access of oil and gas exploration and development in the Prime Conservation Area. A consultation process will be developed with local First Nations on development and land use activities. The plan will be monitored on an ongoing basis by the regulatory agencies and with future stakeholder consultation when changes are contemplated.

Appendices are included which provide guidelines for development and land use activities in the Manitou Sand Hills. The guidelines support the plan and will provide proponents with a clearer understanding of what is expected when making applications for development or carrying out certain activities on the land.

6.4.4. West Reflex (Salt) Lake Habitat Enhancement Project. An attractive sign at the entrance to a small regional park on the Alberta side of Reflex lake displays the location through a series of embedded map, a photograph of a Piping

Plover and one of a nest, the names and logos of 11 funding partners and the local landowner. Some of the text describes the natural history and pertinent requirements by Piping Plovers. It also reads: "Foot Access only. All recreational users are asked to respect the importance of this habitat area, especially during the critical period of May through July." Approximately one half of this lake, locally known as Salt Lake, which is part of the Reflex Lake complex is located in Saskatchewan.

6.4.5. Drinking water and cattle distribution.

To discourage cattle from trampling over prime Piping Plover habitat (Sect. 8.6), the Manito and Reflex Lake Grazing Co-operative has developed drinking water sources for cattle (e.g. MacCormack 1996). This is a win-win situation since cattle prefer to drink freshwater in preference to the saline water where plovers frequently nest. Also, cattle health and growth is enhanced when high quality drinking water is provided (W. Wilms, Agric. & Agri-Food Canada).

Water management was supported by a grant to the Manito Cattle Breeder's Co-op from the IBA Community Action Fund.

6.4.6 Marsden Project Reservoir. This reservoir (Fig. 3) was build by Ducks Unlimited Canada in 1939, in cooperation with the Marsden branch of the Sask. Fish & Game League, now the Saskatchewan Wildlife Federation. A 650 m dam with a fixed-crest spillway has created a 2.4 km²

freshwater marsh. The aquatic habitat is diverse, with open water at the downstream end, a mix of open water and aquatic vegetation in the middle, and extensive cattail stands on the upstream end. The cattail stands were level ditched to increase the proportion of open water making it more attractive to breeding ducks. Ditches are in a zigzag configuration to reduce visibility between territorial drakes thereby increasing the density of territories for breeding pairs. The diversity of habitat types within the marsh meets the requirements of breeding, molting and staging waterfowl as well as providing benefits to a variety of other wildlife species. This reservoir also provides drinking water for cattle.

7 Opportunities

If the birds in the IBA do not exist in isolation of the people, and *vice versa*, and if people and birds are not independent of the ecosystem, then the aim of this conservation plan will be well served by pointing out those circumstances which can help the combined cause of conservation and quality of human life.

7.1 Conservation infrastructure: The Integrated Resource Management Plan.

Many hours have been spent by many local people, administrators, and biologists to arrive at a consensus between different interests, as outlined in the management plan. This investment in time and sharing of ideas, represents a gain in 'social capital' and provides a great opportunity for this area. Given this background, options might be explored as to how a local community can protect a combined and democratically chosen resource and conservation goal. What mechanisms exist for people to protect the Manitou sandhills, the lakes, the birds and their way of life in perpetuity from conflicting outside or inside influences?

7.2 First Nations and conservation values.

Aboriginal peoples have deep roots in the Manitou Lake area, including spiritual values (Sect. 6.2, Appendix 5). This represents an additional impetus for conservation.

Some conservationists feel that our approach to land and environment could benefit from some aboriginal values; others feel that both North American aboriginal and Euro-American values need updating.⁸ Clearly the existence of a cultural tradition alone - no matter how appropriate - is no sure-fire way to human sustainability. However, an inappropriate tradition is even less promising.

⁸ Andrew C. Isenberg wrote "The Destruction of the Bison: An Environmental History, 1750-1920." (Cambridge University Press, New York, 2000). In a review of this book, James E. Sherow writes " Stereotypes run deep, and into our lives they will creep. During the past several decades, some scholars have depicted Native Americans as the first "environmentalists." But do such notions of Indian peoples and their hunting practices hinder or promote an understanding of the world in which they once lived and, by inference, the manner in which we understand the ecosystems that support our lives today?"

Andrew Isenberg, a professor of history at Princeton University, offers us an answer. In "The Destruction of the Bison," he argues that the 19th-century decline from an estimated 30 million to fewer than 1,000 bison began with a "nomadic" Indian economy "based on the unsustainable exploitation of the herds." The "destruction" accelerated as Indians and EuroAmericans fought for control of resources on the plains. And, keeping EuroAmericans on the hook, Isenberg claims that their slaughter of the bison herds "to pacify the plains nomads...did not exploit the peculiar frailty of a primitive society; when they capitalized on the nomads' ecological Achilles' heel they exposed the fragility of all societies, including their own, that rely on the unsustainable exploitation of nature."

In his three-part CBC Ideas series entitled "Men and animals: Building a new relationship with nature," and his subsequent book, Herscovici (1984) describes in detail Cree cultural traditions, the philosophical roots of our current ecological crisis, and the emerging animal rights movement. Herscovici's main sources on Cree culture were Thomas Coon and other members of the Grand Council of the Cree in Val d'Or, Quebec.

On p. 66-67, Herscovici concludes: "So, we find that reciprocity in the aboriginal human community is intimately linked to an attitude of reciprocity between people and nature, and maybe there is a lesson in that for modern society in which we seem to have terrible environmental problems. We seem to have a lack of respect and understanding about nature, leading us into various kinds of problems. And perhaps those problems would be less severe if the relationship between people in our society were better and less exploitative, and more in a spirit of reciprocity. Perhaps that's one of the things that traditional hunting societies have to teach us....."

Today it is native groups who are fighting the hardest to defend the land from further devastation by hydroelectric dams, gas and oil pipelines, mines and their inevitable camp followers of roads, boom-and-bust towns, all-terrain vehicles and a population with little commitment to the land.....

Many in the ecology movement express admiration for the holistic spirit of the Indian view of nature, and it seemed for a time that the environmental movement might give us one last chance to profit from the ecological wisdom of Indian society: Maybe North America could become the setting for a fruitful marriage of European and Indian traditions."

7.3 Hunting and fishing

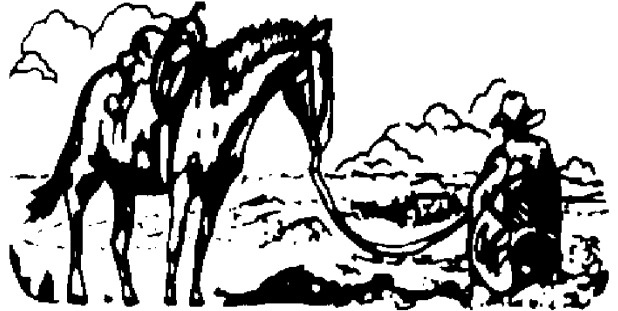
While some conservationists hold the need for protecting biodiversity and ecosystems above all else - a cause that needs no justification, others are pragmatic. Given diverse interests and stakes in society, it certainly is easier to mobilize action the greater the supporters.

According to Filion et al. (1993), 22.6% of Saskatchewan residents fish and 6.2% hunt. Both hunting and fishing is practiced in the Manitou Lake area. The need for water quality and human health has been outlined, and this issue is more pressing when people fish recreationally and take their catch to the table. It is a devastating condemnation of our time that we have allowed pollution to go so far as to make wild-caught fish dangerous to eat - a soiling of the only planet we have.

Canada has a tradition of public ownership of wildlife. A recent erosion of this tradition (White 2000) is of considerable concern to hunters and biologists alike. Hunters cannot pay landowners for the wildlife harvested, but in some cases in Saskatchewan hunters pay indirectly, for access to land. There are some concerns in such a system that need to be carefully negotiated.

A sign addressing hunters reads: "The Manitou Sand Hills Integrated Management Plan has identified this area as part of the Prime Conservation Area. Your cooperation is requested in keeping all motorized vehicles on

designated trails. Vehicles discovered off of these trails (except to retrieve legally taken game) may result in all occupants being charged under the Saskatchewan Wildlife Act 1997, Sec. 42(2). Signs courtesy of Saskatchewan Wildlife Federation"



7.4 Range Management.

Conservationists increasingly accept that prairie ecosystem conservation and ranching have much in common (Schmutz 1994, Page 1997, van Tighem 2000). This viewpoint represents an opportunity for co-operative cross-sectoral solutions. Groskorth (1998) has shown that plant biodiversity in the mixed grasslands of Saskatchewan peaked in the 'fair' to 'good' range categories (Fig. 5). This conclusion was corroborated by Bai et al. (1998) who examined sites in the mixed, moist mixed and aspen parkland ecoregions.

Grassland ecosystems have evolved under the influence of grazers, from the large and once numerous bison to mice (voles) and grasshoppers. For this reason the link between grazing, biodiversity and ecosystem stability is not surprising. While the goals of range management

are to maintain good-excellent range condition - to the right of the biodiversity peak - most pastures in practice include nearly the full spectrum of conditions. Despite attempts to achieve even grazing pressure, cattle will overuse some areas (near water, salt blocks or gates) and underutilized others. This within-pasture-diversity in range condition is also fortuitous, because some species prefer slightly overgrazed sites (Horned Larks, Richardson's ground squirrels and grasshoppers), and others underutilized sites (mice and voles, Baird's Sparrow). The result is a complex and

interdependent prairie ecosystem where human use is an integral part.

The criticisms that have been raised by some against beef 'producers' have been mostly directed at the feedlot segment of the long production chain from cow-calf operator to consumer. Feeding grain to cattle is highly inefficient and costly from an environmental point of view. The feedlot 'finishing' process could be much shorter than in prevailing practice. The grassland conservation opportunity arising from a well managed traditional ranch is potentially enormous.

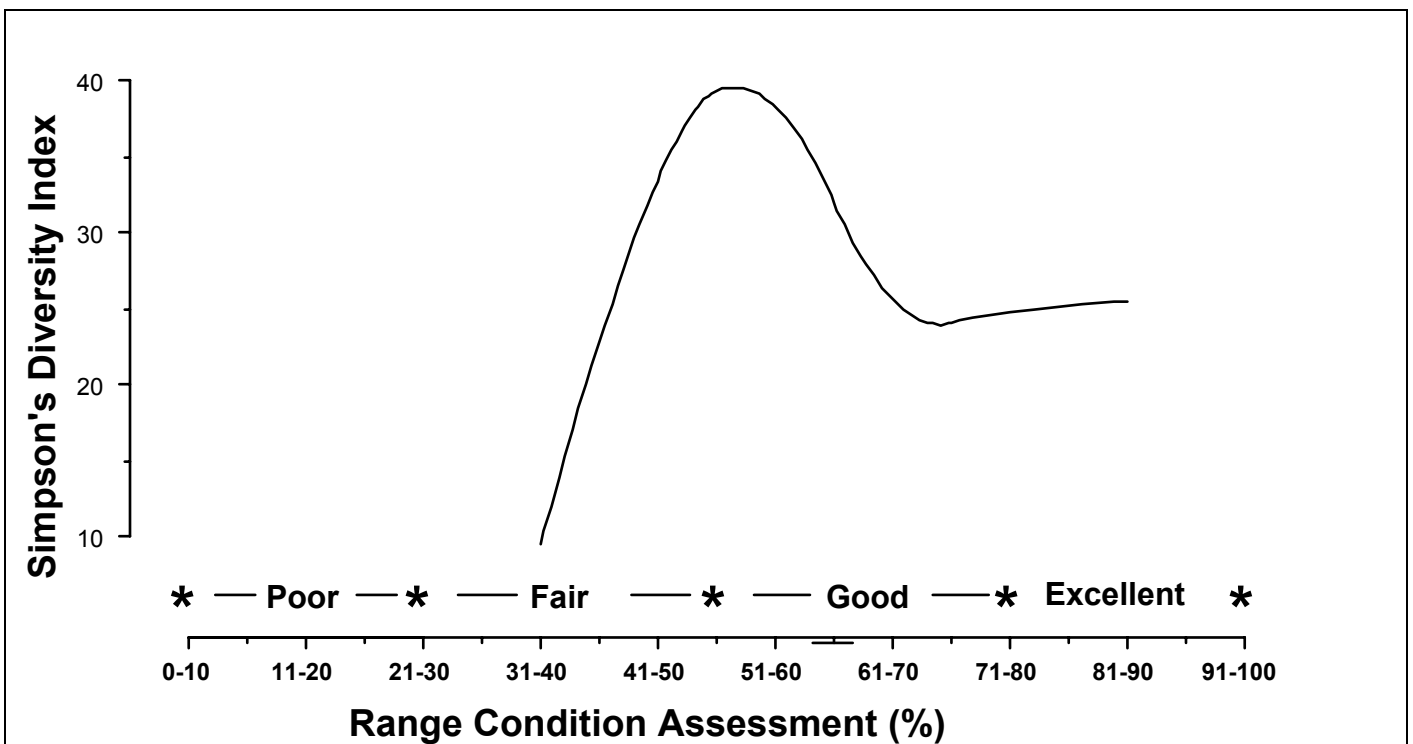


Figure 5. Plant species diversity estimates from study plots in the Saskatchewan mixed grass ecoregion are compared with a standard method in which range condition is assessed. The two methods measure

communities differently. The data show a generally accepted trend of peak diversity under fair to good range condition.

7.5 Crown lands.

The conservation of Crown lands is critical given how much has been lost. These grasslands represent a conservation opportunity in perpetuity. Here, land uses should be buffered from short-term market signals that could undermine grassland conservation. Crown-owned lands also represent an opportunity for incorporating societal benefits, such as biodiversity conservation, recreation, and land and water quality.

According to Gayton (1991), the exact area that remains of each of tall-, mixed-, and fescue grasslands and aspen parkland with fescue is unknown. Using Canadian Wheat Board statistics and adding acreage for provincial and PFRA community pastures, he estimated that approximately 11.3 million acres of native rangeland remain in Saskatchewan. This represents only 17% of the province's original area of grassland.

According to Thornton et al. (1995), "the Saskatchewan government, through Saskatchewan Rural Development [now Saskatchewan Agriculture and Food], owns and administers over 9 million acres (36,423 km²) of Crown land designated as 'agricultural.' Included in those 9 million acres are over 7 million acres of grazing land. Saskatchewan Rural Development estimates that more than 95% of their grazing land are native range. The Prairie Farm Rehabilitation

Administration holds title to over 1.3 million acres of Saskatchewan grazing land. They estimate that 80% of their titled acres remain as native rangeland." Together, they administer 68% of Saskatchewan's native grasslands.

Because most of Saskatchewan's extensive grasslands are Crown-owned, public land policy is highly relevant to grassland conservation. Saskatchewan's Wildlife Habitat Protection Act is one tool for protection that includes 3.4 million acres (Sect. 6.4.1).

Various policies threaten the conservation-minded administration of Crown lands. Lands that are not Wildlife Habitat Land or otherwise restricted are for sale with the purpose to "improve the equity base for farm operation and agriculture in Saskatchewan" (Thornton et al. 1995). Range improvement assistance may, according to Thornton et al. (1995), reward mismanagement by encouraging overgrazing through the subsequently reduced lease rates. Another threat is the conversion of native range to tame pasture. Finally, when the government moved from a land tax based on the land's production capacity to one based on the land's market value, taxes on marginal lands increased out of proportion to other lands. This placed pressure on extensive ranchers to recover this extra cost somehow (Panel, Fifth Prairie Conservation and Endangered Species Conference, Saskatoon, 22 Feb. 1998).

Thornton et al. (1995) challenge that the "policy governing the management of federal and provincial grazing lands should be rewritten to

reflect public rather than solely agricultural interests." The Saskatchewan Round Table on the Environment and Economy (1991:23) suggested that "Governments and agricultural producers must develop programs and policies to ensure the sustainable use of grazing resources" to

1. Develop management plans for all grazing lands to ensure sustainable use of grazing resources and to achieve multiple land use objectives.
2. Manage all remaining native rangelands to maintain Saskatchewan's biological diversity. Restore damaged areas to productive rangelands.
3. Retain grazing policies and programs that support retention of native prairie ecosystems."

Saskatchewan Agriculture and Food has created a Crown Land Stakeholder's Forum with the mandate "To provide advice to the Department on agricultural Crown land policy development that helps promote the sustainable and integrated use of Crown land while providing opportunities for diversification and economic growth." This forum was to help draft a new policy to replace land lease legislation coined in the 1960s. The inaugural meeting was held on 9-10 February 2000, followed by a meeting on 12-13 April. The committee overseeing the forum is given a two-year period within which to review accomplishments and make recommendations.

7.6 Bird Trails.

'Bird Trails' have been established in many parts of the world. In these trails, birds are the theme used to attract visitors and to realize tourism opportunities. Bird watchers have become the largest of nature-loving groups. Bird watchers, or birders, look for birds to identify them as a primary hobby, ornithologists study birds professionally, and naturalists appreciate birds and other living things as members of larger living communities in their environments. The Bird Trail initiative is part of Saskatchewan's Ecotourism strategy, complemented by an Agritourism strategy (Pam Wight and Associates 1998).

In Saskatchewan, 648,000 people aged 15 or older participated in nature-related activities in 1996, for a total of 41 million person-days and an expenditure of \$388 million. Wildlife viewing on nature-related trips was reported by 15.1% of Saskatchewan residents (Filion et al. 1991).

Based on experiences in other areas, several requirements enhance a trail's success. Access must be appropriate - the Manitou Lake area is on a paved highway 170 km from Saskatoon. Opportunities for physical activity should be provided. Information on birds, natural history and other elements should be provided. Visitors should be tolerated or welcomed by local residents. Guidelines should be drafted to minimize ecological impact. Promotion and marketing should be both effective and realistic. Rewards should be shared with the local

community. Services should be available and linkages to other attractions enhance success (Pam Wight and Associates 1998).⁹

7.7 Strategic cooperatives.

Bird watchers and the conservation minded public are growing in numbers (Sect. 1.1) and an opportunity may exist to enlist their help specifically for strategic conservation initiatives. Volunteer bird watchers already perform an important role in bird monitoring (Sect. 2.2.5).

Agricultural cooperatives exist in many forms, from machinery cooperatives to marketing cooperatives and to vertically integrated organizations. Recent conservation literature (e.g. Roberts et al. 1999) describes the notion of 'intentional communities.' One future option may be the formation of cooperatives uniting consumers and producers strategically around a product (food) that also has specific meaning

(bird conservation in an IBA). Such cooperatives may be local in scope at first, but there is little reason to think they cannot unite people over considerable distances (e.g. suburban Vancouver or Montreal. A focus on food is appropriate, because agriculture is the dominant landscape modifier in Saskatchewan's IBAs. A focus on food is furthermore important because the recent trends to ever larger industrial farms threatens landscape diversity and thus birds.

⁹Murray Ball and Joan Makaroff of Marsden offered horse drawn wagon trips in the Manitou Lake area under the name Blue Heron Nature Tours Ltd.. Food was provided on several-day trips with quality nature interpretation. They learned that the participants found this outing a very rewarding experience and well worth the fee. However, it was difficult to reach and attract the appropriate audience.

John Graham of Marsden offer 2-3 day trail rides from 15 May through 15 October.

Successful tourism requires an integrated strategy and diverse offerings by coordinated tour operators in an accessible area. There are ample opportunities in Saskatchewan, but their successful development is a challenge. If the pundits are correct, quality tourism opportunities will experience increasing demands in future. Therefore, existing ventures should be supported and future activities in the area should include planning for increasing tourism opportunities.

8 Threats

8.1 Shorebirds away from the Manitou Lake area.

Many species of shorebirds are facing population declines in North America. Sixteen species of shorebirds are on the decline, 1 is increasing, 15 remain unchanged and 15 have inadequate information to judge (Harrington 1999). In Canada, two thirds of the species of shorebirds show a downward trend (Dickson 1999). Threats that have been identified at a continental level include non-consumptive uses of shores by people leading to disturbances and energy losses by shorebirds, shore developments, shrimp farming, and coastal impoundments (Harrington 1999).

For instance, 90% of the coastal salt marsh acreage in the United States has been drained for mosquito management using ditches. In actuality, only about 5% of the drained area actually supported many mosquitoes. Changes are now in place to focus mosquito management more precisely. This represents an example of how knowledge of a species' ecology can save time and effort, and also reduce harm to the environment, through cooperation and conservation (Harrington 1999).

Gonzales and Vega (1999) have outlined how runoff from chemical agriculture, the depletion of shorebird food from shrimp farming, lead shot used in hunting, and wildlife depletion

through local consumption have impacted shorebirds along the coast of Sinaloa, Mexico. Sinaloa in particular and Mexico in general provides critical habitat to some short- and long-distance shorebird migrants. It has been estimated that one third of the shorebirds that winter in the Pacific coastal region of North America occur in two bays in Sinaloa. Here, industrial farming and aqua culture have increased rapidly after the North American Free Trade Treaty was signed. Hergott (1999) further outlines, but offers no source for the statistics cited, how shrimp aqua culture in over 50 countries from Thailand to Honduras satisfies increasing European and North American consumer demand, but threatens ecosystems and human social justice. Often an industrial scale shrimp food harvest places pressure on the food chain, and waters are over fertilized with waste. A prominent Indian environmentalist, Vandana Shiva, has calculated that for the 15 harvesting and 50 security jobs created in big-scale aquaculture, as many as 50,000 people have their traditional uses of the land and sea impacted. According to Sallaberry (1999), increasing tourism opportunities are encroaching on important staging areas in Chile, where this industry is unregulated.

8.2 A Complex of large and small wetlands.

Thousands of shorebirds stay in the Manitou Lake area to replenish energy on

migration. However, in addition to this area, countless small wetlands also support many shorebirds. Combined, these modest spots may be of critical importance. While the spectacular staging sites are critical for many migratory species, conservation should not stop there.

Management strategies should complement the natural history of the species. These shorebirds arrive from Central and South America on their way to breed in the Canadian Arctic. Most of these birds are small, some the weight of a chicken egg. They 'fly' a tightrope between energy demand for the 6,000-8,000 km flight, egg laying, incubation and tending young on the one hand, and having too small a body to carry enough energy for long distances on the other. Estimates are, that after a fattening stay, a

shorebird can fly 850-1,500 km before energy is depleted and a feeding stop is needed (Skagen and Knopf 1994). This is ever more difficult for the birds given estimates of prairie wetland loss in Saskatchewan of 35-50% since settlement.

8.3 Wetland dynamics

While a local freshwater or saline pond is often discounted as 'just a slough,' the biodiversity and ecosystem dynamics that operate there are complex. Figure 6 offers a glimpse into some of this complexity from the point of view of feeding lifestyles of shorebirds -- greatly simplified at that. If any one of the many factors that operate here is disrupted, this can be a threat.

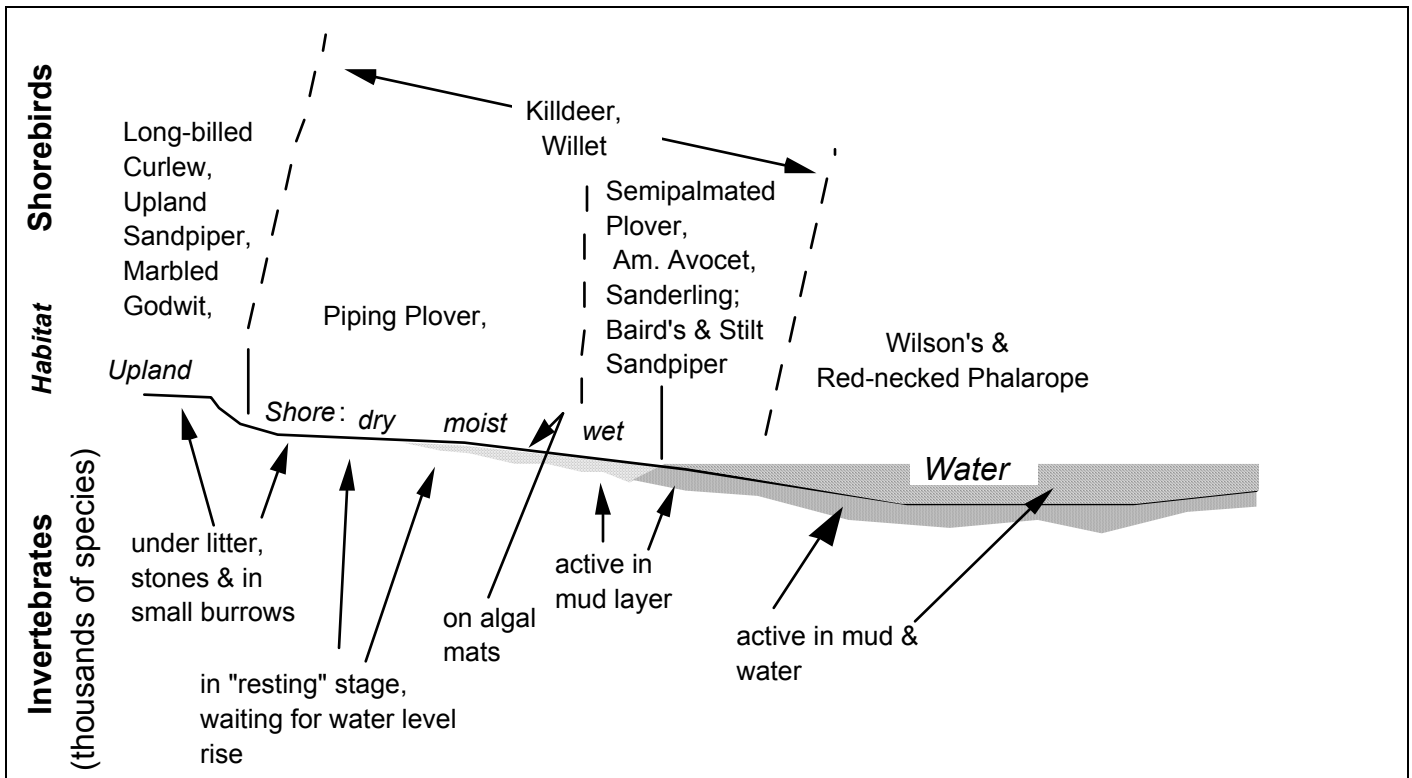


Figure 6. Different zones and characteristics of a pond affect how and where invertebrates species live, and the degree to which these are available to different shorebirds with different feeding strategies. Habitat use by birds is based on Skagen et al. (1999).

Different species of shorebirds occupy rather specific habitats along a shore or on a lake. Management strategies should be cognizant of different feeding styles and different small-scale habitats used at different times. Biodiversity relies on habitat diversity. Different feeding strategies by shorebirds include:

- gleaning, to peck, scrape or pry out insects in view on or near the surface of ground or water (e.g. Long-billed Curlew, Piping Plover or Sanderling).
- probing, using bill in soft mud to feel for and grab live insects or resting cocoons (e.g. Sanderling, sandpipers, Am. Avocet).
- scything, pushing bill through soft mud sweeping side to side in search of insects (e.g. Am. Avocet¹⁰)
- spin-swimming, phalaropes swim in tight circles and disorient insects in the water column making them easier to catch.

For insects to survive in their resting stage, a flood has to recur before their 'time is up' (even resting takes small amounts of energy and this can be depleted over years). Thus, blocking the regular occurrence of flooding and drying eliminates in a pond's seasonal cycle will impact insects. Prolonged droughts may be expected under climate change. Water impoundments in the drainage basin could have the same threat.

Insect resting stages die if they are exposed to the extreme drying of the sun.

¹⁰ A subtle connection between feeding strategy and habitat is illustrated here. Avocets tend to avoid sandy beaches, presumably because the bill would suffer too much wear during scything in this abrasive substrate and not retain its pincer-like feeding function.

Agricultural cultivation of wetlands in their dry period exposes insects to the sun, as does trampling by cattle. A trampled shore alters the soft mud layer and potentially reduces availability of insects to birds.

8.4 Water levels.

Historic photographs showed a substantial decline in water levels in Manitou Lake in recent decades (Murray Ball & Joan Makaroff, pers. communication). Rawson and Moore (1944) calculated the size of Manitou Lake as 114 km² in 1938. Recent measurements yielded 78 km² (Table 1)

A decline in water volume leads to an increase in salinity, since salts remain on the lake when virtually pure water evaporates. Salinity measurements that are available over time are from Rawson and Moore (1944) and from the Fisheries Laboratory of Saskatchewan Environment and Resource Management (Table 7). Salinity appears to be increasing. Rawson and Moore (1944) pointed to this trend already based

on their 1920-1941 studies. This trend was also evident in seven other Saskatchewan lakes studied by them.

Table 7. Total dissolved solids recorded at Manitou Lake over time. Data taken from Rawson and Moore (1944) and the Fisheries Laboratory of Saskatchewan Environment and Resource Management.

Parts per		
Year	Million	Source
1927	15,530	Rawson & Moore
1939	18,753	Rawson & Moore
1938	20,268	Rawson & Moore
1939	19,233	Rawson & Moore
1950	22,863	SERM
1951	14,308 ^a	SERM
1957	21,900	SERM
1974	24,726	SERM

^a not including Calcium

Increases in salinity present a considerable threat to the aquatic community and thus to birds using the aquatic or shore food chain. Rawson and Moore's (1944) data indicate that few species of fishes could tolerate salinity exceeding 10,000 p.p.m. and none more than 20,000 p.p.m. In their study, fewer and fewer species of small aquatic animals, including water flea, rotifers and relatives, were found in lakes as salinity increased and exceeded 20,000 p.p.m.

In the absence of periodic flooding, plants also may encroach on shorelines, thus altering the habitat to the detriment of shorebirds. Furthermore, without a periodic and life-stimulating saturation of the soil by flood water, invertebrates may remain dormant in their resting stage, or may die altogether in time (Sect. 8.3). Climate change is a concern.

8.5 Water quality and health.

In southwestern Saskatchewan, precipitation is low such that impurities are rarely if ever flushed out of the ecosystem via the surface or subsurface water route. Salts, sediments and pollutants accumulate and drinking water for wildlife, livestock and humans is difficult to obtain. Cattle gain weight more quickly when afforded good quality water (Sect. 6.4.5), and there is no reason to think that this is not also important for birds. Many local residents are concerned about the quality of their water.¹¹

In southern Saskatchewan, 44% of the land is treated with pesticides annually, and this too is a serious threat to water quality and the health of people, livestock and wildlife. In a study in southern Saskatchewan, Donald et al. (1999) found that in early July the average number of types of pesticides detected in wetlands ranged from 1.8 in areas with less than 21 mm of rain during the previous 15 days, to 3.2 in areas with more rainfall. The high rainfall areas resulted in greater erosion. As many as 60% of the wetlands had at least one pesticide in amounts that exceeded Canadian guidelines for the protection of aquatic life. Lindane and triallate exceeded these guidelines most often (Donald et al. 1999).

Tests for the presence of pesticides and pollutants in drinking water are costly. Even when funds are available for studies of pesticide exposure through drinking water, the task is difficult at best. Environment and water quality experts in Canada and around the World are given the virtually impossible task of deciding whether a given chemical or practice is safe or not safe. The public demands answers in a simplistic science-based yes-or-no evidence style. This approach is hopelessly mismatched to the complex natural system in which the chemical finds itself. A yes-or-no conclusion is impossible because once a synthetic pesticide leaves the sprayer nozzle, it becomes virtually impossible to track. Furthermore, when a given concentration of a pesticide is studied for impact on a certain life stage (e.g. adult but not embryo) of a plant or animal in the controlled microcosm of a laboratory, this does not automatically reveal its impact on different life stages in nature, its impact under the simultaneous exposure of two or more pesticides, or the impact of multiple exposures (Donald et al. 1999).

Detecting impacts on human health is furthermore complicated because symptoms of organopesticide exposure, for example, are often similar and dismissed as the flu; because they selectively impact children (Duehring 1996); and because they can interact in unexpected ways with other body functions (Fairchild 1999).

Given the scenario outlined above, how can a community avoid being paralyzed with uncertainty and concern? From a planning point

¹¹ At the Schopfer farm N of Reflex Lakes, recent tests of water quality showed that sulfur is now five times higher in concentration than it was 25 years ago.

of view, more and 'better' studies alone are unlikely to contribute new insight. Alternative ways of knowing, combined with community inspired and co-operative solutions, may be more fruitful (e.g. Roberts et al. 1999). Often a simple logic critically applied can be a good guidepost for action. This kind of logic is not only held by experts in research institutions or government offices, but is also in evidence wherever Canadians have a healthy debate.

8.6 Trampling by cattle.

Cattle gathering in large numbers on beaches can be detrimental to Piping Plovers by altering substrate layers from an even layer of moist soil that attract insects and allows some probing, to ridges of dry soil interspersed with wet foot prints. Also, when foot prints are deep, recently hatched young can fall into them and eventually die (Richardson 1999). In some cases, management efforts have resorted to excluding cattle through selective fencing. This can also be disadvantageous by providing roosting sites for avian predators and altering vegetation structure in time. Perhaps the most effective scheme is to use herd management strategies to minimize impact, such as the timing of grazing, and the relocation of watering sites (Sect. 6.4.4), salt blocks, rubbing posts and gates that are favorite gathering sites.

8.7 Predation.

Predation is clearly a natural process, but its balancing factors can be out of synchrony when ecosystems change (e.g. Clayton and Schmutz 1999, Richardson 1999). The encroachment of woody cover toward the shores where piping plovers nest, could be a threat. Such cover provides concealment and therefore close access for mammals, and it can attract bird predators.

According to local residents, small gulls with black heads (Franklin's and/or Bonaparte's gulls) are commonly observed around Reflex Lakes each summer. Bonaparte's Gulls are likely a greater threat to Piping Plover than the highly insectivorous Franklin's Gulls.

8.8 Exotic species.

With the advent of increased transportation of products around the globe, and intended and unintended imports of species - the 'homogenization' of the World's species - brings both benefit and harm.¹² This challenge, with

¹² In a section entitled "The dilemma of free trade," Driesche and Driesche (2001:15) state: "Laws prohibiting the entry of a given type of product on grounds of prevention of invasions have at times been attacked as protectionist measures in disguise. Under current world treaties on trade, such practices are subject to challenge by the country whose products are excluded..."

examples of serious damage in some cases, is living proof of the validity of community ecology, or of the contention that species rarely exist or function in isolation of other species in the community to which they belong. Species can play an integral part in one community and be a serious pest in another.

Leafy Spurge is one invasive exotic species that threatens range resources. Leafy spurge had taken hold on the rangeland W of Manitou Lake (Candy Schopfer & Todd Jorgenson, pers. communication). Initially it was treated with a herbicide and in recent years with biological control insects. The beetles have stopped the weed's expansion, but have not yet eliminated it.

In a study in Manitoba, Belcher and Wilson (1989) found Leafy Spurge to be one of three Eurasian invaders, along with Kentucky Blue Grass and Smooth Brome Grass. They quoted an experimental study that showed that disturbance by humans promotes the establishment of Leafy Spurge; 45 times more seeds established themselves on bare soil compared to undisturbed vegetation. Where any of the three alien species occurred in their study, coverage of native species was decreased, such

"Efforts to limit trade to prevent pest invasion and protect local biodiversity will increasingly have to be defended in World Trade Organization dispute panels against opposing interests whose economic concerns would be hurt by such restrictions. How will the still-uncertain ecological and economic costs of potential invasions be judged against the easily quantifiable economic costs if permission to import a specific good is denied? What is missing is a broad body of knowledge of the social and economic consequences of nonnative species invasions."

that leafy spurge is considered "...a considerable threat not only to the economic use of prairie rangelands but also to its conservation as native vegetation." In Belcher and Wilson's study area, of 83 leafy spurge infested sites, 49 were centered on trails, fireguards and roads, and 30 on disturbances caused by track vehicles; only 4 sites were not associated with a visible soil disturbance.

David Pimentel and others have summarized the dilemma of alien species, as described in the following report (full report available at http://www.news.cornell.edu/releases/Jan99/species_costs.html).

"A few bad actors among the more than 30,000 non-indigenous species in the United States cost \$123 billion a year in economic losses, Cornell University ecologists estimate.

"It doesn't take many trouble-makers to cause tremendous damage," Cornell University ecologist David Pimentel says of a list that runs from alien weeds (cost: \$35.5 billion) and introduced insects (\$20 billion) to human disease-causing organisms¹³ (\$6.5 billion) and even the mongoose (\$50 million). (See accompanying list, "25 Unwelcome Visitors.") Aside from the economic costs, he adds, more

¹³ According to CBC news on 5 April 2001, the first case of chronic wasting disease (CWD) in the wild in Canada was detected in a Mule Deer shot 10 km S. of an elk farm, in the Manitou Sand Hills during the 2000 hunting season. This disease is a form of transmissible spongiform encephalopathy, as are Creutzfeldt-Jakob disease in humans and mad cow disease.

CWD was first identified in captive Mule and Black-tail Deer in 1967. It has been prevalent in captive and then wild deer and elk in Colorado and Wyoming. Efforts to eradicate the disease have failed thus far (W. Producer, 15 Feb. 2001, p. 93). According to the newscast, 49 captive elk with CWD had been detected in Saskatchewan which led to an eradication of about 2,500 game farm elk over the past few years, at a cost of \$10 million in public funds for compensation alone.

than 40 percent of species on the U.S. Department of the Interior's endangered or threatened species lists are at risk primarily because of non-indigenous species.

Pimentel, who presented his findings today (Jan. 24, 1999) at the annual meeting of the American Association for the Advancement of Science (AAAS) in Anaheim, Calif., noted, however, that "most introduced species of plants, animals and microorganisms have become widely accepted and even beneficial participants in our lives."

The researchers also acknowledged that 98 percent of the U.S. food supply comes from such introduced species as wheat, rice, domestic cattle and poultry with a value of more than \$500 billion a year.

can be to interfere with an animal's occupancy of cover to escape from predators or the elements and an animal's feeding time, and it can prevent an animal from breeding. These impacts are often very difficult to detect and thus to avoid. A wildlife viewing code is presented in Appendix 4.

8.9 Accidents.

Highway 40 lies close to the shores of Wells Lake. This poses a small threat in the event of a highway accident, particularly if these were to involve a chemical spill.

Accidental fires break out virtually every, originating from the rail line. These are extinguished as soon as possible. Fire could be a useful tool and natural to counteract expansion of woody vegetation into the grassland. The potential danger of an escaping fire is strongly felt by local residents. Also, given the oil and gas industry installations and the possibility of gas leaks at the periphery of the sand hill complex, this presents another danger.

8.10 Disturbance.

Increased tourism and recreational use can bring with it increased disturbance. This needs to be managed. The impact of human disturbance

9 Conservation Goals and Objectives

"A conservation plan does not conservation make." This conservation plan is no different. It is mere stepping stone in the continuum from conservation goals to conservation action (Fig. 2). A purpose of this plan is to serve as a guidepost for potential action, by providing a description of ecosystem elements which are presumably critical for conserving the IBA birds, the IBA sites, the watershed and the people's quality of life.

This IBA plan is a companion plan to the Manitou Sand Hills integrated land use plan. The IBA plan has a clearer focus on birds whereas the Manitou Sand Hills integrated land use plan pays particular attention to landscape, water and vegetation. Both plans advocate a sustainable use of the region. Clearly birds and their ecosystem can not be treated in isolation. The IBA program values greatly the thorough foundation laid and community participation obtained through the integrated land use plan. The IBA program hopes to provide additional expertise and justification for the goals already outlined in integrated land use plan.

The goals and objectives alluded to below are general in nature. It is expected, that detailed action statements will emerge as stakeholders design efforts jointly and based on the Manitou Sand Hills integrated resource management plan.

9.1 Management goals

Goal 1. Maintain and reinforce the local people's, and participating administrators exemplary commitment to the Manitou Lake area's ecosystems and their sustainable land uses, as outlined in the Manitou Sand Hills integrated resource management plan.

Goal 2. Heed the lake/shoreline/upland dynamics (Sect 8.3) in future shoreline or water related developments in the watershed.

Action 1. Avoid attraction of gulls for the sake of Piping Plovers (e.g. open pit garbage dumps).

Goal 3. In view of climate change potentially accentuating current pressures on the ecosystem such as oil and gas development, nutrient depletion, vegetation community change, monitoring of the range should be given increased priority to allow adaptive responses as needed.

Action 1. Continue and expand a standardized range monitoring, last carried out in 1992 (Thorpe and Godwin 1993).

9.2 Infrastructure goals

Goal 4. How can the integrity and locally driven sustainable development of the Manitou Lake area be maintained into the future, given ever expanding agreements (N. American Free Trade) and deregulation imposing outside forces? Local administration of the area should obtain its own mechanism and core funding to become at least partially independent from the power of the purse of governments or other programs. Explore forward-looking mechanisms by which this can be achieved for the 21st Century (e.g. Biosphere Reserve process or creating a Manitou Lake Foundation).

Goal 5. Facilitate/support tourism potential in the region. Continue to develop tourism as a quality experience with an educational feature.

Action 1: Support existing tourism operators and possibly use the IBA program as a 'selling' point for the area.

Goal 6. Organize events to exchange information and for stakeholders to meet face-to-face, highlighting conservation successes and challenges in the area.

9.3 Educational goals

Goal 7. Provide schools with appropriate resource materials so that teachers can easily incorporate local bird and landscape ecology in their curriculum.

Action 1: Use the IBA program's credibility to encourage a partnership in which the departments of Education and Tourism to make funding available for local tour operators to have a local school component to their operations.

Action 2: Produce lesson plans and/or provide teachers with other 'props' to facilitate teaching that is consistent with the conservation planning message entailed in this report and other similar initiatives.

Goal 8. Promote stewardship through education and encourage events, activities or tours that will attract people from diverse backgrounds (local community, ranchers/farmers, naturalist, and food consumers generally) thus promoting healthy exchanges of ideas and common goals.

9.4 Research and information needs

Goal 9: Continue to monitor the use of the area by bird.

Action 1. Agencies with a responsibility for wildlife management should draft a long-term plan for monitoring shorebird use .

Action 2. Devise a regular and standardized scheme which is followed by all insofar as possible, and encourage local involvement in monitoring where possible.

Goal 10. In addition to bird numbers, monitor trends in reproduction by resident breeding birds and examine insect/lake ecology for use in management strategies and sharing with local people and visitors.

Action 1. Encourage students at universities or in regional colleges to take on these projects. Assist in study design and fundraising where needed.

Goal 11. Use this and other Saskatchewan IBA plans, combined with other organizations with water related mandates to organize a meeting to explore water management threats and strategies in Saskatchewan.

10 Evaluating Success

This IBA program is a new conservation program in Canada. In its current form, it was designed with a ten-year vision, to 2008.

The participants of the Important Bird Area program in Saskatchewan and nationally (Appendix 2) will support this conservation process. These participants and local stakeholders should be ever vigilant for opportunities to support the local initiatives where possible. Most importantly, however, a local 'champion' should

be identified for each area and perhaps for special goals. It is hoped that these champions will accept some ownership for this initiative and keep the ball rolling, and never cease to be vigilant for threats and for opportunities for conservation support.

Local champions are Murray Ball and Joan Makaroff (Appendix 1).

11 Acknowledgments

This conservation plan owes its existence to BirdLife International, and to the joint initiative by the Canadian Nature Federation and Bird Studies Canada for launching this program in Canada. The Important Bird Areas program is part of Natural Legacy 2000, a nationwide initiative to conserve wildlife and habitats on private and public lands. We gratefully acknowledge the financial support of the government of Canada's Millennium Partnership Program for this initiative. Ducks Unlimited Canada also contributed to the IBA Program.

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Manitou Lake area IBA. The Centre for Studies in Agriculture, Law and Environment (CSALE) has provided office space and other services.

The IBA Advisory Committee members helped select IBA sites for conservation planning: Gregg Brewster, Stephen Davis, Frank Roy, Margaret Skeel and Alan R. Smith.

This specific plan also owes its existence to the local people who have cared and employed good judgment for which the birds are able to reside at the lake today. We are grateful to the person's listed here who have agreed to participate in this conservation planning in their professional or private capacity (see Appendix 1).

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Information from the Canadian IBA Database was provided by the Canadian BirdLife International co-partners, Bird Studies Canada and the Canadian Nature Federation. Updated information can be obtained by contacting Bird Studies Canada (see Appendix 2).

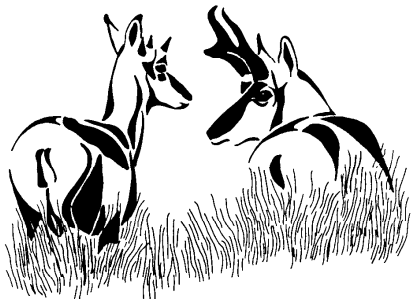
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Appendix 1. Names, affiliation, contact information and general interests of individuals in connection with the Manitou Lake area. By letting their name appear here, these individuals have made no commitment beyond agreeing to be contacted when their participation is requested.

Administrator, R.M. of Manitou Lake, Box 69, Marsden, SK, S0M 1P0; 306-826-5215

Murray Ball, Box 396, Neilburg, Saskatchewan, S0M 2C0, joan.murray@sk.sympatico.ca 306-823-4461

Interests: Murray is a member and past Chairperson of the Manitou Lake Historical Association Inc. He is intimately familiar with the natural and human history of the region.

Gerard Beyersbergen, Canadian Wildlife Service, 4999 - 98 Avenue, Edmonton, AB, T6B 2X3; 780-951-8670 gerard.beyersbergen@ec.gc.ca

Interests: Gerry is a shorebird biologist responsible for monitoring shorebirds in the prairie region.

Dale Bryden, Box 280, Neilburg, SK, S0M 2C0; 306-823-4321

Interests: Dale is the R.M. administrator.

Kevin Cantelon, 9545 - 77 Avenue NW, Edmonton, AB, T6C 0M3

Interests: Kevin is an artist/naturalist familiar with the birds of the region.

Terry Chamulak, Sask. Water, 111 Fairford St. E., Moose Jaw, SK, S6H 7X9; 306-694-3746 tcha@saskwater.com

Interests: Terry is a hydrologist familiar with the region and its water-related issues.

Bill Chappell, Ducks Unlimited Canada, Box 1180, North Battleford, SK, S9A 0J8; 306-445-2575 w_chappell@ducks.ca

Interests: Bill has been working for DU Canada for 14 years in west-central Saskatchewan including the Manitou Lake area.

Nancy Cherney, Sask. Environment & Resource Manage., 3211 Albert Street, Regina, SK, S4S 5W6; nancy.cherney.erm@govmail.gov.sk.ca

Interests: Nancy is a primary participant in directing SERM's Representative Areas Network.

Bob Godwin, Saskatchewan Research Council, 15 Innovation Blvd., Saskatoon, SK, S7N 2X8; 306-933-8190 godwin@src.sk.ca

Interests: Bob is a an ecologist and co-author of the Vegetation survey of the Manito Sand Hills.

Paul Goossen, Canadian Wildlife Service, 4999-98 Avenue, Edmonton, AB, T6B 2X3; 780-951-8679, paul.goossen@ec.gc.ca

Interests: Paul is a wildlife biologist and the chairperson for the Prairie Piping Plover Recovery Team.

Wayne Harris, Sask. Env. and Resource Manage., 350 Cheadle Street W., Swift Current, SK, S9H 4G3; 778-8218 wayne.harris.erm@govmail.gov.sk.ca

Interests: Wayne is the Provincial Biologist for the grassland ecoregion and a naturalist with broad knowledge of species and ecosystems.

Ted Hassel, Chauvin, AB, T0B 0V0; 780-858-2163

Interests: Ted is the secretary for the Manito Cattle Breeders Co-op.

Lois Haug, R.M. of Senlac, Box 130, Senlac, SK, S0L 2Y0; 306-228-3339

Interests: Lois is the R.M. administrator.

Todd Jorgenson, Sask. Agriculture & Food, 509 Pioneer Avenue, North Battleford, SK, S9A 1E9; 306-446-7646 tjorgenson@agr.gov.sk.ca

Interests: Todd is a rangeland ecologist and a member of the Manitou Sand Hills Planning Committee.

Joan Makaroff, Box 396, Neilburg, Saskatchewan, S0M 2C0, joan.murray@sk.sympatico.ca 306-823-4461

Interests: Joan Makaroff lives near Manitou Lake and is intimately familiar with the natural history of the region.

Nolan Matthies, Sask. Wetland Conservation Corp., Rm 202 - 2050 Cornwall Street, Regina, SK, S4P 2K5; 306-787-0726 nmatthies@wetland.sk.ca

Interests: Nolan is a committed birder who works for SWCC. He has been active in facilitating bird related tourism initiatives in Saskatchewan.

Ian McGilp, Tourism Saskatchewan, 101 - 230 22nd Street E., Saskatoon, SK, S7K 0E9; 306-933-5746 ian.mcgilp@saktourism.com

Interests: Ian is in the Product Development Branch of Tourism Saskatchewan and a member of the Manitou Sand Hills Planning Committee.

Jim Schmidt, Sask. Agriculture & Food, 509 Pioneer Avenue, North Battleford, SK, S9A 1E9; 306-446-7449 jschmidt@agr.gov.sk.ca

Interests: Jim is the North-West Regional Manager for Sask. Agriculture & Food's Lands Branch and a member of the Manitou Sand Hills Planning Committee.

Candy Schopfer, Box 96, Chauvin, Alberta, T0B 0V0; 780-

Interests: Candy is a farmer-conservationist who farms with her family north of Reflex Lakes.

Margaret Skeel, Nature Saskatchewan, 1860 Lorne Street, Regina, SK, S4P 2L7; 306-780-9273 Fax 306-780-9263 mskeel@unibase.com

Interests: Margaret is the Program Coordinator for Nature Saskatchewan. In this role and with her strong interest in conservation, she helps deliver IBA Saskatchewan.

Jeff Thorpe, Saskatchewan Research Council, 15 Innovation Blvd., Saskatoon, SK, S7N 2X8; 306-933-8172 thorpe@src.sk.ca.

Interests: Jeff is a plant ecologist and co-author of the Manitou Sand Hills integrated resource management plan.

Leo Tootoosis, Poundmaker First Nation, Cutknife, Saskatchewan.

Interests: Leo is an aboriginal representative on the Manitou Sand Hills Advisory Committee

Earl Wiltse, Sask. Environment & Resource Manage., 3211 Albert Street, Regina, SK, S4S 5W6; 306-787-2889 or 2464 earl.wiltse.erm@govmail.gov.sk.ca

Interests: Earl is SERM's Species at Risk Specialist. He also serves on the IBA advisory Board.

Appendix 2: Information on the lead organizations of the IBA Program

BirdLife International (Wellbrook Court, Girton Road, Cambridge, CB3 0NA, UK; birdlife@ECNET.ec)

A pioneer in its field, BirdLife International is the first non-government organization dedicated to promoting world-wide interest in and concern for the conservation of all birds and the special contribution they make to global biodiversity. BirdLife operates as a partnership of non-governmental conservation organizations, grouped together within geographic regions (e.g. Europe, Africa, Americas) for the purpose of planning and implementing regional programs. These organizations provide a link to on-the-ground conservation projects that involve local people with local expertise and knowledge. There are currently 20 countries involved in the Americas program throughout North, Central and South America.

For further information about the Americas BirdLife Program, check the following web site: <http://www.birdlife1.org.ec/ingles.html>.

The **Canadian Important Bird Areas Program** has been undertaken by a partnership of two lead agencies. The Canadian Nature Federation (CNF) and Bird Studies Canada (BSC) are the Canadian BirdLife International partners.

The Canadian Nature Federation (1 Nicholas Street, Ottawa, ON, K1N 7B7; <http://www.cnf.ca>)

The CNF is a national conservation organization with a mission to be Canada's voice for the protection of nature, its diversity, and the processes that sustain it. The CNF represents the naturalist community and works closely with our provincial, territorial and local affiliated naturalists' organizations to directly reach 100,000 Canadians. The strength of our grassroots naturalists' network allows us to work effectively and knowledgeably on national conservation issues that affect a diversity of ecosystems and human populations in Canada. The CNF also works in partnership with other environmental

organizations, government and industry, wherever possible.

Our approach is open and cooperative while remaining firm in our goal of developing ecologically-sound solutions to conservation problems. CNF's web site is <http://www.cnf.ca>.

Bird Studies Canada (P.O. Box 160, Port Rowan, ON, N0E 1M0; <http://www.bsc-eoc.org>)

The mission of BSC is to advance the understanding, appreciation and conservation of wild birds and their habitats, in Canada and elsewhere, through studies that engage the skills, enthusiasm and support of its members, volunteers, staff and the interested public. BSC believes that thousands of volunteers working together, with the guidance of a small group of professionals, can accomplish much more than could the two groups working independently. Current programs collectively involve over 10,000 volunteer participants from across Canada.

BSC is recognized nation-wide as a leading and respected not-for-profit conservation organization dedicated to the study and understanding of wild birds and their habitats. BSC's web site is: www.bsc-eoc.org/.

Nature Saskatchewan (1860 Lorne Street, Regina, SK, S4P 2L7; www.unibase.com/~naturesk)

Nature Saskatchewan is one of the largest conservation organizations in Saskatchewan whose vision is "Humanity in harmony with nature." Nature Saskatchewan was founded in 1949 and has been a reasoned and respected voice in conservation. Nature Saskatchewan's major accomplishments are in the area of education, conservation, research and publication.

Nature Saskatchewan's educational programs include delivery of the *Living by Water Project* in Saskatchewan and Manitoba, BirdQuest and PlantQuest workshops for youth and adults, a scholarship for graduate studies at universities, and sponsorship of nature camps for youth. In the conservation area, Nature Saskatchewan owns and maintains six nature sanctuaries, negotiates and refers conservation

easements, and fosters conservation through working with governments and industry.

Research conducted or facilitated by Nature Saskatchewan is through support for monitoring at high priority sites and for threatened species. Nature Saskatchewan is conducting inventories of flora and fauna at its nature sanctuaries. The organization co-manages the Saskatchewan Conservation Data Centre and operates a landowner stewardship program *Operation Burrowing Owl*.

Nature Saskatchewan quarterly publishes an internationally known journal *Blue Jay*, releases special publications on an irregular basis (22 to date), and publishes a quarterly newsletter *Nature Views*.

Appendix 3. At the inaugural **IBA-Saskatchewan** workshop (Saskatoon, 22 October 1997), 123 candidate areas were nominated by several dozen naturalists. On 10 January 2001, the data compilation and assessment by outside reviewers was completed, yielding 53 IBAs approved by Bird Studies Canada.

The number of approved IBAs may yet grow as more information becomes available, particularly in the north. However, current IBA priorities involve conservation planning and implementation of suggested actions. The 13 sites shown below have conservation plans completed or in various stages of completion. Two sites focus on grasslands (Govenlock, Nashlyn and Battle Creek IBA, and Colgate IBA), one on a marsh-lake-upland complex (Cumberland Marshes IBA), and the remainder on water bodies. For lake IBAs the adjacent upland is usually equally if not more important in the ecology of IBA birds. In some cases the IBA has been expanded to include the entire watershed (Redberry Lake, and Chaplin, Old Wives and Reed lakes) or portions of watersheds.

Appendix 4. Codes of conduct for nature viewing and hunting

As **wildlife viewers**, our goal is to watch animals behaving in natural ways in their natural habitats. We respect the needs of wild animals for space, natural vegetation, and ecological community. We recognize our responsibility to know the consequences of wildlife viewing .

We follow these guiding principles:

We will view or photograph from a distance that respects the needs of the wildlife, using proper equipment such as binoculars, spotting scopes and telephoto lenses. Before approaching wildlife we will first learn the spatial needs of each species and to recognize their alarm signals.

We will avoid noises or actions that might stress wildlife or cause animals to waste energy in unnecessary flight.

We will be patient, remembering that we are guests in wildlife habitat.

We will not trample or damage vegetation, both for the sake of the wildlife it supports, and for its intrinsic values.

We will not approach animals that are breeding, nesting, brooding or raising young, because parents and young are especially vulnerable at these times. We will learn the places and times to avoid these situations. We will not approach young or baby animals.

We will not feed wildlife, recognizing that feeding usually leads to problems such as unnatural food dependency, habituation to humans, disease or even death.

We will keep pets on a leash around any wildlife, and avoid bringing pets into sensitive wildlife habitat.

We will respect the rules and regulations of protected areas. Trails, roads, closure areas and

other management features are designed for safety and welfare of visitors, natural vegetation and wildlife.

We will be respectful of others including property owners, and other wildlife watchers.

We will give back to nature for the gifts of wildlife viewing we receive, through conservation work for wildlife and native vegetation and through helping others learn the ethics of wildlife viewing.

A hunter's code of conduct. Drafted by private conservation organizations (the main proponent was the Izaak Walton League) and wildlife management agencies. Hunters are considered a backbone of wildlife conservation, but they must also safeguard the future of their sport by behaving responsibly.

- Respect the environment and wildlife
- Respect property and show consideration for non-hunters
- Hunt safely at all times
- Know and obey the law
- Support wildlife and habitat conservation
- Pass on an ethical hunting tradition
- Strive to improve outdoor skills and understanding of wildlife
- Hunt only with ethical hunters

Ethical hunting is the true measure of the hunt.

Appendix 5. Elders' guidelines for aboriginal themed tourism products in Saskatchewan. These guidelines were developed through a series of formal consultations with First Nation's Elders in four forums during the period July 1995 to February 1996.

Consultation process

Individual Elders were approached in unstructured informal discussions to further clarify and provide more specific focus on certain issues which were addressed only in terms of general application in the larger forums.

A survey questionnaire was developed by the interview team to guide discussions and the positions expressed in these guidelines have received general Elders' consensus.

General Elders' responses

There is general support and enthusiasm among the Elders towards developing a commercial tourism market around First Nations' cultural and historic products.

A broad spectrum of types of tourism and tourism categories were discussed during the Elders interviews and the following advice and guidance was provided:

Ecotourism/Adventure tourism

The First Nation's products and enterprises which can be developed in ecotourism are broadly endorsed by the Elders with no specific suggestions for separate guidelines other than those of general application and common sense which are commonly accepted in the industry and by the general public.

In summary, the specific advice provided by the Elders focused on

- * adventure tourism and "living off the land" is an excellent opportunity to showcase traditional lifestyles and practices of First Nations peoples;
- * tourists must be sensitive to the environment - respect for wildlife and no human pollution;

Cultural Tourism

This was a primary focus of the Elders discussions. The Elders feel strongly that all aspects of First Nations cultural tourism should be managed by a "process," as opposed to an overall governing "authority," because of the different traditions and practices of the national groups within Saskatchewan.

Within Saskatchewan there are five distinct Nationalities -Cree, Saulteaux, Dene, Assinaboine and Dakota/Lakota/Nakota.

Each of these rations have different perspectives on cultural exploitation and the appropriateness of tourist participation/observation in the products which may be developed around First Nation's products and attractions.

The Elders feel very emphatically that all aspects of the management, preservation, custody, conservation and stewardship of cultural exploitation must be fully controlled by First Nations with extensive Elders participation