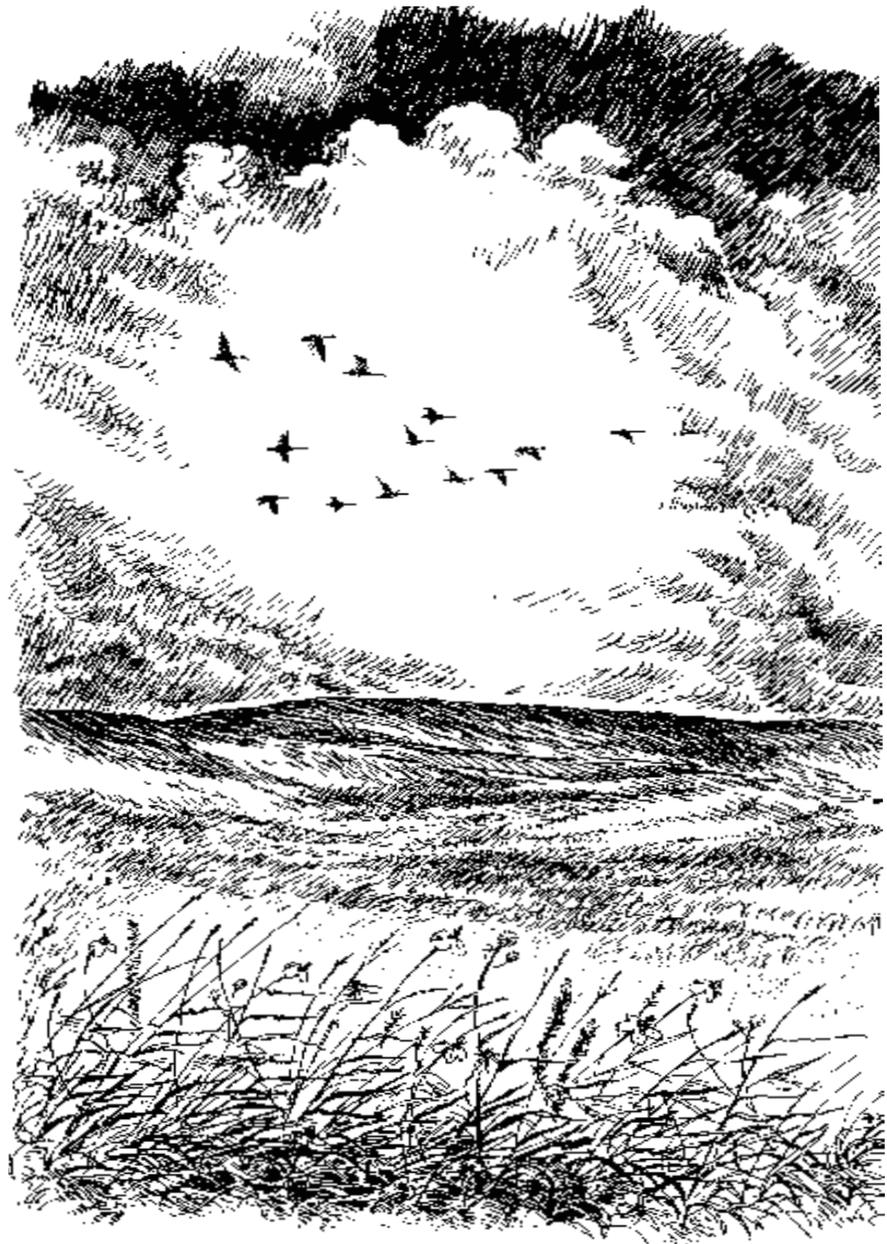


Proposed
North Dakota
Wildlife Management Area

Grassland Easement Program
Environmental Assessment



Environmental Assessment

Proposed

North Dakota

Wildlife Management Area

Grassland Easement Program

Prepared by:

U.S. Fish and Wildlife Service
Refuges and Wildlife, Division of Realty
134 Union Blvd., Suite 350
Lakewood, CO 80228-1807

January 2000

Table of Contents

Chapter 1. Purpose of and Need For Action

Introduction and Background	5
Proposed Action	6
Purpose of and Need for Proposed Action	6
Project Area	6
Decisions to be Made	11
Issues Identified and Selected for Analysis	11
Biological Issues	12
Water Resources	13
Social and Economic Issues	13
Landownership/Land Use:	13
Issues Not Selected for Detailed Analysis	14
Related Actions and Activities	14
National Wildlife Refuge System and Authorities	16
Guiding Principles of the National Wildlife Refuge System	16
Goals of the National Wildlife Refuge System	17
The Habitat Protection and Land Acquisition Process	18

Chapter 2. Alternative, Including the Preferred Alternative

Alternative A. No Action	19
Alternative B. Establish the North Dakota Wildlife Management Area Primarily Along the Missouri Coteau	19
Alternatives Considered But Not Studied	20

Chapter 3. Affected Environment

Biological Environment	23
Habitat	23
Uplands	23
Wetlands	24
Wildlife	27
Invertebrates	27
Amphibians and Reptiles	27
Mammals	27
Birds	28
Social and Economic Considerations	31
Agricultural Resources	31
Mining, Oil, and Gas Resources	31
Landownership	31
Property Tax	32
Public Use and Wildlife-dependent Recreational Activities	32
Cultural Resources	32
Contaminants and Hazardous Wastes	33

Chapter 4. Environmental Consequences	
Effects on the Biological Environment	35
Wildlife Habitat Protection	35
Alternative A (No Action)	35
Alternative B (Preferred Alternative)	36
Water Issues	37
Alternative A (No Action)	37
Alternative B (Preferred Alternative)	37
Effects on Social and Economic Environment	38
Landownership/Land use	38
Alternative A (No Action)	38
Alternative B (Preferred Alternative)	38
Unavoidable Adverse Impacts	39
Irreversible and Irretrievable Commitments of Resources	39
Short-term Uses Versus Long-term Productivity	39
Cumulative Impacts	39
Chapter 5. Coordination and Environmental Review	
Agency Coordination	41
National Environmental Policy Act	41
Distribution and Availability	41
List of Preparers and Reviewers	42
References	43
Appendices	
Appendix A. Endangered and Threatened Species	49
Appendix B. Distribution List for the Environmental Assessment	51
Appendix C. List of Scientific and Common Names Used in the Text	53
Figures	
Figure 1a and 1b. Prairie Pothole Region Map and Aerial View	5
Figure 2. Proposed Project Area Boundary Map	7
Figure 3. North Dakota Land Cover Map	9
Figure 4. Percentage of Land Cover Types in the North Dakota Wildlife Management Area Project Area	11
Figure 5. Alternative B. Priority Zones	21
Figure 6. Wetland Basins in the Prairie Pothole Region of North Dakota 25	
Figure 7. Waterfowl Breeding Pair Distributions in the Prairie Pothole Region of North Dakota	29

Chapter 1.

Purpose of and Need For Action

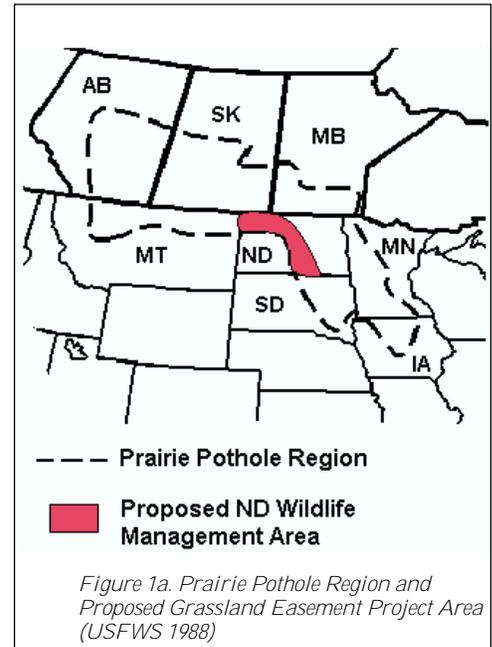
Introduction and Background

The Missouri Coteau of central North Dakota lies in the Prairie Pothole Region, a rolling, hilly landscape created by retreating glaciers 10,000 years ago (Figure 1a and 1b). Historically, these hills were covered with mixed grass prairie, and the thousands of depressions between hills filled seasonally with water, creating wetlands or “potholes.” These grasslands were regularly subjected to disturbances such as fire, drought, and grazing bison which ultimately shaped the plant structure and composition of the prairie. Millions of waterfowl nested on the Coteau, shorebirds stopped over during migration, and grassland songbirds completed their life cycles among a diversity of invertebrates, amphibians, reptiles, and small mammals. Key predators included the plains wolf, coyote, and grizzly bears. All scientific names for wildlife and plants identified in this Environmental Assessment (EA) can be found in Appendix C.

Today, some of this original mixed-grass prairie system remains, but much has changed in North Dakota and the Prairie Pothole Region. Since the 1800s, North Dakota has lost approximately 75-90 percent of its native grasslands and 50 percent of its original wetlands (Dahl 1990, Noss *et al.* 1995, HAPET 1999), primarily to crop production. While these changes have enabled North Dakota to become one of the top agricultural states in the nation, leading production of several commodities including all wheat, barley, and sunflowers (North Dakota Agricultural Statistics Service 1998), fragmenting the prairie has had a significant effect. Changes include altered fire frequency, increased sediment and pesticide runoff, and the replacement of dominant predators and grazers (wolves, grizzlies, and bison) with red foxes, raccoons, skunks, and domestic livestock (USFWS and DU 1996, Jones 1999). Coincident with these changes have been declines in waterfowl recruitment and grassland bird populations across their ranges (USFWS 1988, Beauchamp *et al.* 1996, Sauer *et al.* 1997) and the extirpation of breeding populations of whooping cranes and Eskimo curlews from North Dakota (Bry 1986, USFWS 1996a).

The Missouri Coteau region includes some of the last remaining large blocks of native mixed-grass prairie, high wetland densities, and stable or increasing populations of birds that are declining elsewhere (Sauer *et al.* 1997, Martin *et al.* 1998). The Coteau provides habitat for threatened species such as piping plovers and bald eagles. It is also considered the “jewel” of the Prairie Pothole Region because of the high numbers of actual and potential waterfowl that breed in this area (Smith 1999). This is possible, in part, because about 46 percent of the Coteau is still native grassland and wetlands (HAPET 1999). Although approximately 45 percent of the Coteau has been converted to cropland, livestock grazing is also common, and tends to be relatively compatible with wildlife preservation and habitat protection.

The U.S. Fish and Wildlife Service (Service) has been working since the 1960s to preserve and restore waterfowl and wildlife habitat along the Missouri Coteau. In this effort, several national wildlife refuges, waterfowl production areas, and conservation easement programs have been established. Several other agencies have joined the Service in cooperative programs of habitat protection.



One of the largest and most extensive of these cooperative agreements is the Prairie Pothole Joint Venture (PPJV) established under the North American Waterfowl Management Plan (NAWMP). The grassland easement program proposed here is designed to complement ongoing waterfowl conservation projects as well as increase the scope of conservation efforts along the Missouri Coteau.

The focus for this project will primarily be on high quality grasslands not only for waterfowl, but also for the myriad of other bird species, plants, and mammals that rely on this habitat, as well as the overall protection of the critically declining mixed-grass prairie ecosystem. In order to do this, the Service plans to establish an easement program under the National Wildlife Refuge System (System) called the North Dakota Wildlife Management Area (WMA). A conservation easement program was chosen because it is generally more efficient and effective to protect areas of remaining high quality habitat than to restore areas of degraded habitat. Furthermore, since over 95 percent of the Missouri Coteau is privately owned, success will require cooperation with landowners. Fortunately, many of the current land management practices, i.e. grazing, are compatible with the goals of this project.

Proposed Action

The proposed project seeks to protect 300,000 acres out of the approximately three million acres of remaining native prairie along the Missouri Coteau region from northwest to south-central North Dakota (Figure 2). Protection of the prairie will be accomplished primarily through acquisition of perpetual grassland easements from willing sellers. All grassland easements would also have associated wetland easements. Fee title transfer and restoration activity may also be conducted. The funding is provided by a grant from the Land and Water Conservation Fund. Monies for this fund are derived primarily from oil and gas leases on the outer continental shelf, motorboat fuel tax revenues, and sale of surplus Federal property.

Purpose of and Need for Proposed Action

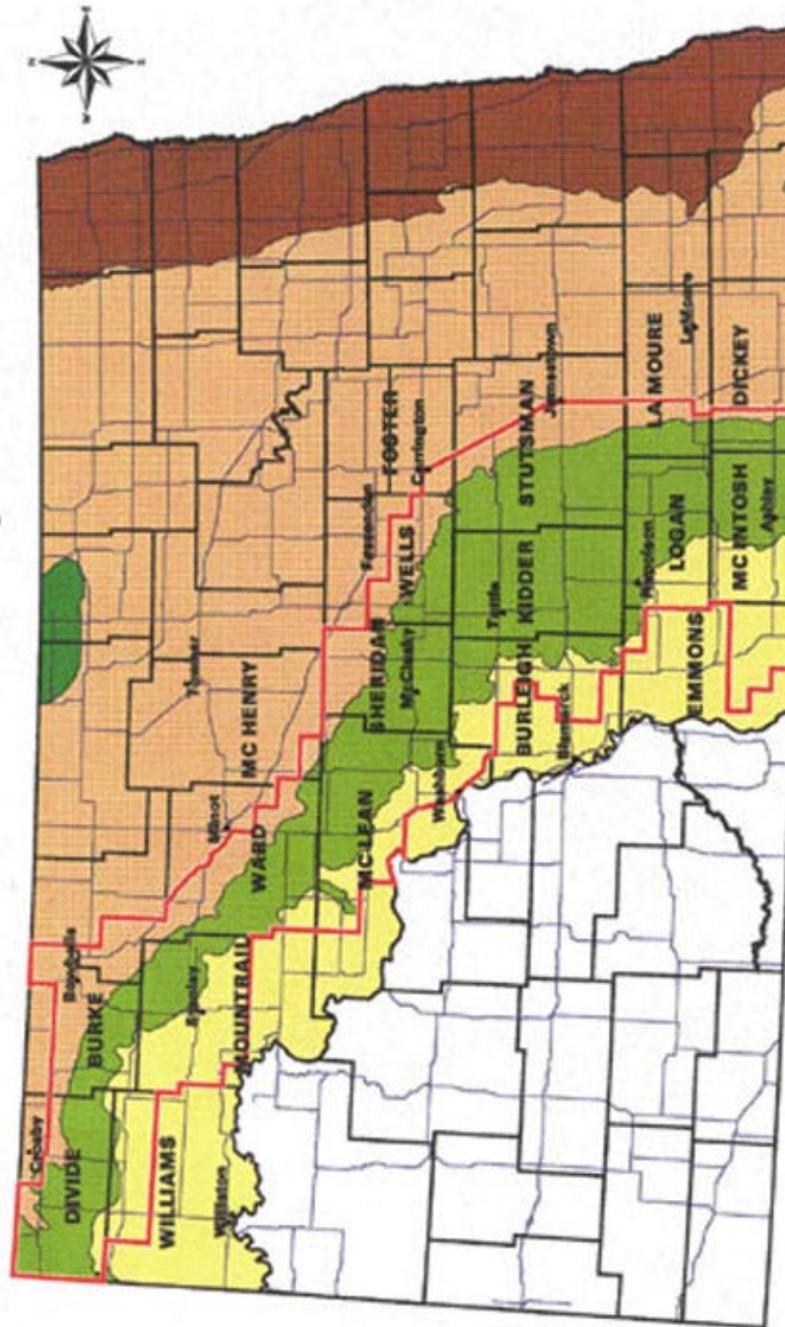
The project area encompasses some of the highest quality remaining native mixed-grass prairie and grasslands within the state of North Dakota and the Prairie Pothole Region (The Nature Conservancy 1999, HAPET 1999) (Figure 3). Approximately 45 percent of the area has already been converted to crop production, and over recent years, some areas have lost another 5-25 percent of grasslands (NRCS 1992a). Given the diversity of plants and animals that rely on this habitat, the ability of this project to protect grassland in perpetuity is critical. The purposes of this project are:

- P to protect native prairie from future agricultural conversion,
- P to protect wetlands and watersheds from siltation caused by wind and water erosion,
- P to protect wetlands and watersheds from contamination by pesticides and fertilizers,
- P to promote ecosystem management in order to maintain, sustain, and enhance the historic plant, animal, and insect biodiversity of native prairie habitats, and
- P to a lesser extent, to restore converted agricultural lands in order to enlarge or connect existing native prairie tracts.

Project Area

The project area extends from the northwest corner to the south-central portion of North Dakota including all or part of 17 counties. The project boundary generally follows the Missouri Coteau which is a hilly region formed by glacial deposition that lies to the north and east of the Missouri River (Figure 2) (Bluemle 1977). The elevations in the project area range from 1500 to 3000 feet. The project area is primarily a mixture of grassland, cropland, and wetlands (Figure 4). Most of the land (96 percent) is privately owned. The public land (4 percent) is primarily owned by the Service (refuges, waterfowl production areas) and the State of North Dakota (state school land, ND Game and Fish Department).

Figure 2.
NORTH DAKOTA WILDLIFE MANAGEMENT AREA
 Grassland Easement Project Area



Physiographic Regions

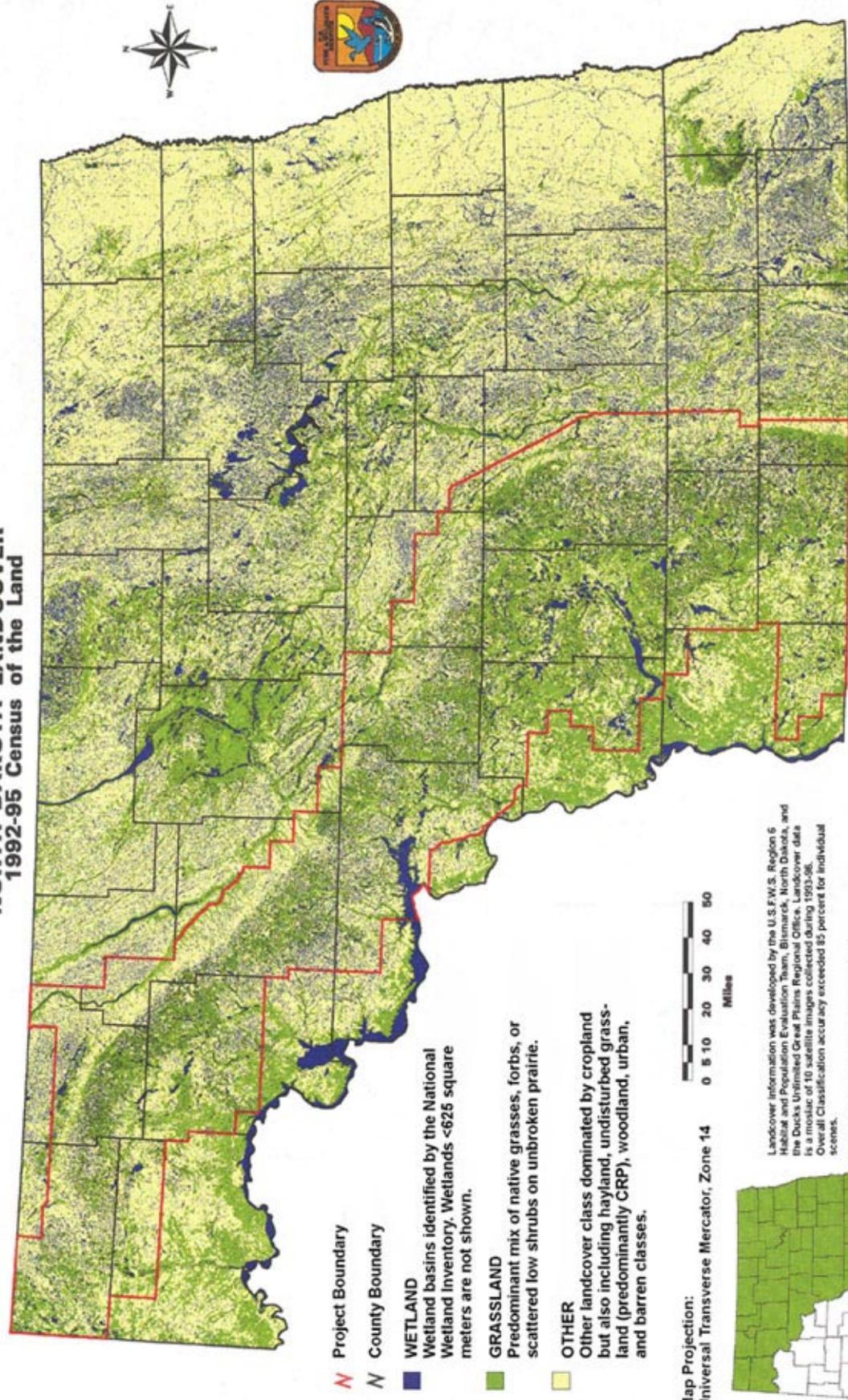
- Missouri Coteau
- Coteau Slope
- Glaciated Plains
- Turtle Mountains
- Red River Valley
- Prairie Coteau

- Project Boundary
- County Boundary
- Major Road



Physiographic Regions are derived from Level IV ecoregions in North Dakota (Omernick 1985). Ecoregions denote areas of general similarity with reference to geology, physiology, vegetation, climate, soils, land use, wildlife, and hydrology.

**Figure 3.
NORTH DAKOTA LANDCOVER
1992-95 Census of the Land**



-  Project Boundary
-  County Boundary
-  WETLAND
Wetland basins identified by the National Wetland Inventory. Wetlands <625 square meters are not shown.
-  GRASSLAND
Predominant mix of native grasses, forbs, or scattered low shrubs on unbroken prairie.
-  OTHER
Other landcover class dominated by cropland but also including hayland, undisturbed grassland (predominantly CRP), woodland, urban, and barren classes.

Map Projection:
Universal Transverse Mercator, Zone 14

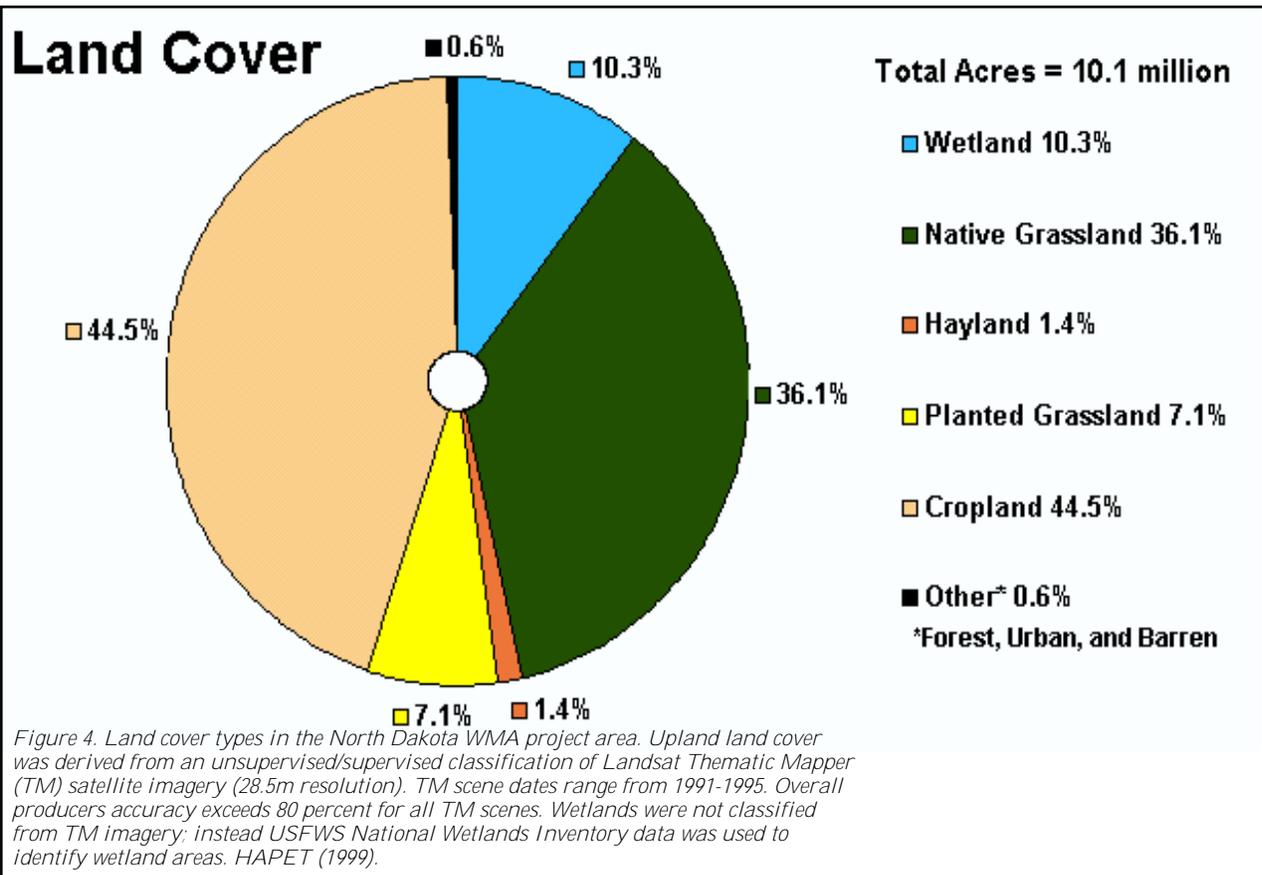


Miles



North Dakota

Landcover information was developed by the U.S.F.W.S. Region 6 Habitat and Population Evaluation Team, Bismarck, North Dakota, and the Ducks Unlimited Great Plains Regional Office. Landcover data is a mosaic of 10 satellite images collected during 1993-96. Overall Classification accuracy exceeded 85 percent for individual scenes.
This map was completed during June 1999.



Decisions to be Made

Based on the analysis provided in this Environmental Assessment, the Regional Director of the U.S. Fish and Wildlife Service, Region 6 - Mountain Prairie Region, will make three decisions:

1. Determine whether the Service should establish the North Dakota Wildlife Management Area (WMA). If yes,
2. Select an approved Wildlife Management Area boundary that best fulfills the habitat protection purpose.
3. Determine whether the selected alternative will have a significant impact upon the quality of the human environment. This decision is required by the National Environmental Policy Act (NEPA) of 1969. If the quality of the human environment is not affected, a Finding of No Significant Impact will be signed and will be made available to the public. If the alternative will have a significant impact, then an Environmental Impact Statement will be prepared to further address those impacts.

Issues Identified and Selected for Analysis

Public scoping meetings were held in Gackle, Garrison, and Crosby, North Dakota during April 1999 to identify issues and concerns from the public regarding the proposed North Dakota Wildlife Management Area. Approximately 65 people attended the meetings and additional comments were received by mail. In addition, a thorough review of the best available biological information on the project area was conducted. From these information sources, the major issues concerning the project were identified. The primary biological issue analyzed in this Environmental Assessment is the effect of the loss of native prairie through agricultural conversion to cropland. Social and economic issues identified for analysis include landownership and land use concerns.

Biological Issues

The loss of mixed-grass prairie to agricultural conversion has been identified as a primary threat to grasslands throughout the Missouri Coteau (The Nature Conservancy 1999). Approximately 45 percent of the project area has already been converted to cropland (HAPET 1999). The Natural Resources Conservation Service (NRCS) estimates that at least 150-200,000 additional acres of grassland in the project area are considered prime farmland. Complete restoration of native prairie is impossible once it has been plowed (Joern and Keeler 1995).

Conversion of native prairie to cropland results in changes in the landscape that can give rise to the following biological issues of concern:

- P Nest success of waterfowl has been declining in the Prairie Pothole Region since the 1930s (Beauchamp *et al.* 1996). This decrease in recruitment coupled with population declines in several species of waterfowl in the 1980s has made long-term population viability for waterfowl in the region a concern. Decreased nest success has been attributed to mammalian predators such as foxes, raccoons, coyotes, and skunks and the loss of protective grassland nesting cover through conversion to cropland (Duebber and Kantrud 1974, Cowardin *et al.* 1985, Klett *et al.* 1988, Sovada *et al.* 1995). Other birds, such as shorebirds, owls, raptors, and upland game birds, in the project area also lose a majority of their nests to predators, although long-term population trends for these species are not as well studied (Kantrud and Higgins 1992, Dinsmore *et al.* 1999).
- P Grassland birds are the only group to show consistent population declines over the last 30 years of breeding bird surveys. Nineteen of the 27 species in this group are found in the project area, making the Missouri Coteau one of the areas of highest species richness for grassland birds. Habitat loss has been identified as one of the primary reasons for declines in this group (USFWS 1995, Sauer *et al.* 1995).
- P Pesticide (herbicides, insecticides, and fungicides) usage is higher on croplands than pasture land. A pesticide use survey conducted in 1996 by the North Dakota State Extension Service found that approximately 90 percent of all cropland received at least one application of herbicide while less than 2 percent of all pasture land was treated. Insecticides were used on approximately 1.2 million acres of cropland while it was estimated that no acres of pasture land were treated. The most commonly used herbicide is in the phenoxy family. Depending on the formulation, the herbicide can be moderately toxic to birds and mammals and highly toxic to insects and fish. This herbicide can also negatively affect upland nesting birds by reducing broad-leaved plant cover or poisoning egg embryos if applied improperly. The most commonly applied insecticides are from the carbamate, organophosphate, and pyrethroid groups. All of these are highly toxic to fish and aquatic insects and the organophosphate and carbamate insecticides are highly toxic to mammals and birds (Messmer and Dahl 1991, Zollinger *et al.* 1996).

Water Resources

- P Loss of wetlands due to drainage is a concern in the project area. Historically, drainage has been associated primarily with croplands, and 50-60 percent of wetlands in North Dakota are estimated to have been lost already (Tiner 1984, Dahl 1990). A recent survey of landowners in the Prairie Pothole Region found that North Dakotans were more likely to want to decrease wetlands on their property and less interested in learning about conservation of wetlands than landowners from neighboring states. In addition, crop producers were less interested in wetland conservation easements than livestock producers or crop and livestock producers (Responsive Management 1998).
- P Conversion of grasslands to croplands also increases concerns of sedimentation and pesticide runoff into wetlands. Tillage increases the sediment load into wetlands when compared to grasslands (Gleason and Euliss 1998, Kantrud *et al.* 1989) primarily due to wind erosion (NRCS 1992b). Because of the high wetland densities in the pothole region (up to 100 basins/mi²), a high risk for contamination of wetlands exists from aerial applications of pesticides to cropland. Even when pesticides are carefully applied, aerial drift can still result in significant contamination of wetlands (Grue *et al.* 1988).

Social and Economic Issues

Landownership/Land Use:

The Service has been contacted by many landowners who support the project and are interested in enrolling their land in the easement program. A few individuals felt the project boundary should be extended to include more landowners, specifically in Renville County. Additional issues of concern were:

- P Several individuals believed that perpetual easements would negatively affect future generations of landowners. They were concerned that the easements would limit the choices of future landowners, even though they may have paid as much for the land as if it had no restrictions. Others were concerned that perpetual easements would lower the resale value of the land.
- P Comments were received that the North Dakota WMA would favor large landowners over smaller farms because the project focuses on larger tracts of native prairie. These landowners felt that there should be no minimum acre requirement for eligibility in the program.
- P Some respondents felt the scope of the project should be increased. Additional management provisions to easement contracts such as weed control, planting tame grass, and reconsidering the restrictions on haying were suggested.
- P Other comments included restoring prairie and enrolling land from the USDA Conservation Reserve Program (CRP) in the program.
- P Some landowners felt the easement program would not justly compensate landowners for the restrictions on their land and tillable land should be worth more.

Issues Not Selected for Detailed Analysis

It was suggested that wildlife interests should pay property taxes in the same manner as private landowners.

Since this is primarily an easement program, the land enrolled in the program does not change hands; therefore the taxes paid by the landowner are not affected.

Related Actions and Activities

North American Waterfowl Management Plan was enacted in 1986 to address declining waterfowl populations. Under this plan, the Prairie Pothole Joint Venture was created to coordinate the efforts of North Dakota, South Dakota, Minnesota, Iowa, and Montana. Two local projects within the Prairie Pothole Joint Venture, the Northern Coteau and Chase Lake Prairie Project, encompass the majority of land in the NDWMA. The funding and efforts for these projects represent partnerships from many groups including the private landowners, U.S. Fish and Wildlife Service, Ducks Unlimited, North Dakota Game and Fish Department, The Nature Conservancy, Delta Waterfowl, National Audubon Society, National Fish and Wildlife Foundation, Stutsman County Wildlife Federation, North Dakota Department of Agriculture, Falkirk Mining Company, and the North Dakota Wetlands Trust. This funding will be used for the protection and enhancement of approximately 150,000 wetland and upland acres in the Prairie Pothole Region.

Ducks Unlimited has submitted a proposal under the North American Wetlands Conservation Act for a Missouri Coteau Habitat Conservation Project. This proposal seeks to protect 53,000 acres of grassland in association with 8,500 wetland acres within the Missouri Coteau region of North Dakota. The Conservation Project is a cooperative effort between DU, USFWS, The Nature Conservancy, private landowners, and Independence Tube Corporation.

North Dakota Game and Fish Department (NDGFD) manages over 11,000 acres of State Wildlife Management Area lands within the project area. NDGFD also has over 8,000 acres of habitat and food plots that are leased from landowners with sportsmen's dollars. These plots are used to enhance the surrounding habitat complex.

U.S. Department of Agriculture offers several programs for conservation of habitat and resources in the project area. The Conservation Reserve Program provides payments to landowners to retire erodible cropland and restore vegetative cover for at least 10 years. Funds are also available for sharing the cost of restoration. Currently, over 1 million acres are enrolled in these programs within the proposed NDWMA project area. The 1996 Farm Bill has several conservation provisions such as the Environmental Quality Incentive Program (EQIP), Conservation of Private Grazing Land, and Wetland Conservation Provision (Swampbuster) designed to aid private landowners in restoring and conserving their resources and habitat.

The Nature Conservancy owns and manages three nature preserves within the project area. The Sheridan Preserve and the Buffalo Ranch Preserve are in Sheridan County and the John E. Williams Preserve is in McLean County. As already mentioned, The Nature Conservancy also frequently forms partnerships with other organizations to preserve habitat.

The North Dakota Wetlands Trust provides funding and cash incentives for a variety of wetland and grassland restoration projects throughout the Missouri Coteau and North Dakota. Examples of these programs include the Conservation Reserve Piggy-Back Program, the Efficiency Incentive Program, Create-a-Wetland, No-Till Drill projects, and the Sheridan County Grazing systems. These programs provide direct cash payments and/or equipment for the restoration of wetlands and upland grasslands.

Private landowners own over 95 percent of the project area and have primary stewardship of the remaining mixed-grass prairie. Landowners have made significant contributions to the Prairie Pothole Joint Venture projects in the area. Many landowners in the area are concerned with protecting wildlife and preserving grasslands.

National Wildlife Refuge System and Authorities

The Service proposes to protect lands within the project area through conservation easements to enhance the survival prospects of endangered and threatened species in the area and to protect and maintain grassland and wetland habitat for migratory birds and other species of animals and plants. The proposed resource protection actions would be consistent with the mission and guiding principles for the management and general public use of the National Wildlife Refuge System.

Guiding Principles of the National Wildlife Refuge System

1. **Habitat.** Fish and wildlife will not prosper without high-quality habitat, and without fish and wildlife, traditional uses of refuges cannot be sustained. The Refuge System will continue to conserve and enhance the quality and diversity of fish and wildlife habitat within refuges.
2. **Public Use.** The Refuge System provides important opportunities for compatible wildlife-dependent recreational activities involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation.
3. **Partnership.** America's sportsmen and women were the first partners who insisted on protecting valuable wildlife habitat within national wildlife refuges. Conservation partnership with other Federal agencies, State agencies, Tribes, organizations, industry, and the general public can make significant contributions to the growth and management of the Refuge System.
4. **Public Involvement.** The public should be given full and open opportunity to participate in decisions regarding acquisition and management of our national wildlife refuges.

The Conservation Easement Program along the Missouri Coteau in North Dakota would be administered as part of the Refuge System and operated under a Wildlife Management Area in accordance with the overall mission of the National Wildlife Refuge System. The mission of the National Wildlife Refuge System is to preserve a national network of lands and waters for the conservation, management, and where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. The broad goals of the National Wildlife Refuge System describe the conservation of the nation's wildlife resources for the ultimate benefit of people.

Goals of the National Wildlife Refuge System

- a. To preserve, restore, and enhance in their natural ecosystems (when practicable) all species of animals and plants that are endangered or threatened with becoming endangered.
- b. To perpetuate the migratory bird resource.
- c. To preserve a natural diversity and abundance of fauna and flora on refuge lands.
- d. To provide an understanding and appreciation of fish and wildlife ecology and the human's role in the environment.
- e. To provide refuge visitors with high quality, safe, wholesome, and enjoyable recreational experiences oriented toward wildlife to the extent these activities are compatible with the purpose for which the refuge was established.

The proposed North Dakota Wildlife Management Area would be managed as part of the National Wildlife Refuge System in accordance with the National Wildlife Refuge System Administration Act of 1966, Refuge Recreation Act of 1962, Executive Order 12996 (Management and General Public Use of the National Wildlife Refuge System), National Wildlife Refuge System Improvement Act of 1997, and other relevant legislation, executive orders, regulations, and policies.

Conservation of additional wildlife habitat in the Missouri Coteau area would also continue to be consistent with the following policies and management plans:

1. Prairie Pothole Joint Venture (PPJV 1987, 1994 updated)
2. North American Waterfowl Management Plan (USFWS 1994)
3. Peregrine Falcon Recovery Plan (USFWS 1984)
4. Gray Wolf Recovery Plan (USFWS 1987)
5. Piping Plover Recovery Plan (Great Lakes and Northern Great Plains) (USFWS 1988)
6. Bald Eagle Recovery Plan (Northern states) (USFWS 1983)
7. Whooping Crane Recovery Plan (USFWS 1994 revised)
8. Migratory Bird Treaty Act (1918)

The Habitat Protection and Land Acquisition Process

Once a project area boundary is approved, the primary means for habitat protection will be through the purchase of conservation easements; however, fee-title purchase, no-cost transfer, long-term lease, donation, or exchange may also be considered. It is the established policy of the Service to acquire land or interest in land from willing sellers.

The authorities for the acquisition of the proposed North Dakota Wildlife Management Area are the Fish and Wildlife Act of 1956 (16 U.S.C. 742 f (b) (1), as amended and the Migratory Bird Conservation Act (16 U.S.C. 715-715r), as amended. Acquisition funding is made available through the Land and Water Conservation Fund Act of 1965. The Federal monies used to acquire conservation easements on private lands through the Land and Water Conservation Fund are derived primarily from oil and gas leases on the outer continental shelf, motorboat fuel tax revenues, and sale of surplus Federal property. Additional funds could be made available through Congressional appropriations, Migratory Bird Conservation account funds, North American Waterfowl Conservation Act funds, donations from non-profit organizations or other sources to acquire lands, waters, or interest therein for fish and wildlife conservation purposes.

The basic considerations in acquiring land are the biological significance of the land, existing and anticipated threats to wildlife resources, and landowner's willingness to sell conservation easements, or otherwise make property available to the project. The purchase of conservation easements proceed according to availability of funds.

Under provisions of the Refuge Revenue Sharing Act (Public Law 95-469), the Service would annually reimburse counties to offset revenue lost as a result of acquisition of private property.

This Law states that the Secretary of the Interior (Secretary) shall pay to each county in which any area acquired in fee title is situated, the greater of the following amounts:

1. An amount equal to the product of 75 cents multiplied by the total acreage of that portion of the fee area which is located within such county.
2. An amount equal to $\frac{3}{4}$ of 1 percent of the fair market value, as determined by the Secretary, for that portion of the fee area which is located within such county.
3. An amount equal to 25 percent of the net receipts collected by the Secretary in connection with the operation and management of such fee area during such fiscal year. However, if a fee area is located in two or more counties, the amount for each county shall be apportioned in relationship to the acreage in that county.

The Refuge Revenue Sharing Act also requires that Service lands be reappraised every five years to ensure that payments to local governments remain equitable. Payments under this Act would be made only on lands that the Service acquires in fee title. On lands where the Service acquires only partial interest through easement, all taxes would remain the responsibility of the individual landowner.

Chapter 2.

Alternative, Including the Preferred Alternative

Chapter 2 describes the two alternatives identified for this project: a No Action alternative and an alternative giving the Service the authority to create the North Dakota Wildlife Management Area (NDWMA), a grassland easement program along the Missouri Coteau of North Dakota. The No Action alternative considers the effect of not establishing a conservation easement program within the project area boundary identified in the EA. The effects of the action alternative (preferred alternative) establishing the North Dakota WMA are also considered.

If the preferred alternative is selected, current and future conservation easements acquired by the U.S. Fish and Wildlife Service are administered in accordance with Executive Order 12996, *Management and General Public Use of The National Wildlife Refuge System (1996)* and the *National Wildlife Refuge System Improvement Act (1997)*. Management activities would include monitoring the properties to insure that landowners did not violate the terms of the easement. The Service would continue to monitor the status and recovery of endangered, threatened, and candidate species, conduct other activities for enhancing wildlife habitat and restoring native species with landowners permission and coordinate with private organizations and State and Federal agencies.

Alternative A. No Action

Under the No Action alternative, the North Dakota Wildlife Management Area would not be established and therefore, funds from the Land and Water Conservation fund would not be used to purchase perpetual grassland easements in the project area. Native prairie grasslands in the nine million acre project area would continue to be converted as the agricultural economy changes or when the land changes ownership. Grassland easements would still be available through proceeds from the Migratory Bird Conservation Act funds (Duck Stamps), grants from the North American Waterfowl Conservation Act, and cooperatives with non-profit organizations. Grassland and wildlife habitat restoration projects, such as predator exclosures, creating nesting islands in wetlands and replanting native grasses, would also continue.

Alternative B. Establish the North Dakota Wildlife Management Area Primarily Along the Missouri Coteau

Under Alternative B, the Service would establish a grassland conservation easement program with Land and Water Conservation Funds along the Missouri Coteau of North Dakota. Within a project boundary, primarily along the Missouri Coteau, approximately 300,000 acres of grasslands would be perpetually protected. Priority areas for purchasing easements would be high quality native prairie that provides habitat for waterfowl, nongame migratory birds, and other wildlife. Grasslands, or land in lower priority zones with other types of cover, may be purchased to connect and round-out larger tracts of high quality grasslands (Figure 5).

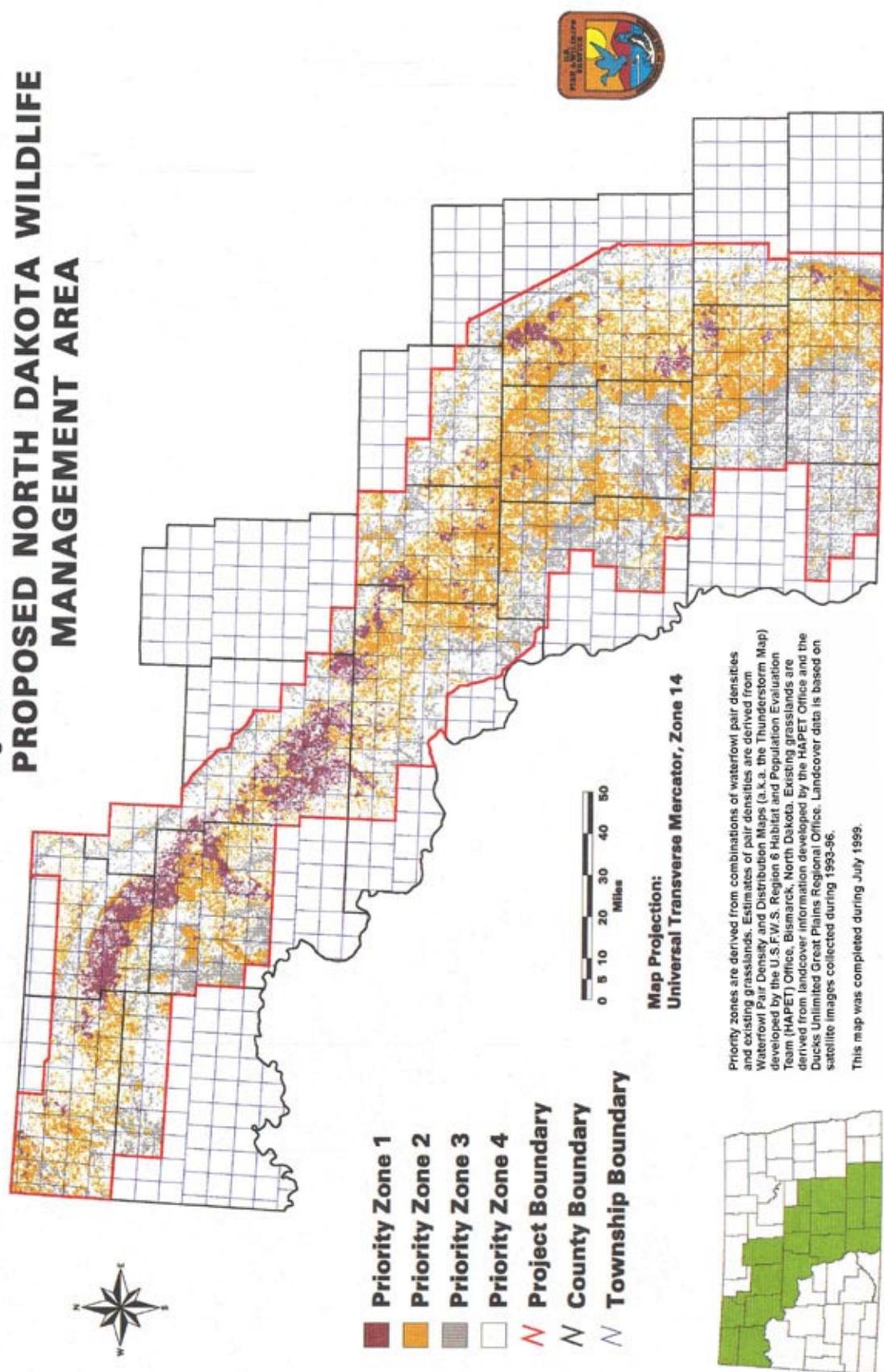
The easement program would rely on voluntary participation from landowners. Grazing would not be restricted on the land included in the easement contract, although haying would be restricted until after July 15th and plowing the land would not be permitted. All land would remain in private ownership and, therefore, property tax, weed control responsibilities, and control of public access to the land would not change.

Alternatives Considered But Not Studied

Establish a larger project area for the North Dakota Wildlife Management Area

This alternative would enlarge the project area beyond the Missouri Coteau to include all of the Coteau slope west to the Missouri River and Renville County to the northeast. This alternative would add very little land in priority zones 1 or 2 and, therefore, would not make a significant contribution to the goals of this grassland easement program.

**Figure 5.
PROPOSED NORTH DAKOTA WILDLIFE
MANAGEMENT AREA**



- Priority Zone 1**
- Priority Zone 2**
- Priority Zone 3**
- Priority Zone 4**
- Project Boundary**
- County Boundary**
- Township Boundary**

0 5 10 20 30 40 50
Miles

**Map Projection:
Universal Transverse Mercator, Zone 14**

Priority zones are derived from combinations of waterfowl pair densities and existing grasslands. Estimates of pair densities are derived from Waterfowl Pair Density and Distribution Maps (i.e., the Thunderstorm Map) developed by the U.S.F.W.S. Region 6 Habitat and Population Evaluation Team (HAPET) Office, Bismarck, North Dakota. Existing grasslands are derived from landcover information developed by the HAPET Office and the Ducks Unlimited Great Plains Regional Office. Landcover data is based on satellite images collected during 1993-96.

This map was completed during July 1999.



Chapter 3.

Affected Environment

This chapter describes the biological, social, economic, and cultural resources that would most likely be affected by establishing the North Dakota Wildlife Management Area.

Biological Environment

The project area is centered on the Missouri Coteau, a glacially formed, hilly region 30-50 miles wide extending from northwestern to south-central North Dakota. As the glaciers advanced, they encountered existing topographic obstacles which resulted in sediment being picked up and mixed with the ice. When the glaciers melted between 12,000 and 9,000 years ago, the ice on top melted more quickly than ice that was trapped beneath the sediment. This uneven melting resulted in the hilly to gently rolling topography found in the project area. This sedimentary deposition is up to 600 feet thick and is characterized as an unsorted mixture of clay, silt, sand, cobbles, and boulders or "till." The depressions between hills or "potholes" fill seasonally with water forming wetlands. The project area is also punctuated by areas created by the runoff from melting glaciers resulting in gravel and sand depositions (Bluemle 1977). As the Missouri Coteau was formed, the grinding of rock by the glaciers resulted in a nutrient rich soil upon which grasslands were established. Soils in the project area can generally be described as Mollisols which are dark in color due to high content of organic matter. The soil suborder is Borolls which are moist-wet and cool (Barker and Whitman 1989, Bryce *et al.* 1998).

Habitat

It is this combination of numerous wetlands surrounded by grassy uplands that creates the diversity for which this area is considered so valuable. The wetlands or "prairie potholes" support an entire suite of plants and animals, while the grasslands support yet another suite of plants and animals, and in many cases, the biodiversity of this area relies on a combination of resources from potholes and prairie. It is for this reason, that although this project focuses on grasslands, the wetlands of the area are also discussed.

Uplands

The proposed project area lies in the mixed-grass prairie of the northern plains at a transition zone between the tallgrass prairie to the east and the short-grass prairie to the west (Whitman and Wali 1975). Mean minimum and maximum temperatures are wide ranging (-9/86°F) and mean precipitation is between 12-20 inches per year, but drought years commonly occur (Bragg 1995). The vegetation is largely a wheatgrass-needlegrass type (Bryce *et al.* 1998, Martin *et al.* 1998). Common, mid-sized native grass species include western wheatgrass, needle-and-thread, green needlegrass, prairie junegrass, and side-oats grama. Blue grama is the primary species of short grass found among the mid-sized grasses. Little bluestem is also commonly found on slopes and hills (Barker and Whitman 1989). In areas of glacial outwash, plains muhly and saltgrass may be found (Bryce *et al.* 1998). Numerous wildflowers and other forbs also make up 5-15 percent of the vegetative cover. Common species include sunflowers, goldenrods, asters, wild mint, prairie clover, purple coneflower, western yarrow, and sageworts (USDA 1975).

Wooded and shrubby areas cover less than 1 percent of the land in this area and are found primarily on slopes and in ravines (Whitman and Wali 1975, HAPET 1999). Wooded areas are often comprised of aspen and green ash, especially in the northwest section of the Missouri Coteau. Pockets of western snowberry shrubs can be found throughout the project area (Barker and Whitman 1989, Martin *et al.* 1998).

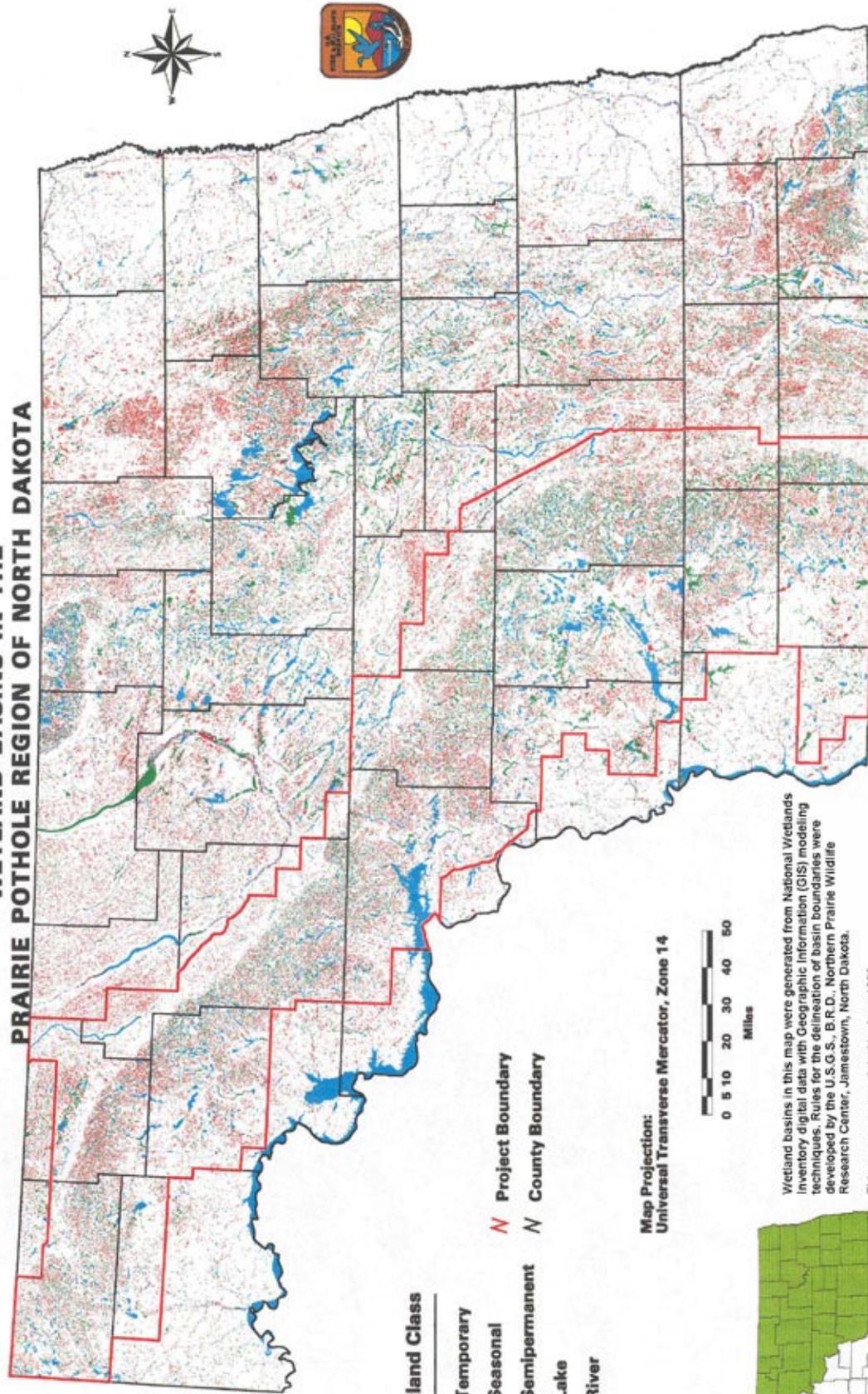
In addition to the tremendous diversity of common plants in the uplands of the project area, several plants are considered rare, threatened, or endangered at the State level in North Dakota (Bry 1986, NDNHP 1997). The Dakota buckwheat found in dry upland prairie is endangered within North Dakota and another seven grassland species are threatened. Rare plants in the project area are the prairie mimosa, rocky mountain iris, and small-flowered penstemon.

Wetlands

Approximately 10 percent of the project area is covered by wetlands, primarily palustrine emergent (Cowardin *et al.* 1979) (Figure 6). The length of time water persists in these wetlands varies, and this variation results in different types of vegetation. Ephemeral, temporary, and seasonal wetlands that have water for several weeks support vegetation comprised of wetland low prairie, wet meadow, and shallow marsh zones. Vegetation common to these zones include bluegrass, sedges, western snowberry, prairie cordgrass, and wild lily. Other temporary and seasonal wetland plants include smartweed, rushes, and reed canary grass. Semipermanent or permanent wetlands have water present through most or all of the year. These wetlands may have any of the vegetation zones already mentioned, as well as deep marsh zones with pondweed and milfoil, shallow marsh zones with bulrush and cattails, and open water areas with no vegetation. Two additional types of wetlands are found on the Missouri Coteau; alkali ponds and fens. Alkali ponds generally have reduced diversity, although widgeon grasses are common (Stewart and Kantrud 1971). Fens are alkali bogs that support a diversity of flora including some of the rarest plants in North Dakota (Duxbury 1987).

The wetlands in the project area also support several species of plants that have small or declining populations in North Dakota. Fifteen species of wetland plants exist that are considered threatened, and pull-up muhly and *Carex garberi* (a sedge) are endangered at the State level in North Dakota. In wetter prairie areas within the project area, rare or imperiled species such as the joint-spike sedge, fringed gentian, and sedge mousetail can be found (Bry 1986, NDNHP 1997).

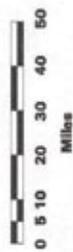
Figure 6.
WETLAND BASINS IN THE
PRAIRIE POTHOLE REGION OF NORTH DAKOTA



- Wetland Class**
- Temporary
 - Seasonal
 - Semipermanent
 - Lake
 - River

- Project Boundary
- County Boundary

Map Projection:
 Universal Transverse Mercator, Zone 14



North Dakota

Wetland basins in this map were generated from National Wetlands Inventory digital data with Geographic Information (GIS) modeling techniques. Rules for the delineation of basin boundaries were developed by the U.S.G.S., B.R.D., Northern Prairie Wildlife Research Center, Jamestown, North Dakota.
 This map was completed in June 1999.

Wildlife

The Missouri Coteau region also supports a wide variety of animal life. Assemblages of insects and other invertebrates, reptiles and amphibians, mammals, and birds can all be found in the project area. Fish, however, are generally not supported by the prairie/wetland habitat because potholes may dry up in summer or freeze completely during the winter. Minnows and brook sticklebacks can be found in semipermanent wetlands that have connections to deep water (Kantrud *et al.* 1989).

Invertebrates

The total number of insects and other invertebrates species in the Missouri Coteau region is not currently known; however, the limited information suggests a wide diversity. The Coteau lies in a region that represents 15-19 percent of all insect species found in North America (Arenz and Joern 1996). A survey of just five wetlands found over 50 species of insects. Snails, shrimp, and amphipods are common invertebrates that are also found in prairie wetlands (Kantrud *et al.* 1989). Three butterflies are known to occur in the project area that are considered likely to become candidates for the Endangered Species Act without additional conservation actions (i.e., of management concern). These are the regal fritillary, the tawny crescent butterfly, and the Dakota skipper (Bry 1986). Mixed vegetational stands, i.e., prairie, are thought to be less prone to insect pest outbreaks than monocultures (croplands) (Curry 1994).

Amphibians and Reptiles

Turtles, snakes, toads, frogs, and salamanders can all be found in the project area (Hoburg and Gause 1992). The western hognose snake and the great plains toad are typical of the grasslands, whereas the northern leopard frog, western chorus frog, and tiger salamander are closely associated with prairie wetlands. Tiger salamander larva and adults are particularly important food items for wetland birds (Kantrud *et al.* 1989).

Mammals

The project area includes the ranges of approximately 50 mammal species (Grondahl no date, Burt and Grossenheider 1964). Upland prairie provides habitat for many small mammals including shrews, mice, and voles. Three species of ground squirrels (Richardson's, Franklin's and thirteen-lined) also rely on grassland habitat found on the Missouri Coteau. These ground squirrels, in turn, provide critical food sources and nesting habitat for prairie raptors, such as ferruginous hawks and short-eared owls (Berkey *et al.* 1993). Coyotes, red foxes, badgers, skunks, and weasels are examples of carnivores that are widespread throughout the area. Big game animals such as deer and pronghorn also utilize the upland habitat. Prairie wetlands provide cover and/or food for at least 17 species of terrestrial or semiaquatic mammals including muskrat, beaver, and mink (Kantrud *et al.* 1989).

Records exist of two federally listed mammals in the project area. At least two confirmed sightings of a gray wolf since 1980 has occurred in the project area (Bry 1986). The gray wolf is a federally endangered species. The swift fox is a candidate species for listing, and although it is not currently found in the project area, its historic habitat includes mixed-grass prairie in the project area. Within the project area, records exist of three mammals considered rare in North Dakota. These include the river otter, hispid pocket mouse, and pigmy shrew (NDNHP 1997).

Birds

The project area represents one of the areas of highest species richness for both grassland and wetland birds in the US and Canada, providing breeding habitat for at least 130 species of birds (Stewart 1975, Sauer *et al.* 1997). At least 12 species of waterfowl breed in the project area and several depend not only on wetlands, but also on upland grasslands for nesting, i.e., mallards, northern pintails, gadwalls, northern shovelers, green-winged teal, blue-winged teal, redheads, canvasbacks, and ruddy ducks (Stewart 1975). In fact, the project area encompasses areas that have the potential to support over 100 pairs of breeding ducks per square mile; some of the highest possible densities in North Dakota (HAPET 1996) (Figure 7).

The Missouri Coteau is also very important to shorebirds. Thirty-one species of shorebirds use the Coteau region during migration or for breeding. Those that stopover during migration use the area to rest and refuel on invertebrates associated with the wetlands. Of the 10 species of shorebirds that nest on the Coteau, three breed specifically in upland grasslands. These are the upland sandpiper, willet, and marbled godwit. All of the nesting shorebirds benefit from intact, healthy grasslands as studies have shown this inhibits nest predation (Dinsmore *et al.* 1999).

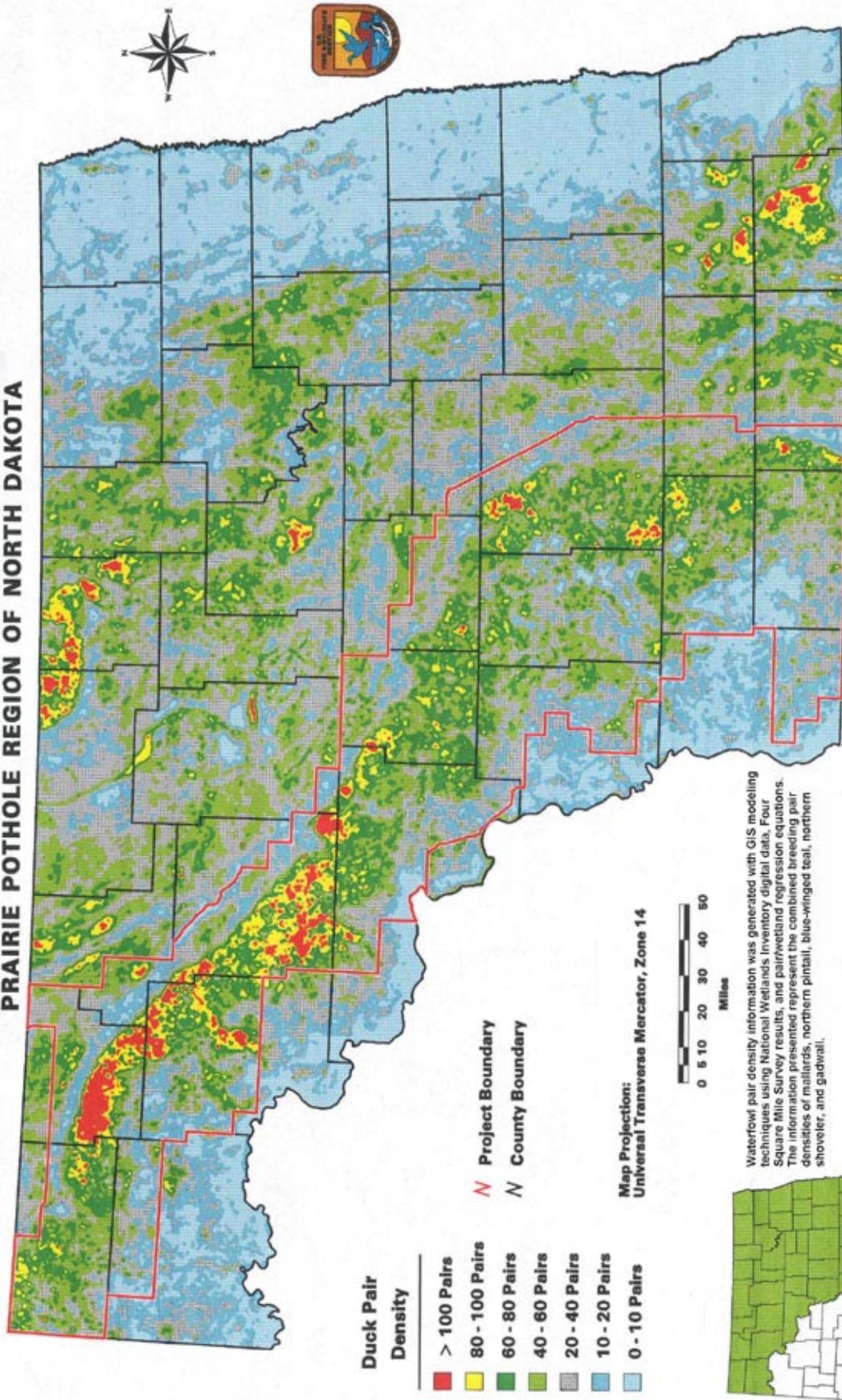
Native grasslands and untilled pasture land of the Missouri Coteau region provide refuge for several bird species that show a strong preference for nesting in this type of cover. These bird species include the northern harrier, sharp-tailed grouse, willet, upland sandpiper, marbled godwit, common snipe, Wilson's phalarope, mourning dove, short-eared owl, burrowing owl, and common nighthawk. While the actual nest site characteristics may not be grass, the common nighthawk, common snipe, and threatened piping plover nest almost exclusively in areas surrounded by native grasslands and wetlands (Higgins *et al.* 1969, Ryan *et al.* 1984, Konrad and Gilmer 1984, Kantrud and Higgins 1992).

The Missouri Coteau provides habitat for a suite of grassland birds that are currently the focus of much concern. This is the only group of birds to experience consistent declines nationwide over the last 30 years (Breeding Bird Survey 1966-1996, Sauer *et al.* 1995). Many of the birds in this group have ranges limited to grassland habitats represented in the project area, such as Baird's sparrows, grasshopper sparrows, Sprague's pipits, lark buntings, and chestnut-collared longspurs (Berkey *et al.* 1993, USFWS 1995, Knopf 1996). Destruction of habitat and mowing for hay production are considered two of the main reasons for grassland bird decline (Sauer *et al.* 1995).

In addition to birds that breed in the proposed project area, over 60 species of birds migrate through or use the project area as wintering grounds. Migrating geese, ducks, gulls, and shorebirds stopover at wetlands, warblers use wooded and shrubby areas, and raptors, such as bald eagles and peregrine falcons, can be found in a variety of habitats. Common redpolls, snowy owls, and snow buntings use this area during winter.

In many cases, the project area represents a refuge for birds that are suffering population declines elsewhere. For example, over the last 30 years, 21 species of birds have experienced significant declines nationwide while populations in the Missouri Coteau region have remained stable (Breeding Bird Survey 1966-1996, Sauer *et al.* 1997). Included in this group are several species that are specific to grasslands such as Wilson's phalarope, bobolinks, western meadowlarks, and clay-colored sparrows. Populations of the loggerhead shrike, vesper sparrow, and the American goldfinch actually have increased significantly over the last 30 years on the Coteau, while significantly decreasing nationwide. In addition, several species of birds are more common on the Coteau than in other areas of the State, i.e. sharp-tailed sparrow, Baird's sparrow, and Sprague's pipit (Stewart 1975).

Figure 7. WATERFOWL BREEDING PAIR DISTRIBUTIONS IN THE PRAIRIE POTHOLE REGION OF NORTH DAKOTA



Waterfowl pair density information was generated with GIS modeling techniques using National Wetlands Inventory digital data, Four Square Mile Survey results, and pair/webband regression equations. The information presented represent the combined breeding pair densities of mallards, northern pintail, blue-winged teal, northern shoveler, and gadwall.

However, many species of birds exist in the project area that are in decline, cause for concern, threatened, or endangered. The project area provides habitat for the American bittern, the clay-colored sparrow, and the burrowing owl which have shown significant declines over the last 30 years (Berkey *et al.* 1993, Sauer *et al.* 1997). Nine species that are endangered or threatened on both the Federal and/or State level use the project area for some stage of their yearly cycle. These include the yellow rail, piping plover, bald eagle, peregrine falcon, whooping crane, and McCown's longspur (Bry 1986, USFWS 1995). The project area supports 21 U.S. Fish and Wildlife Service species of concern including ferruginous hawks, willets, short-eared owls, and loggerhead shrikes (Berkey *et al.* 1993, USFWS 1995). Furthermore, the project area provides habitat for birds that have bred in the past but no longer do, i.e. the whooping crane which is a federally endangered bird and the sandhill crane which also has a history of breeding in the project area (Kantrud and Higgins 1992).

Social and Economic Considerations

Three communities of over 1,000 people are within the project area (Kenmare, Stanley, and Wishek), and another three communities of over 1,000 are on the border of the project area (Carrington, Crosby, and Jamestown). Two of North Dakota's largest communities, Minot (pop. 35,000) and Bismarck (pop. 50,000), are just outside of the project area. Numerous smaller towns are within the project area. Much of the rural population is involved in agriculture, both crop and livestock production. Private lands are also used for hunting a wide variety of game species. Many of the landowners within the project area have enrolled in habitat conservation programs such as USDA's cropland reserve program (CRP), the North Dakota Game and Fish Department's food and habitat conservation plots, and the U.S. Fish and Wildlife Service's Small Wetland Acquisition Program (SWAP) and conservation easement programs.

Agricultural Resources

Approximately 45 percent of the land in the project area is cropland. Since 1959, the total acres farmed in North Dakota has remained steady, with the majority of farms between 200 and 2,000 acres. Most farms are owned by individuals or families whose principal occupation is farming, with the average age of farm operators around 50 years. Durum, spring wheat, tame hay, barley, sunflowers, corn, and oats are the principal crops produced. Although the number of irrigated acres has tripled since 1959, only 2 percent of total farm acres are irrigated. Most irrigation is for cropland, with little irrigation used for pasture land or other uses. Approximately 36 percent of cattle and 50 percent of wild hay produced in North Dakota comes from the counties in the project area (Bureau of the Census 1992).

Mining, Oil, and Gas Resources

The principal minerals mined in North Dakota include lime, sand/gravel, and coal. Although no large scale mining operations are in the proposed project area, deposits of sand and gravel, sodium sulfate, and volcanic ash exist within the proposed project boundary (Murphy no date). Energy extraction contributes to 19 percent of North Dakota's economy (Leistriz and Coon 1994). Approximately 1,400 wells capable of producing oil are in the counties within the project area (North Dakota Oil and Gas 1998). The presence or addition of wells on property is not expected to affect the easement acquisition process.

Landownership

Within the counties in the project area, approximately 96 percent of the land is privately owned. About half of the privately owned land is cropland, and another 20 percent is rangeland (Bureau of Census 1992). Of the public land (4 percent), the Service owns roughly half, with the rest of the land comprised mostly of State school land, North Dakota Game and Fish Wildlife Management Areas, and Bureau of Reclamation land.

Property Tax

Property taxes on private land are currently paid to the counties by the landowners. Since purchasing easements does not result in a transfer of land title, private landowners would continue to pay property taxes. If the Service acquires any fee title acquisitions, the affected counties would receive mitigated payments from the Service in lieu of property taxes under the Refuge Revenue Sharing Act (see Chapter 1).

Public Use and Wildlife-dependent Recreational Activities

Hunting throughout the project area is very popular. A variety of wildlife is hunted including waterfowl, upland game, deer, furbearers, squirrels, and rabbits. In 1996, North Dakota had 88,000 registered hunters who generated over 100 million dollars in revenues for the State and its residents (USFWS 1996b). Private landowners often give permission for hunting on their land, and they will retain full control over hunting on their property under the easement program. Since most potholes are not suitable for sustaining fish populations, most fishing occurs on lakes and reservoirs, generally on public land (Van Eeckhout 1989, ND Game and Fish 1997).

Cultural Resources

The U.S. Fish and Wildlife Service, as a Federal agency, has a trust responsibility to Tribes which includes the protection of the sovereignty of the Tribal government and preservation of Tribal culture and other trust resources. The easement program does not compromise Tribal jurisdiction or Tribal rights because it deals only with willing sellers of private land for an easement. The protection of trust resources is enhanced with the easement program by conservation of wildlife habitat and protection of resources from land conversion and development.

Archaeological and historical resources within any fee title lands would receive protection under Federal laws mandating the management and protection of cultural resources. These laws include, but are not limited to, the Archaeological Resources Protection Act, the Archaeological and Historic Preservation Act, the Native American Graves Protection and Repatriation Act, Native American Religion Freedom Act, and the National Historic Preservation Act.

Currently, the Service does not propose any project, activity, or program that would result in changes in the character of or would potentially adversely affect any historic cultural resource or archaeological site. When such undertakings are considered, the Service would take all necessary steps to comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. The Service would also pursue proactive compliance with Section 110 of the NHPA to survey, inventory, and evaluate cultural resources.

Details of all previously recorded sites in North Dakota can be obtained from the State Historical Society of North Dakota in Bismarck, North Dakota. A summary of these findings can be found in the North Dakota Comprehensive Plan for Historic Preservation: The Archaeological Component (1990). This Plan divided the state into 13 study units. The proposed project area for the North Dakota Wildlife Management Area includes parts of five of these study areas: the South Missouri, Garrison, James River, Souris River, and Sheyenne. The South Missouri River and Garrison study units are the most extensively researched whereas the Souris River study areas has the least number of recorded sites.

The South Missouri and Garrison study units are areas of intensive prehistoric human settlement. Most of the earthlodge villages found in North Dakota are in these study sites. Cultural materials scatter, earthlodge villages, rock features, and stone circles are some of the most commonly recorded site types. Also, along the Missouri River is the most likely place to find projectile points from the Paleo-Indian cultural tradition.

Half of the recorded sites in these study units are centered around the Missouri River Valley and its closely associated uplands. However, historic campsites are commonly found along the Missouri Coteau. The uplands in the Garrison study unit also were often used for settlements during the Plains Archaic period. This is the most common place in North Dakota to find materials, especially tipi rings, from this period.

Cultural materials scatter, stone circles, and other rock features are the most common property types recorded in the James River, Souris River, and Sheyenne study units. Mounds are relatively frequent finds in the James River and Sheyenne study units. The James River study unit also has several grave sites.

Contaminants and Hazardous Wastes

Fieldwork for the pre-acquisition contaminant survey will be conducted prior to the purchase of any land interests. The preliminary survey will be conducted on these properties to determine if contaminants pose a threat to fish and wildlife or if they would be a liability to the Service. The Environmental Contaminants Specialist located at Bismarck, North Dakota, Ecological Services Office, will be contacted to ensure policies and guidelines are followed before acquisition.

Chapter 4.

Environmental Consequences

Effects on the Biological Environment

This section assesses the environmental impacts expected to occur from the implementation of Alternatives A or B as described in Chapter 2. Environmental impacts are analyzed by issues for each alternative and appear in the same order as discussed in Chapter 1.

Wildlife Habitat Protection

Alternative A (No Action)

Without the North Dakota WMA, grasslands would still be protected by other projects in the project area; however, fewer acres would be protected by easements or it would take considerably longer to protect the 300,000 acres proposed in this project. Other measures for grassland wildlife habitat protection through fee title acquisitions and restoration projects such as seeding native grasses and predator exclosures would continue. However, the cost per acre for these measures are two to four times the cost per acre for grassland easements and would not recreate native prairie.

Without the perpetual protection from easements created through the North Dakota WMA, the future of grasslands in the project area would be uncertain. A survey of landowners in the Prairie Pothole Region indicates that, although a majority of landowners would keep the amount of grassland and cropland on their property the same, 24 percent would like to increase their cropland acres (Responsive Management 1998). Of those landowners that would like to increase their cropland acres, the topography of the land, laws, and costs are perceived as factors preventing them from doing this. While topography is not changeable, changes in policy and the agricultural economy have historically resulted in changes in tilled acres (Gerard 1995). Therefore, future changes in either of these factors could lead to increases in grassland conversion.

Additional losses of grasslands may contribute to the long-term decline in nest success for upland nesting waterfowl. Several duck species avoid nesting in cropland and overall nest success in croplands has been found to be below levels considered sufficient to sustain populations (Cowardin *et al.* 1985, Klett *et al.* 1988). It is likely that predation would continue to be a major reason for nest loss in waterfowl and other upland nesting birds since each additional conversion of grassland to cropland would create islands of grass more easily searched by predators (Cowardin *et al.* 1985, Sovada *et al.* 1995). If grasslands were not protected with easements and converted to cropland, high quality duck nesting habitat could be restored by planting cover (cool season grasses/forbs). Other intensive management techniques, such as predator control, fencing exclosures, and artificial nesting islands also could be used (Beauchamp *et al.* 1996, Reynolds 1999). While all of these measures may be beneficial to overall nest success, they are significantly more expensive than easements and none of them would completely recreate native prairie.

If additional mixed-grass prairie habitat were tilled, several species of grassland birds that are restricted to this type of habitat would be negatively affected. Cultivated land is considered unsuitable nesting habitat for these species (Owens and Myres 1972). A reduction in nesting habitat may mean that the Missouri Coteau would no longer be an area of relatively high grassland bird density, and populations in the project area may begin to decline as they have in other parts of their ranges (Breeding Bird Survey 1966-1996). Some of these species may have to receive protection under the Endangered Species Act if their populations continue to decline.

Conversion of grassland to cropland would increase the pesticide load on the environment. Pesticide use is almost entirely associated with croplands, and 90 percent of all cropland in North Dakota receives at least one application of herbicide per year (Zollinger *et al.* 1996). The effects of pesticides on wildlife are estimated to be high and could include reduction of nesting cover for birds, direct contamination of egg embryos, and losses in the aquatic invertebrate food base critical for many nesting birds, particularly waterfowl (Dwernychuk and Boag 1973, Messmer and Dahl 1991, Pimentel *et al.* 1992).

Alternative B (Preferred Alternative)

Establishing the North Dakota WMA would enable up to 300,000 acres of native prairie to be protected in perpetuity. This would help maintain the uniqueness of the Missouri Coteau within North Dakota as an area of relatively intact grasslands that harbor a wide variety of wildlife species. This 300,000 acres would complement other Service easement programs and existing public grasslands, such as waterfowl production areas and state wildlife management areas, allowing for the preservation of a network of grasslands in the project area. These areas of protected grasslands would exist regardless of changes in agricultural policy or economy, which are known to affect the rate of grassland conversion (Gerard 1995).

The Missouri Coteau is considered the “jewel” of the prairie pothole region for waterfowl because of the high wetland densities and relatively intact grasslands (USFWS and DU 1998, Smith 1999). Purchasing grassland easements within the project boundary would prevent the conversion of grasslands, where nest success for waterfowl is higher, to cropland where nest success is lower (Klett *et al.* 1988). Other species of upland nesting birds also have higher nest success rates in grasslands than in cropland (Kantrud and Higgins 1992). Furthermore, nest success increases when the percentage of the landscape in grass increases (Ball *et al.* 1995, Greenwood *et al.* 1995, Reynolds *et al.* In prep). Thus, protecting the relatively intact grasslands in the project area represents a significant opportunity for maintaining waterfowl populations throughout the Prairie Pothole Region.

Protecting grasslands in the project area would help maintain the ability of the Missouri Coteau to act as a buffer against population declines grassland birds are experiencing in other parts of their ranges. Grassland bird populations are steady or increasing in the project area while decreasing throughout many other parts of their ranges (Breeding Bird Survey 1966-1996). Long-term prospects for grassland birds are considered poor (Sauer *et al.* 1995). Preserving grasslands in this portion of their range may prevent some of these species from needing protection under the Endangered Species Act.

Preventing the establishment of some new cropland would slow the increase in volume of pesticides into the environment. Pesticide use is almost entirely associated with croplands, and 90 percent of all cropland in North Dakota receives at least one application of herbicide per year (Zollinger *et al.* 1996). Protected grasslands would also act as a buffers for wetlands near cropland treated with pesticides by filtering up to 70 percent of runoff (Hartwig and Hall 1980). This may reduce the impact on wildlife, i.e. nesting ducks, from ingesting contaminated invertebrates and/or the loss of the invertebrate food base due to die-offs caused by pesticides (Grue 1988, Kantrud *et al.* 1989).

Water Issues

Alternative A (No Action)

Wetlands would continue to receive some protection in the project area without the North Dakota WMA through provisions under the 1996 Farm Bill "Swampbuster" that prevent drainage of some wetlands and the Service's Small Wetlands Acquisition Program. Although, fewer wetlands would be protected, and/or it would take longer as funding was acquired. In addition, creation of new cropland from grassland would likely increase the contamination and sedimentation of wetlands in the project area since pesticide use and soil erosion are higher on cropland (NRCS 1992b, Zollinger *et al.* 1996).

Alternative B (Preferred Alternative)

Since all grassland easements in the North Dakota WMA would have associated wetland easements, more wetlands would ultimately be protected. Soil erosion into wetlands is lower in grasslands than croplands (Martin and Hartman 1987, NRCS 1992b), and grasslands can filter significant levels of pesticides before they enter wetlands (Hartwig and Hall 1980). Grasslands would also buffer wetlands from drift and overspray from aerial applications of pesticides since planes would not be flying as close to wetlands.

Effects on Social and Economic Environment

Landownership/Land use

Alternative A (No Action)

If the North Dakota WMA was not established, far fewer perpetual grassland easements would be created. Fewer acres in the project area would be permanently protected from conversion to cropland. As the economy changed or land was sold, the use of the land could be changed. Less than perpetual easements have historically delayed, rather than prevented, wildlife habitat conversion (Higgins and Woodward 1986). The resale value of fewer properties would be affected by easements.

Without the North Dakota WMA easement program, the Service may consider fee title purchases more often (Wacker 1999). This would limit the total number of acres the Service could protect for wildlife habitat since fee title lands cost three to four times as much as easements and require more time to process. These purchases would probably be limited to landowners with large tracts of prairie for sale and/or land adjacent to waterfowl production areas and national wildlife refuges in order to maximize the wildlife benefits. This would also mean more landownership by the Service that would require additional funds for management. This additional demand on funding would limit opportunities for other management options in cooperation with landowners such as restoring prairie, creating wetlands, etc. Landowners who have maintained their native prairie and use wildlife compatible practices would not receive an easement payment from the Service to supplement their incomes.

Alternative B (Preferred Alternative)

If the North Dakota WMA is established, landowners with native prairie would be eligible for easement contracts. Protection of grasslands would be permanent and, therefore, not subject to changes in the economy, policy, or a change in landownership. The resale value of land may or may not be affected by grassland easements, although from the history of wetland easements, this is difficult to predict. Some land with easements sells for less (which the easement payment compensates for) or the land sells for a competitive price (Wacker 1999).

Establishing the North Dakota WMA would enable the Service to work with a wider diversity of landowners. Three to four times as many landowners could be eligible for an easement program than a program restricted to fee title purchases because easements are less expensive. Opportunities for both small and large landowners to receive payments would also be increased because the lower cost of easements allow the Service more flexibility and does not restrict the Service to large parcels of land or land near other Service land (waterfowl production areas, national wildlife refuges). Under an easement program, it may also be more likely that neighboring landowners would jointly sign an easement than to agree to sell their property to the Service.

The easements would provide additional income for cattle producers as an investment in grazing operations and maintaining the economic diversity of agriculture in North Dakota. These landowners would receive a payment of 25-30 percent of the appraised value of their land, including adjustments for potential cropland. No changes or restrictions would be placed on these grasslands except that the land could not be plowed and haying could not be done until July 15th. If the landowner was interested, additional programs and wildlife enhancement could be implemented. Potentially, more funding would be available for such enhancement from other grants since money for the North Dakota WMA would be available for purchasing easements.

Unavoidable Adverse Impacts

No direct or indirect unavoidable adverse impacts to the environment would result from the selection of Alternative B. The identification of an approved boundary for the Wildlife Management Area would not result in unavoidable adverse impacts on the physical and biological environment. The selection of an approved boundary does not, by itself, affect any aspect of landownership or values. Once easements are acquired, the Service would prevent incremental adverse impacts, such as degradation and loss of habitat over time, to the lands with their associated native plants and animals.

Irreversible and Irrecoverable Commitments of Resources

Irreversible or irretrievable commitments of resources associated with the selection of an approved Wildlife Management Area boundary would be nonexistent. Under the No Action Alternative, if grassland and wetland habitat were not protected and continue to decline, some plant and animal species could disappear over time, causing an irreversible and irretrievable loss. Once easements are acquired, irreversible and irretrievable commitments of funds to protect these lands (such as expenditure for fuel and staff for monitoring) would exist.

Short-term Uses Versus Long-term Productivity

The proposed Wildlife Management Area is intended to maintain the long-term biological productivity of the grassland and wetland ecosystem of the Missouri Coteau in North Dakota. The local short-term uses of the environment following acquisition include managing wildlife habitats and maintaining compatible agricultural practices. The resulting long-term productivity includes increased protection of endangered and threatened species and maintenance of biological diversity. The public would gain long-term opportunities for wildlife-dependent recreational activities.

Cumulative Impacts

Protecting grasslands, primarily with conservation easements, would have long-term positive cumulative impacts on wildlife habitats within the Missouri Coteau region of North Dakota. The protection of wildlife habitats on private lands would represent a cumulative benefit to the long-term conservation of migratory birds, endangered species, and biological diversity. The conservation easements would protect a broad spectrum of native habitats and conserve important populations of endangered species and other native plants and animals.

Chapter 5.

Coordination and Environmental Review

Agency Coordination

The proposal for the establishment of the North Dakota Wildlife Management Area, through the authorization of an executive boundary consisting of 300,000 acres has been discussed with landowners, conservation organizations, Federal, Tribal, State and county governments, and other interested groups and individuals.

This Environmental Assessment addresses the protection of native grasslands, primarily through acquisition of conservation easements, by the Service under the direction of the National Wildlife Refuge System.

Funding for acquisition of conservation easements will be provided by the Land and Water Conservation Fund and, to a smaller degree, the Migratory Bird Conservation Fund.

Management activities associated with easements may be funded through other sources, such as Wildlife Foundation, Pheasants Forever, Ducks Unlimited, North American Wetland Conservation Act grants, and Partners for Fish and Wildlife.

Partnership endeavors include: Natural Resource Conservation Service; Ducks Unlimited; North Dakota Game and Fish Department; and Partners for Fish and Wildlife.

National Environmental Policy Act

As a Federal agency, the U.S. Fish and Wildlife Service must comply with provisions of the National Environmental Policy Act (NEPA). An Environmental Assessment is required under NEPA to evaluate reasonable alternatives that will meet stated objectives and to assess the possible impacts to the human environment. The Environmental Assessment serves as the basis for determining whether implementation of the proposed action would constitute a major Federal action significantly affecting the quality of the human environment. The Environmental Assessment also facilitates the involvement of government agencies and the public in the decision making process.

Distribution and Availability

Copies of the Environmental Assessment were sent to Federal and State legislative delegations, Tribal Councils, agencies, landowners, private groups, and other interested individuals (see Appendix B). Additional copies of these documents are available at the U.S. Fish and Wildlife Service, Wetland Acquisition Office, 3425 Miriam Ave, Bismarck, North Dakota 58501 (701-250-4415; fax 701-250-4412) and at the U.S. Fish and Wildlife Service Regional Office, Land Acquisition and Planning Branch, P.O. Box 25486-DFC, Denver, Colorado 80225 (303-236-8145 ext. 658; fax 303-236-4792).

List of Preparers and Reviewers

Author:

- P Vanessa L. Hill, Biological Technician, Land Acquisition and Refuge Planning Branch, Division of Realty, Refuges and Wildlife, Minot, ND Field Office.

Reviewers:

- P Ron Shupe, Refuge Supervisor, NGARD/RW, Lakewood, CO
- P Harvey Wittmier, Chief, Division of Realty, Refuges and Wildlife, Lakewood, CO
- P Carol Taylor, Chief, Land Acquisition and Refuge Planning Branch, Division of Realty, Refuges and Wildlife, Lakewood, CO
- P John Esperance, Fish and Wildlife Biologist, Land Acquisition and Refuge Planning Branch, Division of Realty, Refuges and Wildlife, Lakewood, CO
- P Barbara Shupe, Writer/Editor, Land Acquisition and Refuge Planning Branch, Division of Realty, Refuges and Wildlife, Lakewood, CO
- P Stuart Wacker, Realty Field Supervisor, Wetland Acquisition Office, Bismarck, ND
- P Karen Kreil, Fish and Wildlife Biologist, Ecological Services, Bismarck, ND
- P Mike McEnroe, Supervisory Wildlife Biologist, Wetland Habitat Office, Bismarck, ND
- P Fred Giese, Project Leader, Des Lacs National Wildlife Refuge Complex, Kenmare, ND
- P Ron Reynolds, Project Leader, Habitat and Population Evaluation Team, Bismarck, ND
- P Dave Potter, Project Leader, Audubon National Wildlife Refuge Complex, Garrison, ND
- P Mike Goos, Audubon Wetland District Manager, Audubon National Wildlife Refuge Complex, Garrison, ND
- P Mick Erickson, Chase Lake Project Coordinator, Chase Lake Wetland Management District, Woodworth, ND
- P Paul VanNingen, Project Leader, Long Lake National Wildlife Refuge, Moffit, ND
- P Bob VandenBerge, Project Leader, Kulm Wetland Management District, Kulm, ND

Acknowledgments:

- P Chuck Loesch, Wildlife Biologist, Habitat and Population Evaluation Team, Bismarck, ND
- P Ken Torkelson, Writer/Editor, Wetland Habitat Office, Bismarck, ND

References

- Arenz, C.L. and A. Joern. 1996. Prairie legacies-invertebrates. In Samson, FB and FL Knopf eds., *Prairie Conservation: Preserving North America's Most Endangered Ecosystem*. Island press, Washington DC.
- Ball, I.J., R.L. Eng, and S.K. Ball. 1995. Population density and productivity of ducks on large grassland tracts in north central Montana. *Wild Soc Bull* 23(4):767-773.
- Barker, W.T. and W.C. Whitman. 1989. *Vegetation of the northern great plains*. Research report #111 EXP. ND Agricultural Experiment Station.
- Beauchamp, W.D., R.R. Koford, T.D. Nudds, R.G. Clark, and D.H. Johnson. 1996. Long-term declines in nest success of prairie ducks. *J Wild Manage* 60(2):247-257.
- Berkey, G., R. Crawford, S. Galipeau, D. Johnson, D. Lambeth, and R. Kreil. 1993. A review of wildlife management practices in North Dakota: effects on nongame bird populations and habitats. USFWS Report.
- Bluemle, J.P. 1977. *The face of North Dakota: the geologic story*. Educational Series 1, North Dakota Geologic Survey.
- Bragg, T.B. 1995. The physical environment of great plains grasslands. In A. Joern and K.H. Keeler eds. *The Changing Prairie: North American Grasslands*. Oxford univ press, New York, New York.
- Bry, E. 1986. The rare ones. *North Dakota Outdoors* 49(2):2-33.
- Bryce, S., J.M. Omernik, D.E. Pater, M. Ulmer, J. Schaar, J. Freeouf, R. Johnson, P. Kuck, and S.H. Azevedo. 1998. Ecoregions of North and South Dakota. Northern prairie wildlife research center home page: <http://www.npwr.usgs.gov/resource/1998/ndsdeco/ndsdeco.htm>
- Bureau of the Census. 1992. 1992 Census of Agriculture. Vol.1: Geographic area series. Part 34:North Dakota, State and County Data. Washington, DC
- Burt, W.H. and R.P. Grossenheider. 1964. *A Field Guide to the Mammals*, 2nd ed. HoughtonMifflin Co., Boston, MA. 284pgs.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. USFWS Biol Serv Prog FWS/OBS-79/31.
- Cowardin, L.M., A.B. Sargeant, and H.F. Duebbert. 1985. Low waterfowl recruitment in the prairies: the problem, the reasons and the challenge to management. In H. Boyd ed., *First Western Hemisphere Waterfowl and Waterbirds Symposium*, pgs 16-18.
- Curry, J.P. 1994. *Grassland invertebrates: ecology, influence on soil fertility and effects on plant growth*. Chapman and Hall, London. 437pgs.
- Dahl, T.E. 1990. Wetlands losses in the United States 1780's to 1980's. US Dept. of the Int., Fishand Wildlife Service, Washington, DC 13pgs.
- Dinsmore, S.J., S.K. Skagen, and D.L. Helmers. 1999. DRAFT- Shorebird overview for the prairie pothole joint venture. USFWS Spec. Publ. NAWMP/PPJV. Denver, CO.
- Duebbert, H.F. and H.A. Kantrud. 1974. Upland duck nesting related to land use and predator reduction. *J Wildl Manage* 38(2):257-265.
- Duxbury, A. 1987. Fens: our glacial relicts. *North Dakota Outdoors*. June: 13-17.

- Dwernychuk, L.W. and D.A. Boag. 1973. Effect of herbicide-induced changes in vegetation on nesting ducks. *Canadian Field Naturalist* 87:155-165.
- Gerard, P.W. 1995. Agricultural practices, farm policy and the conservation of biological diversity. National Biological Service Technical Report Series, Biological Science Report 4:28pgs.
- Gleason, R.A. and N.H. Euliss Jr. 1998. Sedimentation of prairie wetlands. *Great Plains Res* 8(1):97-112.
- Greenwood, R.J., A.B. Sargeant, D.B. Johnson, L.M. Cowardin, and T.L. Shaffer. 1995. Factors associated with duck nest success in the Prairie Pothole Region of Canada *Wildl. Monogr.* 128: 57pp.
- Grondahl, C. No date. Small mammals of North Dakota. North Dakota Game and Fish Dept. Bismarck, ND. 17pgs.
- Grue, C.E., M.W. Tome, G.A. Swanson, S.M. Borthwick, and L.R. DeWeese. 1988. Agricultural chemicals and the quality of prairie-pothole wetlands for adult and juvenile waterfowl-what are the concerns. *Nat Symposium on Protection of Wetlands from Agricultural Impacts*, CSU, Ft. Collins, CO.
- HAPET- Habitat and Population Evaluation Team, USFWS. 1996. Waterfowl breeding pair distributions in the prairie pothole region of North Dakota (GIS map). Bismarck, ND.
- HAPET - Habitat and Population Evaluation Team, USFWS. 1999. Detailed land cover classification for east river North Dakota (GIS map). Bismarck, ND.
- Hartwig, N.L. and J.K. Hall. 1980. Influencing the action of herbicides: runoff losses. *Crops and Soil Magazine*, October:14-16.
- Higgins, K.F., H.F. Duebbert, and R.B. Oetting. 1969. Nesting of the upland plover on the Missouri Coteau. *Prairie Nat* 1(3):45-48.
- Higgins, K.F. and R.O. Woodward. 1986. Comparison of wetland drainage during and after protection by 20-year easements. *Prairie Nat.* 18(4):229-233.
- Hoburg, T. and C. Gause. 1992. Reptiles and amphibians of North Dakota. *North Dakota Outdoors* 55(1):7-19.
- Joern, A. and K.H. Keeler. 1995. Getting the lay of the land: introducing North American native grasslands. In Joern, A. and K.H. Keeler (eds), *The Changing Prairie: North American Grasslands*. Oxford Univ Press, New York.
- Jones, L. 1999. Predator management pilot projects. North Dakota Chapter of the Wildlife Society Meeting. Bismarck, ND.
- Kantrud, H.A. and K.F. Higgins. 1992. Nest and nest site characteristics of some ground-nesting, non-passerine birds of northern grasslands. *Prairie Nat* 24(2):67-84.
- Kantrud, H.A., G.L. Krapu, and G.A. Swanson. 1989. Prairie basin wetlands of the Dakotas: a community profile. *USFWS Biol Rep* 85(7.28). 116pgs.
- Klett, A.T., T.L. Shaffer, and D.H. Johnson. 1988. Duck nest success in the prairie pothole region. *J Wildl Management* 52:431-440.

- Knopf, F.L. 1996. Prairie legacies-birds. In Samson, F.B. and F.L. Knopf eds., *Prairie Conservation: Preserving North America's Most Endangered Ecosystem*. Island press, Washington DC.
- Konrad, P.M. and D.S. Gilmer. 1984. Observations on the nesting ecology of burrowing owls in central North Dakota. *Prairie Nat* 16(3):129-30.
- Leistriz, F.L. and R.C. Coon. 1994. The role of agriculture in the North Dakota economy. *North Dakota Farm Research (Winter)*: 11-13.
- Martin, D.B. and W.A. Hartman. 1987. The effect of cultivation on sediment composition and deposition in prairie pothole wetlands. *Water, Air and Soil Pollution* (34):45-53.
- Martin, B., S. Cooper, B. Heidel, T. Hildebrand, G. Jones, D. Lenz, and P. Lesica. 1998. *Natural Community Inventory Within Landscapes of the Northern Great Plains Steppe Ecoregion of the United States*. The Nature Conservancy, Arlington, VA 222pgs.
- Messmer, T. and G. Dahl. 1991. *Wildlife and pesticides: a practical guide to reducing the risk*. NDSU Extension Service, WL-1017. <http://www.ext.nodak.edu/extpubs/ansci/wildlife/w11017-1.htm>
- Murphy, Ed. No date. *Mineral Resources of North Dakota*. North Dakota Geological Survey. <http://www.cc.ndsu.nodak.edu/instruct/schwert/ndgs/mineral.htm>
- NRCS- Natural Resources Conservation Service. 1992a. Percent Change in Rangeland Area, 1982-1992. *Natural Resources Inventory, Map ID# 2309*.
- NRCS- Natural Resources Conservation Service. 1992b. Estimated average annual wind erosion in relation to T value on non-federal rural land, by land cover/use and by year. Table 215.
- The Nature Conservancy. 1999. *Ecoregional Planning in the Northern Great Plains Steppe*. Northern Great Plains Steppe Ecoregional Conservation Team. The Nature Conservancy, Arlington, VA. 76 pgs.
- North Dakota Agricultural Statistics Service. 1998. *North Dakota Agricultural Statistics*. Ag Statistics No. 67. June 1998.
- North Dakota Game and Fish Department. 1997. Annual report issue. *North Dakota Outdoors* 59(6): 1-25.
- North Dakota Oil and Gas Division. 1998. *State Summary*. Bismarck, ND.
- NDNHP - The North Dakota Natural Heritage Program. 1997. *Rare North Dakota animals and plants*. 26pgs.
- Noss, R.F., E.T. LaRoe, and J.M. Scott. 1995. *Endangered ecosystems of the United States: a preliminary assessment of loss and degradation*. USFWS Biological Report 28:58pgs.
- Omernik, J.M. 1995. *Ecoregions- a framework for environmental management in Davis, WS. and Simon, T. P eds., Biological Assessment and Criteria-tools for water resource planning and decision making*. Lewis Publishers, Boca Raton, FL. p.49-62.
- Owens, R. and M.T. Myers. 1972. Effects of agriculture upon populations of native passerine birds of an Alberta fescue grassland. *Can J Zool*. 51: 697-713.

- Pimentel, D., H. Acquay, M. Biltonen, P. Rice, M. Silva, J. Nelson, V. Lipner, S. Giordano, A. Horowitz, and M. D'Amore. 1992. Environmental and economic costs of pesticide use. *BioScience* 42(10): 33-43.
- Responsive Management. 1998. Attitudes of landowners towards conservation practices in the prairie pothole region. Harrisonburg, VA.
- Reynolds, R. 1999. Project Leader. US Fish and Wildlife Service Habitat and Population Evaluation Team, Bismarck, ND. Interview, May 1999.
- Reynolds, R., T.L. Shaffer, R.W. Renner, W.E. Newton, and B.D.J. Batt. In prep. Impact of the conservation reserve program on duck recruitment. Unpubl. manuscript. U.S. Fish and Wildlife Service, Bismarck, ND.
- Ryan, M.R., R.B. Renken, and J.J. Dinsmore. 1984. Marbled godwit habitat selection in the northern prairie region. *J Wildl Manage* 48(4):1206-1218.
- Sauer, J.R., B.G. Peterjohn, S. Schwartz, and J.E. Hines. 1995. The grassland bird homepage. Ver 95.0 Patuxent Wildlife Research Center. Laurel, MD.
- Sauer, J.R., J.E. Hines, G. Gough, I. Thomas, and B.G. Peterjohn. 1997. The North American breeding bird survey results and analysis. Version 96.3. Patuxent wildlife research center, Laurel, MD.
- Smith, D. 1999. The North American waterfowl management plan-1998 update "Where we've been and where we are heading". North Dakota Chapter of the Wildlife Society Meeting. Bismarck, ND.
- Sovada, M.A., A.B. Sargeant, and J.W. Grier. 1995. Differential effects of coyotes and red foxes on duck nest success. *J Wildl Manage*. 59(1):1-9.
- Stewart, R.E. 1975. Breeding Birds of North Dakota. Tri-college center for environmental studies. Fargo, ND. 295pgs.
- Stewart, R.E. and H.A. Kantrud. 1971. Classification of natural ponds and lakes in the glaciated prairie region. Res. Publ. 82. Bureau of Sport Fisheries and Wildlife. 57pgs.
- Tiner, R.W. 1984. Wetlands of the United States: current status and recent trends. USFWS. National Wetlands Inventory.
- Van Eeckhout, G. 1989. Puttin' fish in prairie potholes. *ND Outdoors* (April-May): 9-11.
- USDA Soil Conservation Service. 1975. Range sites of North Dakota. Bismarck, ND
- USFWS - U.S. Fish and Wildlife Service. 1988. Concept plan for waterfowl habitat protection: Prairie potholes and parklands (US portion).
- USFWS - U.S. Fish and Wildlife Service, Office of Migratory Bird Management. 1995. Migratory nongame birds of management concern in the United States: the 1995 list.
- USFWS - U.S. Fish and Wildlife Service. 1996a. Federal endangered, threatened and candidate species of North Dakota fact sheets. Bismarck, ND.
- USFWS - U.S. Fish and Wildlife Service. 1996b. The economic importance of hunting. International Assoc of Fish and Wildlife Agencies.

- USFWS and DU (Ducks Unlimited.). 1996. The Prairie Pothole Venture: cultivating cooperation for wildlife and agriculture.
- USFWS and DU. 1998. North American Wetland Conservation Act Proposal: A prairie pothole joint venture project of the North American Waterfowl Management Plan, Missouri Coteau habitat conservation project.
- Wacker, S. 1999. Realty Field Supervisor. U.S. Fish and Wildlife Service, Wetland Acquisition Office, Bismarck, ND. Interview, May 1999.
- Whitman, W.C. and M.K. Wali. 1975. Grasslands of North Dakota. In M.K. Wali ed. Prairie: a multiple view. The Univ of ND press, Grand Forks, ND.
- Zollinger, R.K., A.G. Dexter, G.K. Dahl, S.A. Fitterer, M.P. McMullen, G.E. Waldhaus, P. Glogoza, and K. Ignaszewski. 1996. Pesticide use and pest management practices for major crops in North Dakota 1996. NDSU Extension Report No. 43.

Appendix A. Endangered and Threatened Species

North Dakota Wildlife Management Area Project Area

Mammals:

Gray Wolf

Canis lupus (E)

Birds:

Bald Eagle

Haliaeetus leucocephalus (E)

Whooping Crane

Grus americanus (E)

Peregrine Falcon

Falco peregrinus anatum (E)

Piping plover

Charadrius melodus (T)

Key:

(E)

Endangered

Listed (in the Federal Register) as being
in danger of extinction

(T)

Threatened

Listed as likely to become endangered
within the foreseeable future

Appendix B.

Distribution List for the Environmental Assessment

Federal Officials

U.S. Senator Kent Conrad
U.S. Senator Byron Dorgan
U.S. Representative Earl Pomeroy

Federal Agencies

USDA, Natural Resources Conservation Service
USDA, Farm Service Agency
USDA, U.S. Forest Service
BIA, Fort Berthold Agency
BIA, Three Affiliated Tribes
USDI, USGS-BRD:Northern Prairie Wildlife Research Center
USDI, Bureau of Reclamation
USDI, Bureau of Land Management
USDI, U.S. Fish and Wildlife Service
 USFWS, Aberdeen WAO USFWS, Audubon NWR/WMD
 USFWS, Benton Lake NWR USFWS, Bismarck WAO
 USFWS, Chase Lake WMD USFWS, Crosby WMD
 USFWS, Director USFWS, Ecological Services
 USFWS, External Affairs R6 USFWS, Huron WAO
 USFWS, Kulm WMD USFWS, Lostwood WMD
 USFWS, Long Lake WMD

State Officials

Governor Edward T. Schafer

State Congressional Officials

District 2	Sen. John Andrist Rep. Dorvan Solberg Rep. Bob Stefanowicz	District 4	Sen. Meyer Kinnoin Rep. Ronald Nichols Rep. John Warner
District 6	Sen. David O'Connell Rep. Glen Froseth Rep. Gerald Sveen	District 8	Sen. Layton Freborg Rep. Jeff Delzer Rep. Mick Grosz
District 14	Sen. Jerry Klein Rep. Duane DeKrey Rep. Robin Weisz	District 28	Sen. Pete Naaden Rep. Deb Lundgren Rep. Ray Wikenheiser
District 29	Sen. Terry Wanzek Rep. April Fairfield Rep. Chet Pollert	District 48	Sen. David Nething Rep. Lyle Hanson Rep. Joe Kroeber

State Agencies

ND Department of Agriculture
ND Game and Fish Department
State Historical Society of North Dakota
ND State Library, Bismarck
ND Parks and Recreation Dept./Natural Heritage Program
ND State Water Commission
ND State Soil Conservation Committee

County Offices

County Commissioners
Conservation District
Extension Office Counties: Burke, Burleigh, Dickey, Divide, Emmons,
Foster, Kidder, La Moure, Logan, McIntosh, McLean, Mountrail, Sheridan,
Stutsman, Ward, Wells

Groups

The Nature Conservancy of North Dakota
The Nature Conservancy Regional Office
Ducks Unlimited
North Dakota Wetlands Trust
Delta Waterfowl Foundation
North Dakota Stockmen's Association
North Dakota Cattlemen of District 5
Rocky Mountain Elk Foundation
National Audubon Society
Pheasants Forever
Pheasants for the Future
ND Chapter of the Wildlife Society
Bismarck/Mandan Bird Club
North Dakota Wildlife Federation
Sierra Club
Minot Camera Club
Douglas Sportsmen's Club
Driscoll-Moffit Wildlife Club
Garrison Sportsmen's Club
Hiddenwood Sportsmen's Club
Lewis and Clark Wildlife Club
McClusky Sportsmen's Club
Town and Country Sportsmen's Club

Individuals (65)

Appendix C.

List of Scientific and Common Names Used in the Text

Plants

Aspen	<i>Populus tremuloides</i>
Asters	<i>Aster spp.</i>
Blue grama	<i>Bouteloua gracilis</i>
Bluegrass	<i>Poa spp.</i>
Bulrush	<i>Scirpus spp.</i>
Cattails	<i>Typha spp.</i>
Dakota buckwheat	<i>Erigeron visheri</i>
Fringed gentian	<i>Gentianopsis crinita</i>
Gentian	<i>Gentianopsis spp.</i>
Goldenrods	<i>Solidago spp.</i>
Green ash	<i>Fraxinus pennsylvanica</i>
Green needlegrass	<i>Nasella viridula</i>
Joint-spike sedge	<i>Carex athrostachya</i>
Little bluestem	<i>Schizachyrium scoparium</i>
Milfoil	<i>Myriophyllum exalbescens</i>
Needle-and-thread	<i>Stipa comata</i>
Plains muhly	<i>Muhlenbergia cuspidata</i>
Pondweed	<i>Potamogeton spp.</i>
Prairie clover	<i>Petalostemum spp.</i>
Prairie cordgrass	<i>Spartina pectinata</i>
Prairie junegrass	<i>Koeleria pyramidata</i>
Prairie mimosa	<i>Desmanthus illinoensis</i>
Pull-up muhly	<i>Muhlenbergia filiformis</i>
Purple coneflower	<i>Echinacea angustifolia</i>
Reed canarygrass	<i>Phalaris arundinacea</i>
Rocky mountain iris	<i>Iris missouriensis</i>
Rushes	<i>Juncus spp.</i>
Sageworts	<i>Artemisia spp.</i>
Saltgrass	<i>Distichlis spicata</i>
Sedges	<i>Carex spp.</i>
Sedge mouse-tail	<i>Myosurus</i>
Side-oats grama	<i>Bouteloua curtipendula</i>
Small-flowered penstemon	<i>Penstemon procerus aristatus</i>
Smartweed	<i>Polygonum coccineum</i>
Sunflowers	<i>Helianthus spp.</i>
Thread-leaved sedge	<i>Carex filifolia</i>
Western Snowberry	<i>Symphoricarpos occidentalis</i>
Western wheatgrass	<i>Pascopyrum smithii</i>
Western yarrow	<i>Achillea millefolium</i>
Widgeon grass	<i>Ruppia spp.</i>
Wild lily	<i>Lilium spp.</i>
Wild mint	<i>Mentha spp.</i>
Willow	<i>Salix spp.</i>

Invertebrates

Dakota skipper	<i>Hesperia dacotae</i>
Regal fritillary butterfly	<i>Speyeria idalia</i>
Tawny crescent butterfly	<i>Phycoides batesii</i>

Fish

brook sticklebacks	<i>Culaea inconstans</i>
minnows	<i>Pimephales promelas</i>

Herptofauna

Great plains toad
Northern leopard frog
Tiger salamander
chorus frog
Western hognose snake

Bufo cognatus
Rana pipiens
Ambystoma tigrinum Western
Pseudacris triseriata
Heterodon nasicus

Mammals

Badgers
Beaver
Bison
Coyote
Deer
Elk
Grizzly bear
Ground squirrels

Hispid pocket mouse
Mice

Taxidea taxus
Castor canadensis
Bison bison
Canis latrans
Odocoileus spp.
Cervus elaphus
Ursus arctos horribilis
Spermophilus richardsonii
S. tridecemlineatus
S. franklinii
Perognathus hispidus
Peromyscus spp.
Onychomys leucogaster
Reithrodontomys megalotis

Mink
Muskrat
Plains wolf
Pronghorn
Pygmy shrew
Red fox
Raccoon
River otter
Skunk
Shrews

Mustela vison
Ondatra zibethicus
Canis lupus
Antilocapra americana
Microsorex hoyi
Vulpes vulpes
Procyon lotor
Lutra canadensis
Mephitis mephitis
Sorex spp.
Blarina brevicauda
Vulpes velox
Microtus spp.
Clethrionomys gapperi
Mustela spp.

Swift fox
Voles

Weasels

Birds

American bittern	<i>Botaurus lentiginosus</i>
American goldfinch	<i>Carduelis tristis</i>
Baird's sparrow	<i>Ammodramus baridii</i>
Bald eagle	<i>Haliaeetus leucocephalus</i>
Blue-winged teal	<i>Anas discors</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Burrowing owl	<i>Athene cunicularia</i>
Canvasback	<i>Aythya valisineria</i>
Chestnut-collared longspur	<i>Calcarius ornatus</i>
Common nighthawk	<i>Chordeiles minor</i>
Common redpoll	<i>Carduelis flamma</i>
Common snipe	<i>Gallinago gallinago</i>
Clay-colored sparrow	<i>Spizella pallida</i>
Eskimo curlew	<i>Numenius borealis</i>
Ferruginous Hawk	<i>Buteo regalis</i>
Gadwall	<i>Anas strepera</i>
Grasshopper sparrow	<i>Ammodramus savannarum</i>
Green-winged teal	<i>Anas crecca carolinensis</i>
Lark bunting	<i>Calamospiza melanocorys</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Mallard	<i>Anas platyrhynchos platyrhynchos</i>
Marbled godwit	<i>Limosa fedoa</i>
McCown's longspur	<i>Calcarius mccownii</i>
Mourning dove	<i>Zenaida macroura</i>
Northern harrier	<i>Circus cyaneus</i>
Northern pintail	<i>Anas acuta</i>
Northern shoveler	<i>Anas clypeata</i>
Piping plover	<i>Charadrius melodus</i>
Redhead	<i>Aythya americana</i>
Ruddy duck	<i>Oxyura jamaicensis</i>
Sandhill crane	<i>Grus canadensis</i>
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>
Sharp-tailed sparrow	<i>Ammodramus</i>
Short-eared owl	<i>Asio flammeus</i>
Snow bunting	<i>Plectrophenax nivalis</i>
Snowy owl	<i>Nyctea scandiaca</i>
Sprague's pipit	<i>Anthus spragueii</i>
Upland sandpiper	<i>Bartramia longicauda</i>
Vesper sparrow	<i>Pooecetes gramineus</i>
Western meadowlark	<i>Sturnella neglecta</i>
Whooping crane	<i>Grus americana</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Wilson's phalarope	<i>Phalaropus tricolor caudacutus</i>
Yellow rail	<i>Coturnicops noveboracensis</i>

Habitat and Population Evaluation Team (HAPET)
1500 East Capitol Avenue
Bismarck, ND 58501
701/250 4413
r6rw_hap@fws.gov

U. S. Fish and Wildlife Service
<http://www.fws.gov>

For Refuge Information
1 800/344 WILD

January 2000



