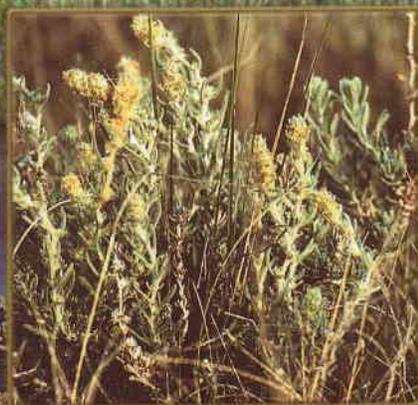


Saskatchewan's Native Prairie:



Taking Stock of a Vanishing Ecosystem and Dwindling Resource

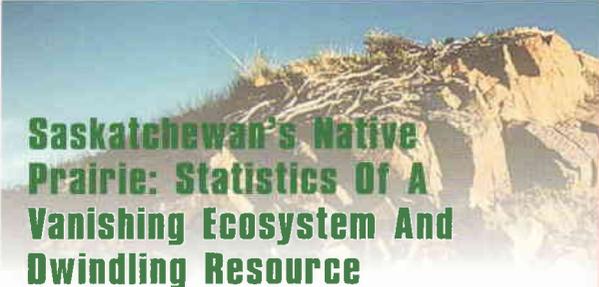


Native Plant Society of
Saskatchewan, Inc.



CANADIAN PLAINS
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Saskatchewan's Native Prairie: Statistics Of A Vanishing Ecosystem And Dwindling Resource

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Introduction

The Canadian prairie offers a distinct environment for plants, animals and people who live here. A climate of long, cold winters and short, often dry summers challenges all creatures. Early indigenous people relied on a wide variety of plants and animals for their survival. European explorers found a vast landscape. Some saw a barren land with little potential and others described a land of opportunity. It was a land settled by only the most determined people from a variety of cultures. The prairies, once scoured by ice, were scoured again by iron. Today it is a land that has become globally recognized for production of high quality grains and meat. In the short history of European settlement, we have had a wide and profound impact on the land, an impact that many believe is irreversible.

This booklet is intended to provide an appreciation for the impact that settlement has had on Saskatchewan's prairie landscape. It is not intended to cast blame toward any sector of the population. Rather, it is to recognize that the prairie is an endangered ecosystem and as a part of our heritage it should be conserved.



Wisconsin Glaciation (or Wisconsin glacial stage) – is the name given to the period of time ranging from approximately 75,000 years ago to 17,000 years ago when most of Canada (east of the Rockies) and part of the northern U.S.A. were covered by the Laurentide Ice Sheet. The ice was more than 1,000 m thick in some places! Because of their high elevation compared with the surrounding prairie, the Cypress Hills were never glaciated making them a unique land area in Saskatchewan.

With a change in climate the ice sheet started to melt faster than it could advance. This is called glacial retreat because the edge of the glacier melted fastest making it seem like it was moving backwards to the north. Deglaciation of Saskatchewan took several thousand years starting about 10,000 years ago in the southern end of the province.

The glacier left behind many features of the landscape we see today. For example, large flat areas with clayey soil, like the Regina Plains, were once a glacial lake. Much of the province's soil formed on glacial till. This is a mix of stones, gravel, sand, silt and clay that was deposited by the glacier as it melted but without any sorting by water or wind.

As the glacier retreated, plants and animals occupied the newly deposited earth. While some plants and animals moved north from the now southern U.S.A, others spread south and east from Asia, across the Bearing Strait northwest of Alaska. This gave rise to two major groups of plants. Cool-season plants, coming from the north, tolerate cooler climates and dominated most of Saskatchewan's native prairie. Warm-season plants, coming from the south, are less dominant in Saskatchewan but replace the cool-season plants as you go south into the U.S.A.

What is Native Prairie?

The Saskatchewan prairies began to form 17,000 years ago as the last of the ice from the Wisconsin Glaciation melted. The soil types and landforms left in the wake of the glaciers, along with a harsh climate and disturbances resulting from periodic fires and grazing animals, created a unique environment. Over thousands of years, the prairie landscape evolved to include a wide variety of plant and animal species adapted to these environmental conditions. The open grassland interspersed with lakes, ponds, creeks, river valleys, shrubs and trees supported indigenous peoples and wildlife including, huge herds of grazing animals and a myriad of birds and insects. These age-old plant communities dominated by grasses are what we refer to as *native prairie*.

The southern half of Saskatchewan, previously covered by native prairie, is part of the *Prairie Ecozone* in Canada. Based on climate and landforms, the Prairie Ecozone is split into four *ecoregions*: Parkland, Moist Mixed Grassland, Mixed Grassland and Cypress Upland. The ecoregions are further subdivided into *landscape areas* based on distinct groupings of different physical features on the land, surface geology, soil, vegetation, water bodies and dominant land uses.

Grasses dominate native prairie, but a close look at the prairie uncovers hundreds of different species of grasses and wildflowers. It is incredibly diverse! In addition to open grassland, we see wetlands, saline land, shrubs, bluffs and even forested tracts. Each of these communities contains different plant communities, each providing unique habitat for wildlife.

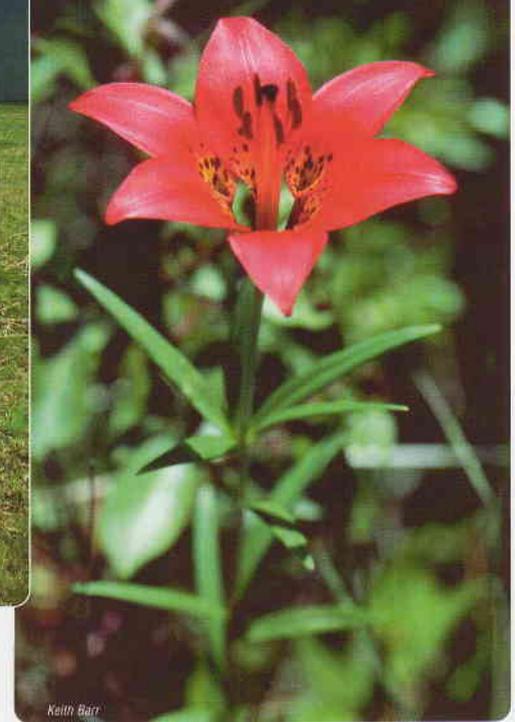
A Part Of Our Culture And Heritage

Our beliefs, habits, arts and lifestyle are strongly influenced by the environment we live in. Living on native prairie influenced the culture of First Nations and Metis people. Native plants and animals were used for food, medicine, ceremonies, art, tools and weapons. For European settlers, the native prairie provided fertile soil and offered a means of providing shelter (e.g., sod houses), a source of food and the foundation for an agricultural lifestyle. The ranching lifestyle is intimately connected with the open rangeland found only on the prairie. In the future, we will be looking to this land as a source of food, medicine, recreation, genetic resource, habitat for wildlife and as a benchmark of our past environment.

Native prairie is part of our heritage, *something that a person has as a result of having been born in a certain time or place.*

We are quickly forgetting our connection with the land. Old-time farmers reminisce about the

crocuses that grew on the hill down by the creek, the wild onions they ate to irritate the refined nose of their school teacher and the times they spent watching the burrowing owl seemingly turn its head in complete circles. It is rare now to find a piece of unbroken prairie large enough to show no evidence of European settlement. How can present and future generations appreciate the character of endless rolling grasslands and the challenges faced by First Nations people and settlers when this environment no longer exists? Will their native prairie experience be restricted to books herbaria, parks, zoos or their imagination?



Native prairie is a part of our culture and heritage.



A Threatened Ecosystem

In the last 150 years, the majority of native prairie in North America has disappeared. In Saskatchewan, it is estimated that almost 80% of the prairie has been lost. In local areas of prime cropland, less than 2% of the original prairie remains. What little prairie remains exists under quite different conditions than it had for thousands of years. The most obvious changes are the fragmentation of native habitat caused by road building, resource extraction, residential development and cultivation. Less obvious changes that threaten the prairie are the disappearance of prairie fires and the once massive herds of bison, the arrival of new and aggressive introduced (i.e., exotic) plants that displace native species, long-term overgrazing by cattle in some areas, and in others, a total lack of grazing. Periodic fire and grazing followed by rest rejuvenated the land and resulted in a landscape diverse in native plants. Now, lack of grazing and fire or continuous grazing without rest has lowered the diversity of plant communities and life they support. Invasive exotic plants include Smooth Brome, Kentucky Bluegrass, Quack Grass, Crested Wheatgrass, Leafy Spurge and Purple Loosestrife. Even native shrubs and trees pose a threat when they expand into grasslands beyond their historical extent.



Wild fires and vast herds of bison were once a natural part of the prairie ecosystem.



Definitions

Fragmentation	The breaking of native prairie into smaller pieces, leaving islands of native prairie surrounded by cultivated land or seeded pastures.
Native plants	Plants found naturally in a region before European settlement.
Exotic or introduced plants	Plants (and other organisms) brought to Saskatchewan during or following European settlement. Some of these plants are of particular concern because they are 'aggressive', they tend to invade native prairie easily and replace native plants.
Biodiversity	Best described as the "variety of life" including i) different patches on the landscape that host different plants and animals, ii) the number of different plants and animals living in a patch and iii) the different genetic varieties of the same plant or animal that allows it to grow in different environments.
Saline land	There are different kinds of salt naturally present in the soil. Some of these salts dissolve very easily in water, are washed into the groundwater and collect in low-lying areas such as saline lakes. Too much salt makes it difficult for most plants to absorb water from the soil, leaving only a few that can survive these harsh conditions.
Idling	Leaving the land idle and in many cases unmanaged. Aside from grazing by wildlife, the land is not grazed, mowed, burned, cultivated, etc.
Overgrazing	Grazing land often or continuously during the growing season each year does not provide time for plants to recover. As a result, roots become shorter, plants become less productive, weeds are more likely to invade and the plants become more susceptible to drought.
Litter	Dead leaves and stems accumulating on grassland that is not overgrazed or burned. An even but not thick cover of litter helps keep the soil moist, however, too much litter, such as that found on idled land, can prevent some plants from establishing and reduce biodiversity.

Why Is It Important To Know How Much Prairie Is Left?

The prairie region of Saskatchewan is one of the most widely disturbed areas of the world. The disappearance of native prairie means the disappearance of thousands of years of evolutionary history. This ecosystem can never be replaced. The prairie vegetation is vital to the survival of countless wildlife species, many of which have already dropped significantly in number or disappeared.

Native prairie is also a part of our culture and heritage, providing many benefits to its human inhabitants. These benefits include clean water, rangeland for livestock, aesthetic and recreational opportunities, soil protection and a gene pool available for future medical, agricultural and industrial uses. Native prairie is home to hundreds of plants and animals. This biodiversity or the "variety of life" is not only beautiful but can be used as an indicator of how healthy the ecosystem is.

Until recently, the extent of disturbance had not been measured. To help land managers develop better plans for its wise use, it is important to know how much prairie remains and where it is located.



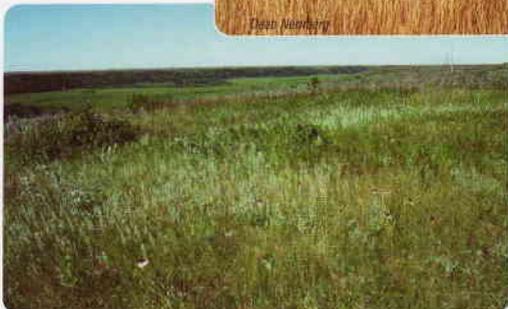
Settlement and cultivation have been the principal forms of prairie disturbance in the past and continue to this day.



Expanding urban centres and resource extraction continue to threaten native prairie.



In the absence of fire and well managed grazing, trees and shrubs spread into grassland, grass litter builds up reducing diversity and exotic plants, such as smooth brome grass, invade.



In many areas, lush native prairie can only be found on rugged valley slopes and rocky uplands above cultivated flood plains.

Native Prairie: Benefits and Opportunities

- Culture and Heritage** Native prairie has shaped our lives. It has provided food, tools, construction materials, recreation, inspiration and a way of life. To lose the native prairie would be to lose a vital part of the history of our province.
- Biodiversity** Native prairie is home to hundreds of plants and animals. A diverse ecosystem is more effective in capturing energy from the sun and cycling nutrients in the soil. It is also less susceptible to disturbances and stresses such as drought, disease and grazing. A diverse plant community becomes home to a much more diverse group animals than a community where only a few plants grow. By losing this diversity we threaten the integrity of the ecosystem we live in.
- Recreation** Native prairie offers many recreational opportunities ranging from hunting to artwork. The wide-open spaces of native prairie attract tourists from around the world.
- Future Resource** As it has in the past, native prairie offers bountiful opportunities for economical development. Wildlife, including native plants, will become an important genetic resource for developing new foods, medicines and fuels.
- Ranching** Healthy native prairie is the foundation for the ranching lifestyle. Healthy grasslands produce livestock that are the envy of producers around the world.
- A Benchmark** Representative areas of native prairie can be used to measure how we are changing our environment.
- Educational Resource** Native prairie helps us learn about the environment we live in and the other organisms that we share it with.
- Aesthetic Value** The beauty of the prairie is unrivalled. The open grassland, living sky and hidden valleys command a sense of place like no other.

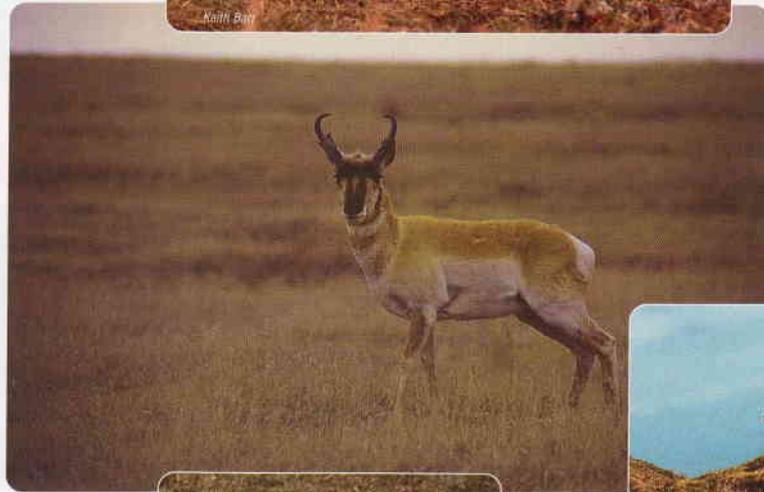
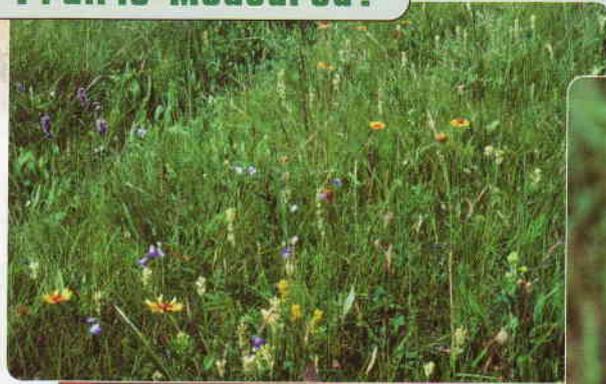
How Is The Amount Of Native Prairie Measured?

Grassland, trees, shrubs, water, crops and roads all reflect light in a slightly different way, just like the different shades on a picture. These differences in reflectance are recorded on satellite images. Researchers used satellite images to estimate the area of different 26 land cover classes in the 4 ecoregions of the Prairie Ecozone. This method is much faster and easier than driving across the whole province and checking every piece of land.

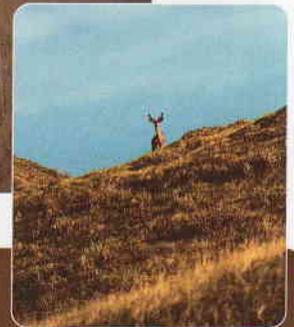
The 26 cover classes were grouped to form six cover types: Native Dominant Grassland, Cropland & Seeded Pasture, Trees & Shrubs, Water & Wetlands and Other (Table 2). Here we are most interested in Native Dominant Grassland (i.e., native grassland), grassland dominated by native plants but possibly including some tame grasses and forbs (e.g., Smooth Brome and Alfalfa).

Determining land uses from satellite imagery is not an exact science. In some cases, different land uses may have a very similar reflectance. Tame pastures and hay crops, for example, are sometimes confused with native grassland. Using satellite imagery, some researchers have estimated that approximately 21% of the Prairie Ecozone remains as native grassland. Other researchers have suggested that as little as 17% of native grassland remains. This implies a considerable amount of error in using the satellite data. Another problem is that the data is only representative of the time the images were taken. Despite a variety of conservation efforts, we know that more and more native grassland is being disturbed.

Despite its limitations, satellite imagery still offers a good but general picture of land cover classes in the province. The information presented in this fact sheet is based on Southern Digital Land Cover (SDLC) 1994 Digital Data Files (cover class data was provided by the Prairie Farm Rehabilitation Administration). The maps provided here are very general. Much more site-specific maps can be produced from this information.



Native prairie is home to a diverse range of plants and animals.



Aside from their contribution to the ecosystem, most native plants have unknown potential. However the potential of some, such as Purple Cone Flower (Echinacea), have become widely recognized and developed.



Our Remaining Prairie Resource

The Prairie Ecozone is estimated to include nearly 241,000 km² of land. Only 21% of Prairie Ecozone is classified as Native Dominant Grassland as compared with 68% classified as Cropland (Map 1, Table 1).

Approximately 20% of Saskatchewan's native grassland occurs in the Aspen Parkland ecoregion. Within this ecoregion, however, native grassland occupies only 13% of the landscape; over 71% of has been cultivated (Table 2.1). Because of the favourable climate, trees and shrubs occupy over 9% of the land area. The Aspen Parkland contains more wetlands than any other prairie ecoregion. Native grassland remaining in the 22 landscape areas of this ecoregion ranges from 6% in the Quill Lake Plain (north of the Quill Lakes) to 37% in the Lower Battle River Plain and the Ribstone Plain in the western part of the ecoregion (Map 2, Table 2.1). Invasion of woody and exotic plants is an important threat to the remaining native grassland in this ecoregion, especially in the absence of grazing and fire. These few invasive plants replace the diverse communities of grasses and wildflowers that provide habitat for many grassland animals. The high productivity of this area leads to a tendency for pastures to be overgrazed. Overgrazing weakens the plant roots, allows only the most adapted to survive and opens space for invasion of exotic plants. Although this is the most productive grassland ecoregion in the province, it is also the most fragmented (broken into small pieces, Table 3), overused and threatened by exotic species.

Like the Aspen Parkland, 20% of the remaining native grassland in the province occurs in the Moist Mixed Grassland ecoregion. Over 76% of the land base has been cultivated leaving only 16% of the ecoregion as native grassland (Table 2.2). In its 20 landscape areas, remaining native grassland ranges from 46% of the land area in the Neutral Hills (the most westerly area of the ecoregion) to 6% in the Griffin Plain (the Estevan/Weyburn area) (Map 2, Table 2.2).

Over 50% of remaining native grassland in Saskatchewan occurs in the Mixed Grassland ecoregion. Overall, 31% of the land area is occupied by native grassland and 62% is cultivated. There are 25 landscape areas in this ecoregion (Map 2, Table 2.3). Native grassland cover ranges from 78% in the Great Sandhills to 14% in the Lake Alma Upland in the southeast corner of the ecoregion. Large areas of this region are uneconomical for crop production due to poor soils and a hot, dry climate. This climate also reduces the establishment and spread of invasive woody and exotic plants. Producers are very conscious of how this grassland is managed because of its lower productivity and high sensitivity to overgrazing.

Overall, native prairie occurs in the largest parcels (Table 3), is in best condition and is least threatened in this ecoregion.

With its long slopes and rolling hills, the Cypress Upland ecoregion is a unique and picturesque feature in the prairie landscape. Only 7% percent of all native grassland in the province occurs in this relatively small ecoregion. Due to soil limitations and a ranching tradition, however, this area has been least disturbed by cultivation (22%) with over 70% of the land area remaining as native grassland (Table 2.4).



Annual crop production now dominates the Moist Mixed Grassland landscape.



MAP 1 TABLE 1

Native Dominant Grasslands Within The Prairie Ecozone of Saskatchewan

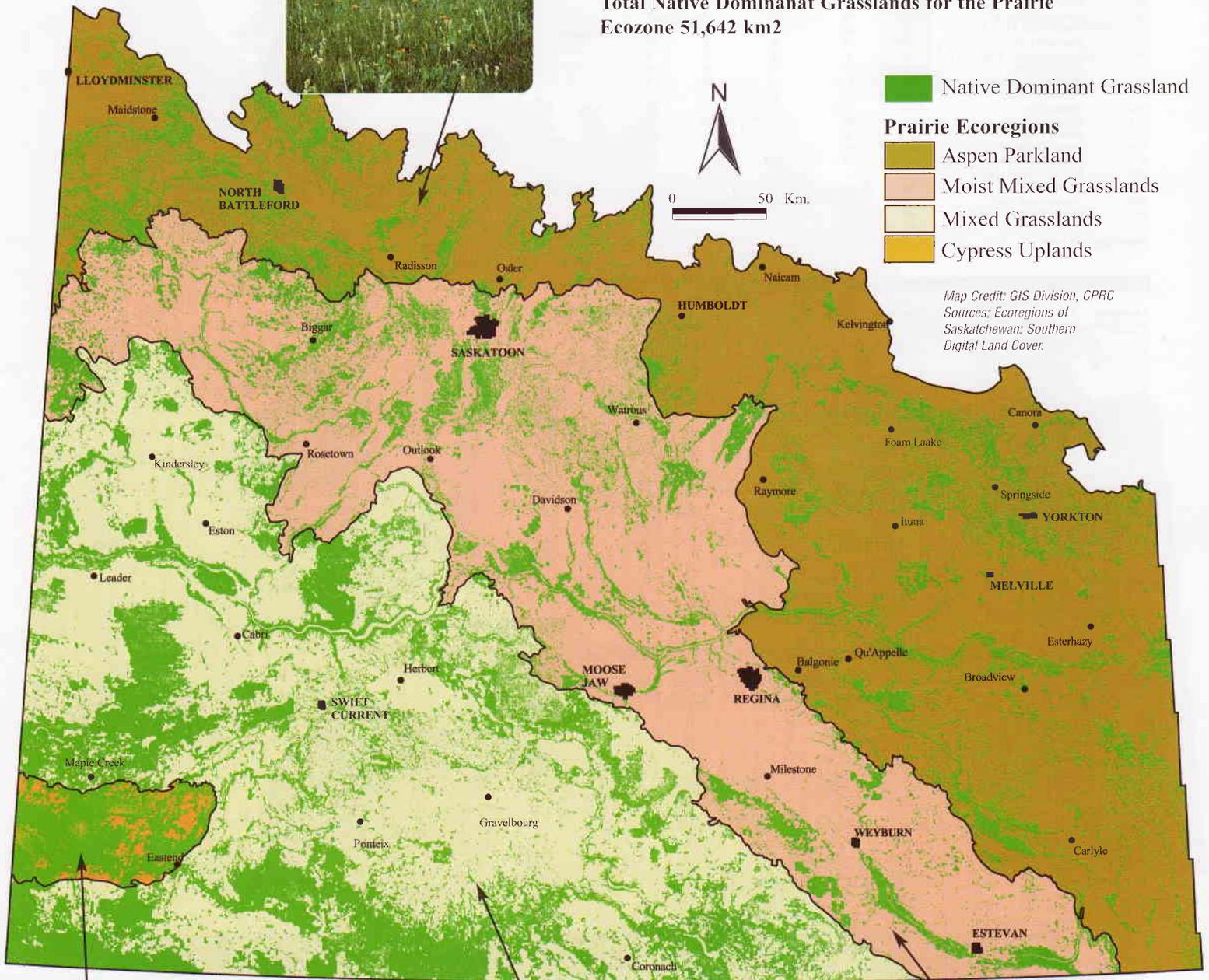


Aspen Parkland



TABLE 1. PRAIRIE ECOZONE		
Ecoregion	Land Area (km ²)	% Native Grassland
Aspen Parkland	81,693	13
Moist Mixed Grassland	67,832	16
Mixed Grassland	86,422	31
Cypress Upland	5,019	71
Ecozone Total	240,966	21

Total Native Dominant Grasslands for the Prairie Ecozone 51,642 km²



Native Dominant Grassland

Prairie Ecoregions

- Aspen Parkland
- Moist Mixed Grasslands
- Mixed Grasslands
- Cypress Uplands

Map Credit: GIS Division, CPRC
Sources: Ecoregions of Saskatchewan; Southern Digital Land Cover.



Cypress Upland



Mixed Grassland



Moist Mixed Grassland



Native Plant Society of Saskatchewan, Inc.



TABLE 2

Vegetation Cover for Saskatchewan Prairie Ecoregions

TABLE 2.1. ASPEN PARKLAND

Landscape Area Code	Landscape Area Name	Land Area Total (km ²)	Cover Type (%)				Other
			Native Grassland	Cropland & Seeded Pasture	Trees & Shrubs	Water & Wetland	
H1	Lloydminster Plain	7,392	18	64	13	4	1
H2	Lower Battle River Plain	1,481	37	31	27	5	0.4
H3	Ribstone Plain	1,145	37	15	34	14	0.1
H4	Provost Plain	342	23	67	2	7	1
H5	Maymont Plain	2,498	12	75	5	7	1
H6	Whitewood Hills	3,453	19	57	17	7	0.3
H7	Hafford Plain	727	23	61	12	4	0.4
H8	Waldheim Plain	4,135	12	76	5	6	1
H9	Cudworth Plain	2,347	9	76	5	9	1
H10	Quill Lake Plain	10,537	6	79	4	10	1
H11	Touchwood Hills Upland	10,301	11	74	10	5	1
H12	Whitesand Plains	1,634	30	39	21	9	1
H13	Yorkton Plain	6,204	12	76	6	6	1
H14	St. Lazare Plain	623	30	41	23	4	3
H15	Melville Plain	7,961	9	77	9	3	3
H16	Indian Head Plain	3,394	14	76	4	4	1
H17	Kipling Plain	5,484	12	77	7	4	1
H18	Moose Mountain Upland	2,740	11	81	3	4	1
H19	Moose Mountain	1,174	13	19	50	18	1
H20	Gainsborough Plain	5,935	8	84	5	2	1
H21	Moose Mountain Creek Plain	1,385	28	62	5	5	0.4
H22	Oak Lake Plain	801	13	80	5	2	1
Aspen Parkland Total		81,693	13%	71%	9%	6%	1%

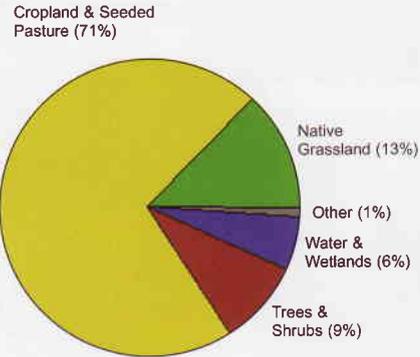


TABLE 2.2. MOIST MIXED GRASSLAND

Landscape Area Code	Landscape Area Name	Land Area Total (km ²)	Cover Type (%)				Other
			Native Grassland	Cropland & Seeded Pasture	Trees & Shrubs	Water & Wetland	
K1	Neutral Hills	1,246	46	47	1	6	0.3
K2	Trampling Lake Plain	6,776	16	75	1	8	1
K3	Senlac Hills	603	32	54	4	10	1
K4	Bigger Plain	572	37	47	10	6	0.4
K5	Bear Hills	1,201	30	63	3	4	0.2
K6	Rosetown Plain	4,232	10	86	0.3	3	0.4
K7	Goose Lake Plain	5,105	18	70	4	8	1
K8	Saskatoon Plain	1,076	14	66	6	4	10
K9	Moose Wood Sand Hills	2,131	39	34	23	4	1
K10	Minichinas Upland	979	18	72	2	8	0.2
K11	Elstow Plain	4,814	11	80	1	7	1
K12	Allan Hills	1,184	19	73	0.2	8	0.1
K13	Arm River Plain	7,448	11	83	2	4	1
K14	Last Mountain Lake Plain	2,124	20	66	0.2	14	1
K15	Strasbourg Plain	4,353	10	84	3	3	1
K16	Eyebrow Plain	2,709	24	69	3	4	0.4
K17	Regina Plain	9,090	7	88	1	1	3
K18	Griffin Plain	6,405	6	86	1	6	2
K19	Trossachs Plain	4,047	19	72	2	6	1
K20	Souris River Plain	1,738	45	39	5	5	5
Moist Mixed Grassland Total		67,833	16%	76%	3%	5%	1%

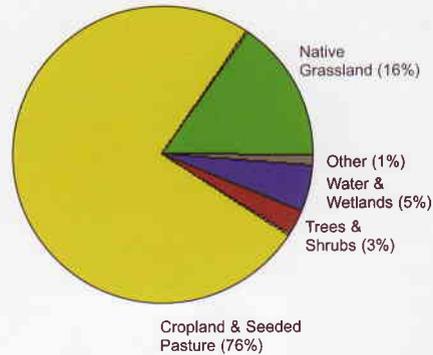


TABLE 2.3. MIXED GRASSLAND

Landscape Area Code	Landscape Area Name	Land Area Total (km ²)	Cover Type (%)				Other
			Native Grassland	Cropland & Seeded Pasture	Trees & Shrubs	Water & Wetland	
M1	Kerrobert Plain	2,659	23	69	1	7	1
M2	Sibbald Plain	1,147	18	76	0.2	5	0.4
M3	Oyen Upland	1,499	44	52	0.2	3	0.4
M4	Eston Plain	9,126	18	77	1	4	1
M5	Bad Hills	1,614	35	61	1	3	0.2
M6	Acadia Valley Plain	136	26	72	0.1	1	0.4
M7	Bindloss Plain	767	37	49	12	2	0.2
M8	Hazlet Plain	2,204	17	79	1	3	0.3
M9	Schuler Plain	1,750	37	61	1	2	0.1
M10	Maple Creek Plain	2,661	73	20	2	5	0.2
M11	Great Sand Hills	1,243	78	13	8	1	0.1
M12	Antelope Creek Plain	2,678	19	76	0.2	4	1
M13	Gull Lake Plain	1,520	42	53	2	3	1
M14	Beechy Hills	2,857	40	52	2	6	0.3
M15	Coteau Hills	1,498	16	75	6	3	0.2
M16	Chaplin Plain	6,713	22	62	3	12	1
M17	Swift Current Plateau	7,588	19	78	1	2	1
M18	Wood River Plain	10,076	15	81	0.4	4	1
M19	Dirt Hills	3,349	33	53	11	3	1
M20	Coteau Lakes Upland	6,729	31	58	2	7	1
M21	Lake Alma Upland	2,139	14	73	4	8	2
M22	Wood Mountain Plateau	8,984	55	39	2	4	1
M23	Climax Plain	3,611	29	67	0.3	3	1
M24	Old Man on his Back Plateau	1,373	67	31	0.3	1	1
M25	Wild Horse Plain	2,601	73	25	0.2	2	1
Mixed Grassland Total		86,422	31%	62%	2%	5%	1%

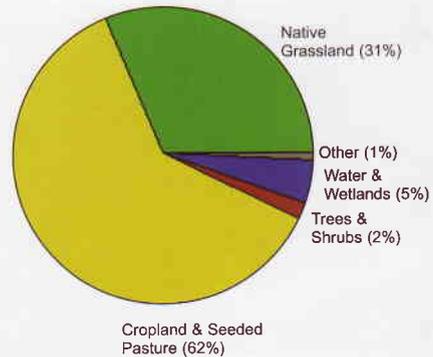
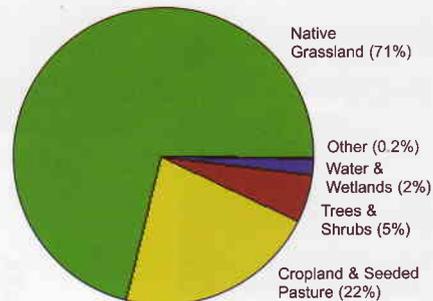


TABLE 2.4. CYPRESS UPLAND

Landscape Area Name	Land Area Total (km ²)	Cover Type (%)				Other	
		Native Grassland	Cropland & Seeded Pasture	Trees & Shrubs	Water & Wetland		
N1	Cypress Slope	947	66	29	3	2	0.3
N2	Cypress Hills	4,073	72	20	6	2	0.2
		5,020	71%	22%	5%	2%	0.2%



Landscape Areas Within The Prairie Ecozone of Saskatchewan

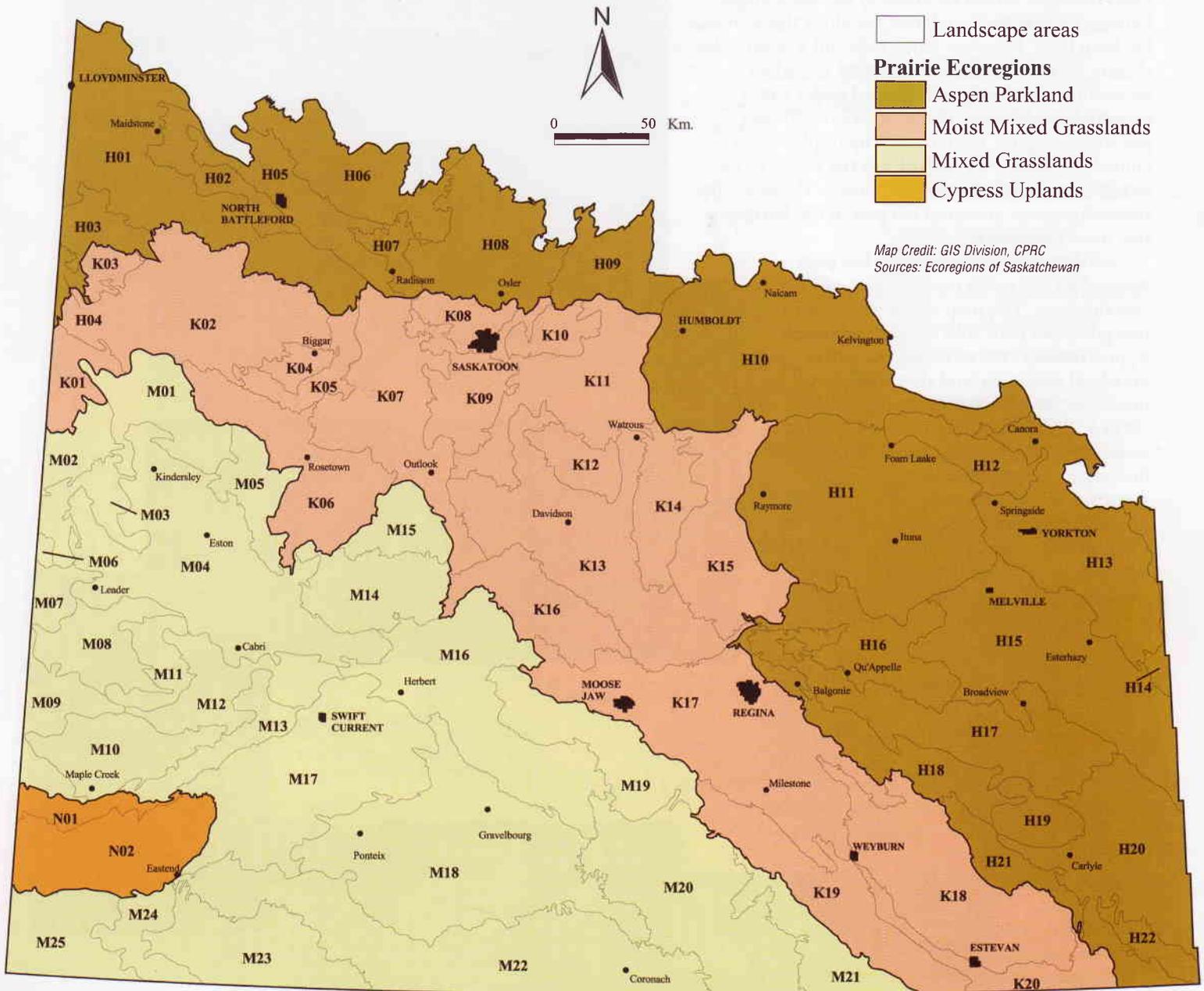


TABLE 3. NUMBER AND SIZE OF REMAINING NATURAL HABITAT PATCHES IN SOUTHERN SASKATCHEWAN BY ECOREGION. SAMPLE SIZES REFER TO NUMBER OF 1:50,000 MAP SHEETS EXAMINED.*

Ecoregion	<10 ha (<25 ac)	11-100 ha (25-250 ac)	101-1,000 ha (250-2500 ac)	> 1,000 ha (>2,500 ac)
Aspen Parkland (n=29)	24,346	888	144 (0.6%)	16 (0.1%)
Moist Mixed Grassland (n=18)	23,444	1,042	192 (0.8%)	43 (0.2%)
Mixed Grassland (n=88)	30,339	2,017	372 (1.1%)	80 (0.2%)
Overall	116,912	5,637	980 (0.8%)	192 (0.2%)

*Reference: James, P.C., K.M. Murphy, F. Beek and R. Sequin, 1999. The biodiversity crisis in southern Saskatchewan: a landscape perspective. Pages 13 to 16 in J. Thorpe, T.A. Steeves and M. Gallop (eds.) Proceedings of the Fifth Prairie Conservation and Endangered Species Conference. Provincial Museum of Alberta, Edmonton. Natural History Occasional Paper No. 24.

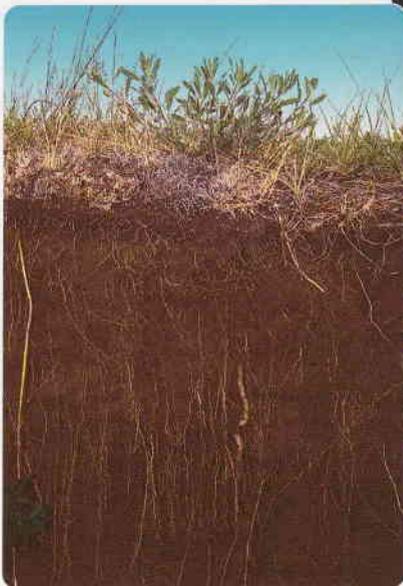
Note: 250 hectares (625 acres) is considered the minimum required to support representative levels of native species diversity. Reference: P.C. James, 2000. Presentation at Native Plant Society of Saskatchewan Annual General Meeting.

Prairie Soil: Finding Our Roots

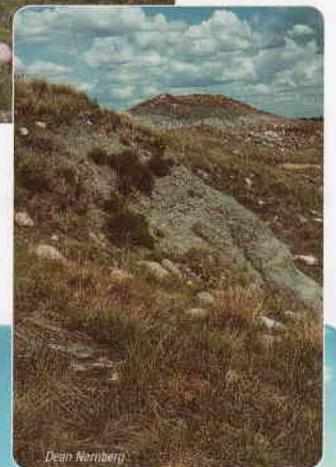
From the statistics described above, it is clear that most native grassland has been lost to agricultural cultivation. We should be proud of our agricultural heritage for it is the foundation on which this province has been built. However, fertile soils and a favourable climate are the foundation of western Canadian agriculture. Our fertile soils formed under native grasslands over almost 10,000 years since the last glaciation. Organic matter, made up of plants and animals decaying over centuries, is the source of the fertility and rich dark colour of topsoil. Therefore, the remaining native grassland is a part of our heritage that must be conserved.

Soil capability for agriculture has been mapped for the entire prairie region of Saskatchewan. This map shows where we can find good and poor soils for crop production. **Approximately 75% of remaining native grassland occurs on land that is severely limited or unsuitable for crop production** (Map 3, Table 4). Most of these areas are unsuitable for cultivation due to soil moisture limitations, stones, steep slopes, erosion, salinity, soil structure or flooding. Over 24% of native grassland is still at medium or high risk of being broken (Soil classes 1 to 3). With advances in crop development, crop varieties that can grow under drier conditions and on infertile soil may soon become available. While these advancements may be very beneficial to producers, it may also increase the threat of further cultivation of native prairie on poor agricultural land.

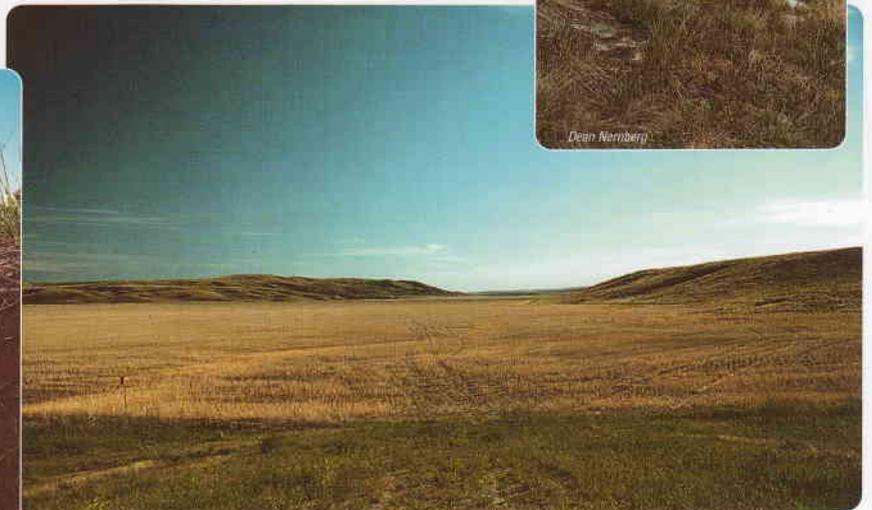
Some plants grow best on fertile clay soils while others are well adapted to infertile sandy soils. Some animals depend on specific plants to provide food and shelter. In order to keep the diversity of plants and animals across the prairies, we need to conserve native grassland on both fertile and infertile soils. **Only 10% of the remaining native grassland occurs on highly productive soil (i.e., Soil Class 1 or 2).** These areas are at highest risk of cultivation. They need to be saved as a benchmark for the future and a reserve of biodiversity.



A diverse range of decomposing native plants and animals built today's agricultural soils.



Approximately 75% of remaining native grassland occurs on land that is severely limited or unsuitable for annual crop production.



Native Dominant Grasslands Relative To Soil Capability For Agriculture Within The Prairie Ecozone of Saskatchewan

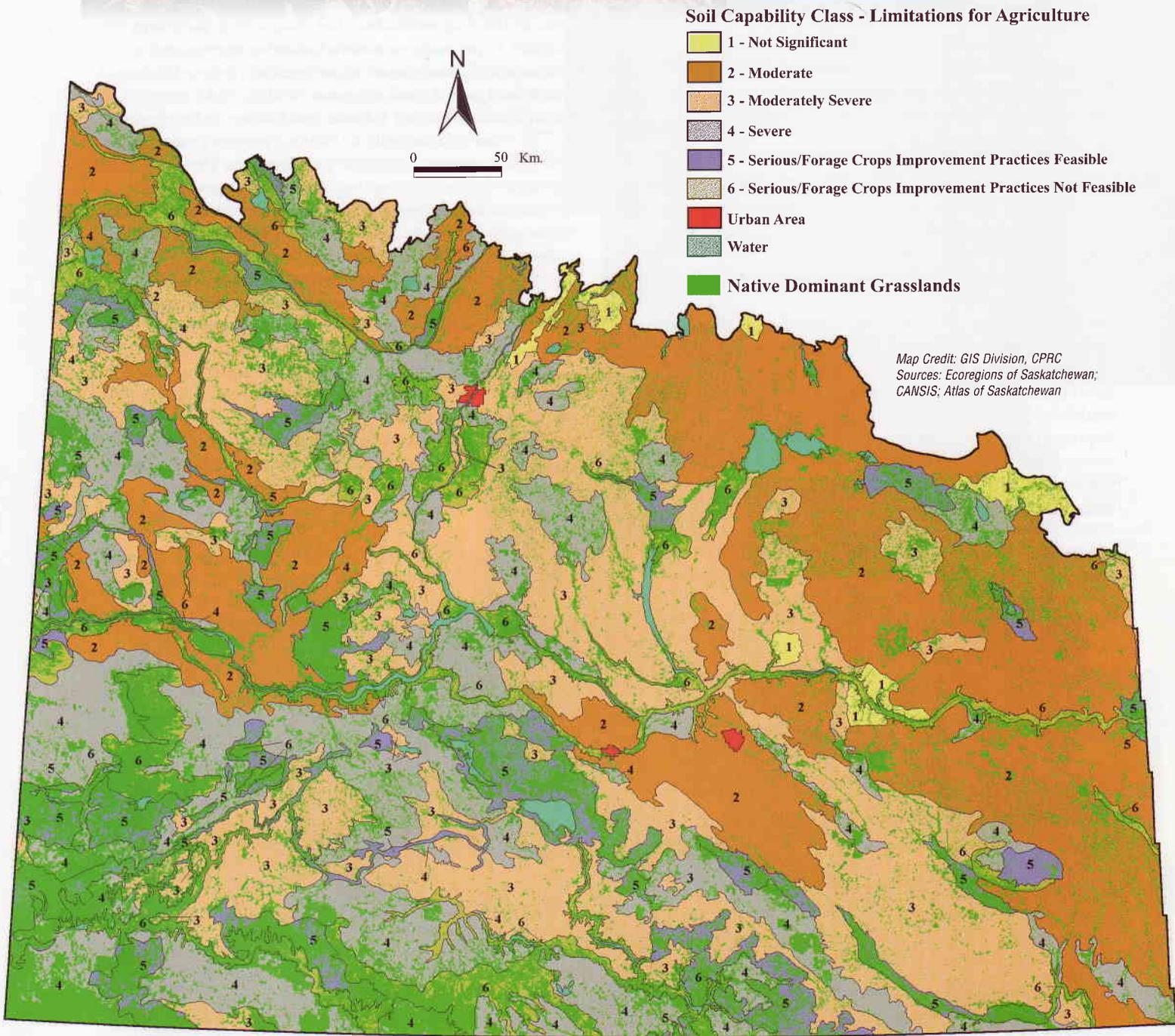


TABLE 4. SOIL CAPABILITY CLASSIFICATION FOR NATIVE DOMINANT GRASSLAND (NDG) IN THE PRAIRIE ECOZONE

Soil Class	Soil Class Description	Prairie Ecozone		NDG		
		Land Area (km ²)	% of Ecozone	Land Area (km ²)	% NDG	% of Ecozone
1	No Significant Limitations	2,696	1	231	1	0.1
2	Moderate Limitations/Moderate Conservation Practices	70,025	29	5,072	10	2
3	Moderately Severe Limitations	65,901	27	7,229	14	3
4	Severe Limitations	55,012	23	14,758	29	6
5	Forage Crops Improvement Practices Feasible	23,944	10	12,609	24	5
6	Forage Crops Improvement Practices Not Feasible	19,441	8	11,125	22	5
urban	Urban Area	249	0.1	9	0.02	0
water	Water	3,560	2	610	1	0.3
Total		240,828	100%	51,643	100%	21%

*Soil capability for agricultural classification derived from the Atlas of Saskatchewan Digital Data Set, 1999.

Prairie Conservation Initiatives

Over 30% of the remaining native grassland is owned or managed by government agencies or conservation organizations (Table 5). Almost 45% of this native 'conservation land' (or 13% of all native grassland) is managed as Provincial or PFRA (Prairie Farm Rehabilitation Administration) pasture. These lands are either leased to farmers and ranchers or are managed as community pastures.

An estimated 46% of conservation land (Table 5) is protected under the provincial Wildlife Habitat Protection Act. Although restricted development may be permitted, this legislation protects 13,600 km² (3.4 million acres) of uplands and wetlands in its natural state. Other publicly owned conservation areas include parks. Once fully established, Grasslands National Park will encompass 906 square kilometres (226,500 acres) of land, 82% of which is native grassland.

In response to the need to conserve more areas in their natural state, the Province is also in the process of establishing a system of special sites to be called the Representative Areas Network. The network will consist of existing and new wildlife lands, riparian areas, wetlands, protected areas, bird sanctuaries, ecological reserves and prairie rangelands. A Biodiversity Action Plan is also being developed to ensure that our biological resources are conserved.

A number of non-governmental agencies own and lease land to conserve wildlife habitat and biodiversity. Some of these agencies also offer stewardship programs designed to promote voluntary habitat conservation by landowners. These conservation agencies include Ducks Unlimited Canada, Saskatchewan Wildlife Federation, Nature Conservancy of Canada and Nature Saskatchewan.

The Prairie Conservation Action Plan was developed to further the interests of prairie conservation. The committee implementing this plan brings together representatives from government agencies, industry, conservation organizations, special interest groups and landowners to discuss issues related to prairie conservation. Chaired by the Saskatchewan Stock Growers' Association, it provides a forum for information exchange, coordinated conservation efforts and development of useful education and stewardship programs.

Landowners can use **conservation easements** to protect land from being broken. 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.



Prairie conservation has become an issue in urban centres as well as in the country.

TABLE 5. NATIVE GRASSLAND WITHIN CONSERVATION AREAS OF SASKATCHEWAN.¹

Conservation Area (CA) Types	Conservation Areas		Native Dominant Grasslands (NDG)		
	Area ² (km ²)	% of ecozone	Area (km ²)	% of CA	% of NDG in ecozone ³
Ramsar Site Wetlands of international importance consisting of marshes, swamps and other wetlands of value for flood control, nutrient production, wildlife habitat and other related purposes.	595	0.2	122	20.6	0.2
Migratory Bird Sanctuary Designated to protect migratory bird, their nests, eggs and habitat.	486	0.2	17	3.5	<0.1
National Historic Park Federally owned lands designated to: a) commemorate a historic event; or b) preserve a historic landmark or object of historic, prehistoric or scientific interest of national significance.	12	<0.1	5	43.1	<0.1
National Park Relatively large tracts of land and/or water designated and managed by the federal government to protect representative natural areas or ecosystems of Canadian or international significance.	914	0.4	748	81.8	1.4
National Wildlife Area Designated to protect and maintain important or unique federally owned lands for migratory birds and other wildlife.	193	0.1	110	56.7	0.2
PFRA Community Pasture Marginal agricultural lands established to accommodate sustainable grazing practices and other compatible land uses, such as wildlife habitat, recreation and mineral extraction.	6,594	2.7	5,477	83.1	10.6
Ecological Reserve Provincial lands sustaining or associated with unique or representative parts of the natural environment	8	<0.1	2	26.3	<0.1
Provincial Historic Site Small parcels of crown land containing prehistoric or historic resources of provincial significance.	1	<0.1	1	69.6	<0.1
Protected Area Designated crown lands which serve to protect and preserve site-specific cultural and natural resources of provincial significance.	54	<0.1	31	58.6	0.1
Provincial Community Pasture Large blocks of provincial crown land assembled to provide supplementary grazing for livestock producers and to maintain marginal lands in permanent cover. They are managed to accommodate multiple uses, such as wildlife habitat, recreation, heritage interests and mineral activities.	2,317	1.0	1,849	79.8	3.6
Provincial Heritage Property Heritage property is any property, whether a work of nature or of man, that is of interest for its architectural, historical, cultural, environmental, aesthetic or scientific value.	<1	<0.1	<1	100.0	<0.1
Provincial Parks Natural Environment - Large natural tracts of land protecting representative and unique landscapes; offer public recreational opportunities. Wilderness - Large & remote tracts of undisturbed crown land in a natural state; allow the pursuit of low intensity & non-mechanized wilderness recreation.	845	0.4	243	28.8	0.5
Provincial Recreation Site Small areas of crown land developed to take advantage of particular recreation activities or facilities (e.g., campground, picnic area or lake access).	29	<0.1	13	44.3	<0.1
Wildlife Development Fund Land⁴ Land designated to conserve and improve critical habitat primarily for white-tailed deer, as well as other important game and endangered species.	284	0.1	89	31.2	0.2
Wildlife Habitat Protection Act⁴ Lands critical to wildlife survival including rare and endangered species. They protect remaining "critical" areas on crown land without affecting existing compatible traditional uses.	9,730	4.0	7,575	77.8	14.7
Wildlife Refuge These lands are constituted as areas for the protection, propagation, perpetuation, management, control, regulation and/or enhancement of wildlife and its habitat.	37	<0.1	13	35.6	<0.1
Nature Conservancy of Canada NCC is Canada's only national charity dedicated to preserving ecologically significant areas through outright purchase, donations and conservation easements.	178	0.1	78	43.6	0.2
Total in Conservation Areas⁵	22,277		16,373	73.5	31.7

1 Reference: Gauthier, D.A. and E. Wiken. (in press). Monitoring the conservation of grassland habitat, Prairie Ecozone, Canada. Proceedings of the 7th National Science Meeting of the Ecological Monitoring and Assessment Network, May 2-5, 2001, University of Calgary, Calgary, Alberta.²

Land area data were calculated from geographical information systems maps and may not equal values published by agencies managing the CAs.

3 Percentage of all NDG in Prairie Ecozone accounted for in CA.

4 These CA types are referenced by quarter section centroids, i.e., they are not available as polygons. Therefore, the CA types can't be intersected with cover types to determine the extent of each land cover type relative to CAs. Therefore, reliable area totals by cover type cannot be obtained.

5 Some areas are designated by more than one CA type. Thus when summing across CA types, cases of double counting may occur.

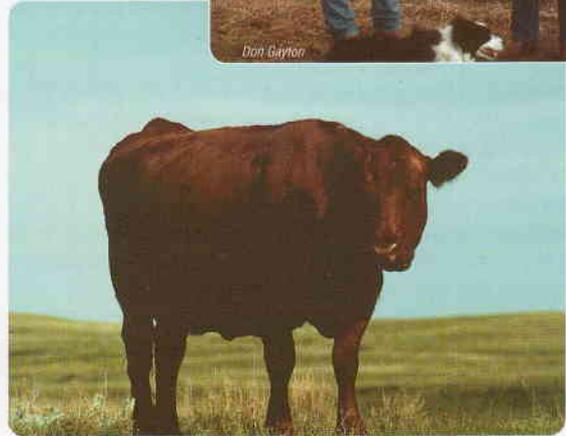
Good Stewards

Drought stress and disturbances such as fire and grazing by huge herds of bison were common on the prairies. With time, prairie plant communities became well adapted to these disturbances. In fact, researchers have shown that moderate levels of disturbance produce the most diverse plant communities. The disturbances, however, were not continuous. Prairie fires could not burn the same piece of land year after year because it took time for litter to build up to fuel the fire. Bison migrated through the rangeland, grazing heavily for a short time but then sometimes not returning for years. The prairie had time to recover between disturbance events. In a sense, nature's balance managed the prairie.

Now that the land has been settled, it has become our responsibility to manage the prairie. The roaming herds of bison are gone and prairie fires are few and far between. Some land has been idled while other parcels have been heavily overgrazed. Poor management allows trees, shrubs, weeds and tame grasses to invade the native grassland. The plant community also becomes less diverse and less productive. Some land managers and researchers have estimated that less than 20% of the remaining prairie is in 'good' condition (i.e., a healthy state).

It is clear then, that the future of native prairie is in the hands of its stewards. By keeping the best interests of the land a priority, good stewards reap the benefit of healthy, diverse and productive prairie. However, the cost of conserving an endangered habitat can be very

high for an individual landowner. These landowners must be commended for keeping the land in its healthy, natural state. Since all of society benefits, we must encourage and support the stewardship efforts of farmers and ranchers.



The future of native prairie is in the hands of its stewards.



Prescribed burning and well-managed grazing are keys to maintaining diversity and controlling invasion of exotic and woody plants.

Our Prairie Future

Cultivation has been noted as the major source of prairie disturbance in the past. In the future, however, other threats to native grassland may be equally as important. The impact of industrial development, expanding towns and cities, acreages, summer cottages and roads are just a few examples. Many of these disturbances fragment the landscape allowing exotic plants to spread into the prairie. Prairie disturbances such as these are inevitable as our population grows. We may reduce our impact by minimizing and restoring disturbance areas. We must also identify areas that are important for conservation where development is restricted or excluded. Detailed assessments of quality and health are needed to ensure our remaining native prairie is managed appropriately in the future.

Assessments of our own values and choices are also needed to ensure that, in the long term, we will still have what we value most.

Future prairie stewards discover the web-of-life on the prairie.



Resources

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General

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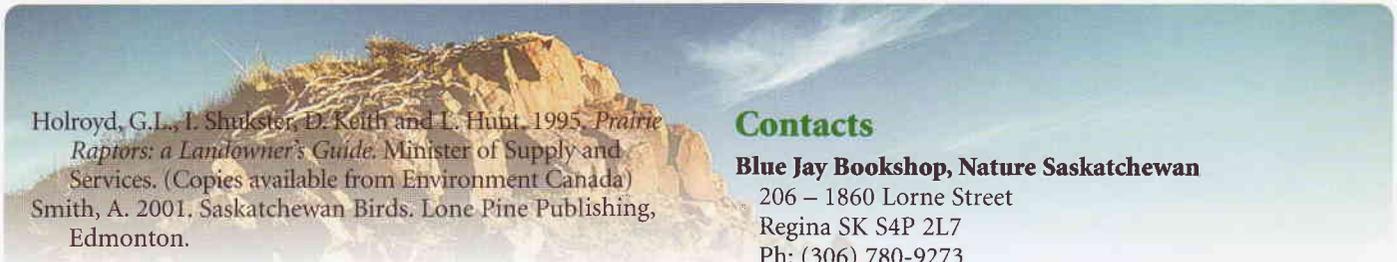
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Contacts

Blue Jay Bookshop, Nature Saskatchewan

206 – 1860 Lorne Street
Regina SK S4P 2L7
Ph: (306) 780-9273

- Wide range of field guides for plants, animals and insects

Canadian Plains Research Center

University of Regina
3737 Wascana Parkway
Regina SK S4S 0A2
Ph: (306) 585-4758
Website: www.cprc.uregina.ca

Ducks Unlimited Canada

603-45th Street West
Saskatoon SK S7L 5W5
Ph: (306) 665-7356

or

Box 4465
Regina SK S4P 3W7
Ph: (306) 569-0424
Website: www.ducks.ca

- Prairie stewardship programs
- Wetland conservation and development
- Wildlife habitat conservation and development
- Conservation easements

Environment Canada

Canadian Wildlife Service, Prairie and Northern Region
115 Perimeter Road
Saskatoon SK S7N 0X4
Ph: (306) 975-4291
Website: www.ec.gc.ca/cws-scf/cwshome_e.html

Federation of Saskatchewan Indian Nations

Asimakaniseekan Askiy Reserve
Suite 200-103 A Packham Avenue
Saskatoon SK S7N 4K4
Ph: (306) 665-1215
Website: www.fsin.com

George F. Ledingham Herbarium

c/o Biology Department
University of Regina
Regina SK S4S 0A2
Ph: (306) 585-4254

- Plant collections
- Plant identification

Grasslands National Park

Box 150
Val Marie SK S0N 2T0
Ph: (306) 298-2166
Website: http://parkscanada.pch.gc.ca/parks/saskatchewan/grasslands/grasslands_e.htm

Native Plant Society of Saskatchewan Inc.

P.O. Box 21099
Saskatoon SK S7H 5N9
Ph: (306) 668-3940
Website: www.npss.sk.ca

- Source list of native plant suppliers
- Workshops, meetings, field tours
- Restoration and education projects
- General plant identification inquiries

Nature Conservancy Canada

#101-2022 Cornwall Street
Regina SK S4P 2K5
Ph: (306) 787-6987
Website: www.natureconservancy.ca

- Conservation easements
- Conservation programs

Nature Saskatchewan

Room 206 – 1860 Lorne Street
Regina SK S4P 2L7
Website: www.unibase.com/~nature/
Ph: (306) 780-9273

- Conservation easements
- Environmental education

PFRA Shelterbelt Centre

Box 940
Indian Head SK S0G 2K0
Ph: (306) 695-2284
Website: www.agr.ca/pfra

- Source for trees and shrubs
- Information resources for establishing shelterbelts

Prairie Farm Rehabilitation Administration

1800 Hamilton St.
Regina SK S4P 4L2
Ph: (306) 780-5121
Website: www.agr.ca/pfra/

- Grazing and water management

Saskatchewan Agriculture and Food

3085 Albert Street
Regina SK S4S 0B1
Ph: (306) 787-5140
Website: www.agr.gov.sk.ca

- Grazing and water management
- Noxious weed list

Saskatchewan Burrowing Owl Interpretive Centre

c/o Moose Jaw Exhibition Company Ltd.
250 Thatcher Drive East
Moose Jaw SK S6J 1L7
Ph: (306) 692-1765

Saskatchewan Conservation Data Centre

3211 Albert St.
Regina SK S4S 5W6
Ph: (306) 787-5021
Website: www.biodiversity.sk.ca

- Rare plants and animals information
- Plant and animal inventory and distribution

Saskatchewan Environment and Resource Management

3211 Albert St.
Regina SK S4S 5W6
Ph: (306) 787-2314
Website: www.gov.sk.ca/serm/

- Wildlife and habitat management for wildlife
- Parks and recreation
- Conservation easements

Saskatchewan Indian Cultural Centre

103B - 205 Packham Avenue
Saskatoon SK S7N 4K4
Ph: (306) 373-9901
Website: www.sicc.sk.ca

Saskatchewan Prairie Conservation Action Plan

Box 4752
Regina SK S4P 3Y4
Ph: (306) 352-0472
Website: www.pcap-sk.org

- Multi-stakeholder group addressing issues related to prairie conservation
- Field tours, prairie management, educational events
- Key contact for conservation issues

Saskatchewan Purple Loosestrife Eradication Project

115 Perimeter Road
Saskatoon SK S7N 0X4
Ph: (306) 975-4101

Saskatchewan Wetland Conservation Corporation

#101-2022 Cornwall Street
Regina SK S4P 2K5
Ph: (306) 787-0782
Website: www.wetland.sk.ca

- Native Prairie Stewardship Program
- Streambank Stewardship Program
- Grazing and water management
- Plant identification

Saskatchewan Wildlife Federation

444 River St. W,
Moose Jaw SK. S6H 6J6
Ph: (306) 692-7772

Saskatchewan Stock Growers' Association

Box 4752
Regina SK S4P 3Y4
Ph: (306) 757-8523

Semiarid Prairie Agriculture Research Centre

(Agriculture and Agri-Food Canada)
Box 1030
Swift Current SK S9H 3X2
Ph: (306) 778-7200
Website: www.res.agr.ca/swift/welcome.htm

Society for Range Management

3085 Albert Street,
Regina SK S4S 0B1
Ph: (306) 787-7712

Tourism Saskatchewan

1922 Park Street
Regina SK S4P 3V7
Ph: (306) 787-2300
Website: www.sasktourism.com

University of Saskatchewan

Department of Plant Sciences
51 Campus Drive
Saskatoon SK S7N 5A8
Ph: (306) 966-4955
Website: www.usask.ca/agriculture/plantsci/

W.P. Fraser Herbarium

University of Saskatchewan
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Saskatoon SK S7N 5A8
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