

Dakota Prairie Grasslands

USDA Forest Service, Northern Region

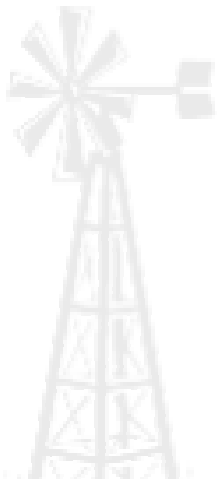
Monitoring and Evaluation Report



Fiscal Year 2005



Caring for the Land and Serving People.



Equal Employment Opportunity Act. - The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDAs TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202)720-6382 (TDD). USDA is an equal opportunity provider and employer.

TABLE OF CONTENTS

PAGE

<i>Introduction</i>	<i>1</i>
Context	1
2005 – Plan Implementation Continues	1
Delayed Implementation of Grazing Portions of the Grasslands Plan	2
Monitoring - Who, When, Why, What	2
Purposes of Monitoring and Evaluation	2
Monitoring Handbook	3
Monitoring Team	4
Questions for Fiscal Year 2005	4
<i>Monitoring Questions</i>	<i>4</i>
Administration	4
Community Relations	10
Heritage	15
Implementation	16
Management Indicator Species	17
Recreation	21
Special Interest Areas	22
Threatened and Endangered Species	23
Viability	25
Watershed	25
Wildlife	27
<i>Appeals and Litigation</i>	<i>29</i>
Grasslands Plan Level Appeals	29
Project Level Appeals	29
Litigation Involving the Grasslands Plan	29
<i>Grasslands Plan Amendments (or Implemented Changes)</i>	<i>29</i>
<i>Contacts and Information</i>	<i>29</i>
<i>Grasslands Supervisor Approval</i>	<i>30</i>
<i>References</i>	<i>31</i>

FIGURES

<i>Figure 1: Sheyenne National Grassland. Summer 2005. Photo courtesy of Dr. Mary Ann Cunningham.</i>	1
<i>Figure 2: Dakota buckwheat, Grand River National Grassland, summer 2005.</i>	9
<i>Figure 3: University of Idaho researchers seining fish on the Little Missouri National Grassland, summer 2005.</i>	9
<i>Figure 4: Stock pond on the Grand River National Grassland.</i>	12
<i>Figure 5: Oil well pad on the Little Missouri National Grassland in the Tracy Mountain field.</i>	13
<i>Figure 6: Leafy Spurge.</i>	15
<i>Figure 7: Burrowing owl. Photo by Art Explosion.</i>	17
<i>Figure 8: Black-tailed prairie dog. Photo courtesy US Forest Service.</i>	18
<i>Figure 9: St. Cloud State University researcher measuring bill length of juvenile burrowing owl. Little Missouri National Grassland. Summer 2005. Photo courtesy US Forest Service.</i>	21
<i>Figure 10: Bald eagle. Photo courtesy Art Explosion.</i>	23
<i>Figure 11: Close-up of the western prairie fringed orchid.</i>	24
<i>Figure 12: Recently reclaimed stock dam.</i>	27
<i>Figure 13: University of North Dakota researchers preparing golden eagles for banding, summer 2005. Photo courtesy of Margi Coyle.</i>	27
<i>Figure 14: National Park Service employees preparing an elk for radio collaring in winter 2005 as part of a multi-agency project to assess elk response to land management activities, including oil and gas development. Photo courtesy of Mike Oehler.</i>	28
<i>Figure 15: Surveying for western prairie fringed orchid. Sheyenne National Grassland. Summer 2005. Photo courtesy of US Forest Service.</i>	28
<i>Figure 16: North entrance to Pasture 5a on the Grand River National Grassland. White Butte in the distance.</i>	32

TABLES

<i>Table 1: Action plans identified in the Grasslands Plan and completion progress.</i>	4
<i>Table 2: Economic impacts from cattle grazing on the Dakota Prairie Grasslands in 2004.</i>	12
<i>Table 3: Economic impacts from oil production on the Dakota Prairie Grasslands in 2002.</i>	13
<i>Table 4: Estimated economic impacts from recreation on the Dakota Prairie Grasslands in 2002.</i>	14
<i>Table 5: Approximate acreage of active prairie dog colonies on the Dakota Prairie Grassland in 1997, 2002, and 2005. Note: some of the 2005 GPS files were corrupted, and had to be redone in summer 2006</i>	19
<i>Table 6: Number of western prairie fringed orchids counted in selected swales in conjunction with water table monitoring on the Sheyenne National Grassland, 2001-2005.</i>	19
<i>Table 7: Number of western prairie fringed orchids counted at selected sites, and area censused, 2001-2005. Note that suitable habitat encompassed only a portion of each area censused.</i>	20
<i>Table 8: Land management activities proposed or initiated in Management Area 2.1 between July 31, 2002 and September 30, 2005.</i>	22
<i>Table 9: Areas deferred from livestock grazing, 1 June to 15 September, to benefit western prairie fringed orchid.</i>	24
<i>Table 10 - Stream Health Assessed by the Proper Functioning Condition Protocol*.</i>	26
<i>Table 11: Names and telephone numbers of people who contributed to the monitoring and evaluation report for fiscal year 2005 and/or are members of the Dakota Prairie Grasslands Monitoring Team.</i>	29
<i>Table 12: Dakota Prairie Grasslands offices with contact names and addresses.</i>	30

Dakota Prairie Grasslands

Fiscal Year 2005 Monitoring and Evaluation Report

Introduction

This report summarizes Grasslands Plan monitoring and evaluation during fiscal year 2005, which ran from October 1, 2004, to September 30, 2005.

Each National Forest and Grassland unit manages resources under the guidance of a Land and Resource Management Plan (LRMP), commonly referred to as a Forest Plan or Grasslands Plan. The National Forest Management Act requires National Forests and Grasslands to develop these management plans. It also requires them to monitor and evaluate the plans.

Context

The Dakota Prairie Grasslands is comprised of four Ranger Districts.

The McKenzie Ranger District

administers the northern half of the Little Missouri National Grassland.

The Medora Ranger District administers the southern half of the Little Missouri National Grassland.

The Sheyenne Ranger District administers the Sheyenne National Grassland.

The Grand River Ranger District administers the Grand River and Cedar River National Grasslands.



*Figure 1: Sheyenne National Grassland. Summer 2005.
Photo courtesy of Dr. Mary Ann Cunningham..*

The Grand River National Grassland is located in South Dakota; the other National Grasslands that are part of the Dakota Prairie are located in North Dakota.

2005 – Plan Implementation Continues

The Little Missouri, Grand River, Cedar River, and Sheyenne National Grasslands were administered by the Custer National Forest until 1998, at which time they were assigned to the newly formed Dakota Prairie Grasslands. On July 31, 2002, the Regional Forester signed the Record of Decision to approve the Dakota Prairie Grasslands' LRMP, (i.e. the "Grasslands Plan"). Fiscal year 2003 was our first full year under the guidance of the new Grasslands Plan.

The Grasslands Plan consists of four Chapters. Chapters 1-3 provide the goals, objectives, standards, and guidelines that are to be used to manage the Dakota Prairie Grasslands' resources.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

Chapter 4 outlines the monitoring and evaluation strategy to be used to assess the Plan over time. Specifically, Chapter 4 lists the monitoring questions to be addressed and assigns these questions reporting timeframes. The "Monitoring Handbook" being developed by the Dakota Prairie Grasslands details the methodologies that are used to collect and analyze the monitoring data.

The Dakota Prairie Grasslands Land and Resource Management Plan, or Grasslands Plan, will provide management guidance for the next 10 to 15 years.

Delayed Implementation of Grazing Portions of the Grasslands Plan

The Scientific Review Team process (described in the 2003 Dakota Prairie Grasslands Monitoring and Evaluation Report) continued in Fiscal Year 2005. Eleven Allotment Management Plans (AMPs) on the Cedar River that were included in the review were "real". This association had opted out of the formal SRT process, and so these AMPs had gone through the National Environmental Policy Act (NEPA) process and were signed by the permittees. In 2005, Pastures 6 through 9 on the Grand River National Grasslands were also signed. Other than these AMPs, no other implementation of the grazing portion of the Grasslands Plan occurred.

In May 2005, the Scientific Review Team released the results of their evaluation. The Forest Service released a response to this report. This will be incorporated into a Livestock Grazing Record of Decision that will finalize the Grasslands planning process in 2006. These reports can be found on-line at <http://www.fs.fed.us/r1/dakotaprairie/>.

In the meantime, monitoring questions that pertain to grazing will be answered with the most current information.

Monitoring - Who, When, Why, What

Purposes of Monitoring and Evaluation

Effective land and resource management plan monitoring and evaluation fosters adaptive management and more informed decisions. It helps identify the need to adjust desired conditions, goals, objectives, standards and guidelines as conditions change. Monitoring and evaluation helps the agency and the public determine how a land and resource management plan is being implemented, whether plan implementation is achieving desired outcomes, and whether assumptions made in the planning process are valid.

Monitoring and evaluation are conducted at several scales and for many purposes, each of which has different objectives and requirements. Monitoring requirements and tasks are developed to be responsive to the objectives and scale of the plan, program, or project to be monitored.

Monitoring and evaluation are separate, sequential activities required by National Forest Management Act regulations to determine how well objectives have been met and how closely management standards and guidelines have been applied.

Monitoring generally includes the collection of data and information, either by observation or measurement. Evaluation is the analysis of the data and information collected during the monitoring phase.

The evaluation results are used to answer the monitoring questions, determine the need to revise management plans, change how the plans are implemented, and form a basis for adaptively managing the national grasslands. Monitoring and evaluation keep the Grasslands Plan up-to-

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

date and responsive to changing issues by verifying the effectiveness of management plan standards and guidelines, anticipating program and project effects on resources, and providing information for amendments to the management plan.

Monitoring provides the information necessary to determine whether the Grasslands Plan is sufficient to guide management of the national grasslands for subsequent years or whether modification of the plan is needed.

The purposes of Land and Resource Management Plan monitoring and evaluation are to:

- ◆ Determine whether the plan is working as anticipated to accomplish its identified goals and objectives.
- ◆ Determine whether changes need to be made to the plan.
- ◆ Determine whether assumptions made in the planning process are valid.
- ◆ Allow Forest Service managers to make better decisions within the guidance of the plan.

There are three types of monitoring:

1. Implementation Monitoring: evaluates whether the anticipated inputs, anticipated outputs, and actions prescribed in the Grasslands Plan are occurring as planned.
2. Effectiveness Monitoring: evaluates how effective the Grasslands Plan actions are at achieving the desired outcomes.
3. Validation Monitoring: verifies the assumptions and models used in the Grasslands Plan.

Monitoring Handbook

A Monitoring Handbook is being developed by the Dakota Prairie Grasslands Monitoring Team to provide more refined guidance in monitoring and evaluation than the monitoring strategy outlined in the Grasslands Plan. The target audience for this Monitoring Handbook is Dakota Prairie Grassland employees. Its objectives are:

1. To focus our monitoring efforts,
2. To schedule monitoring data collection,
3. To budget monitoring funds, and
4. To specify monitoring protocols.

The Monitoring Handbook is in a draft stage. Despite being in draft form, the Handbook has a great deal of useful information in it as far as monitoring methods, reporting language, and scheduling that was helpful in developing this monitoring report. The Monitoring Handbook is scheduled for completion at the end of calendar year 2006.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

Monitoring Team

The Dakota Prairie Grasslands Monitoring Team is an interdisciplinary group of people that oversees Grasslands Plan monitoring. Functions of the team include developing monitoring protocols, overseeing monitoring data collection and storage, evaluating monitoring results, budgeting, and making recommendations to the Grasslands leadership in regards to monitoring and evaluation. Monitoring team members are listed in Table 11.

Questions for Fiscal Year 2005

The Grasslands Plan contains 48 monitoring questions in Chapter 4. These questions need to be answered over the life of the plan, but each question will not be monitored or evaluated every year. Development of the Dakota Prairie Grasslands Monitoring Handbook will include creation of a monitoring schedule based on question prioritization, time needed for data collection, and projected budgets. However, even with the best-laid plans, circumstances will change that may affect the monitoring schedule; therefore, the Grasslands leadership will assist in prioritizing what will be monitored in any given year.

Which questions were addressed for fiscal year 2005 was based on several factors including the "frequency of reporting" stated in Chapter 4 of the Grasslands Plan for each question, availability of information to answer the question, and initial attempts by the Monitoring Team to prioritize questions.

Monitoring Questions

Administration

ADM1. Are the action plans identified in the objectives being completed on schedule?

Frequency of Reporting: Annually
Monitoring Type: Implementation

This question refers to the many different strategies and plans that the Dakota Prairie Grasslands is to develop over the life of the Plan to help attain goals. Table 1 outlines these plans and identifies our progress.

Table 1: Action plans identified in the Grasslands Plan and completion progress.

#	Action Plan Commitment	Plan Page	Time Given (Years)	Year Due	Progress and Comments
1	Develop conservation and recovery strategies for federally threatened or endangered species with the U.S. Fish and Wildlife Service and other agencies.	1-2	As information becomes available	NA	A recovery strategy for the threatened western prairie fringed orchid was completed in 2002, with implementation beginning in FY2003. The black-footed ferret, bald eagle, gray wolf, and whooping crane already have strategies. The piping plover and interior least tern do not occur on the DPG. No other T/E wildlife species is noted as "known or suspected to occur" on the DPG by the Regional Forester.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

#	Action Plan Commitment	Plan Page	Time Given (Years)	Year Due	Progress and Comments
2	Develop and implement conservation strategies for Forest Service sensitive species.	1-3	As technical information becomes available	NA	A conservation strategy was developed for the Black-tailed Prairie Dog, a sensitive species, on the Grand River Ranger District in FY 2004
3	Develop management strategies to conserve rare plant and wildlife communities.	1-3	As such communities are identified	NA	An assessment of rare plant communities on the Sheyenne Ranger District is underway and will be completed in FY 06. Work was done on the black-tailed prairie dog on the Medora Ranger District in 2005.
4	Establish scientifically credible monitoring programs that contribute to our ability to determine viability of threatened and endangered species, species at risk, and MIS.	1-3	Over life of Plan	NA	The DPG monitoring handbook, which will be completed in FY 07, provides a plan for scientifically credible inventory and monitoring methods.
5	Complete conservation strategies for globally rare plant species and other high priority species in cooperation with other conservation organizations and agencies.	1-3	Over life of Plan	NA	A conservation strategy was initiated for the sensitive plant, Dakota buckwheat in FY02. This will be completed in FY06.
6	Assess potential impacts of the construction of impoundments in upper watersheds on hydrologic flows and patterns on downstream habitat on the sturgeon chub and other sensitive native fish species.	1-3	Over life of Plan	NA	The sturgeon chub was evidently extirpated from the Little Missouri River by the drought in the late 1980's. Attempts to reintroduce the species there have been made, but the success of those efforts is unknown. No other sensitive native fish species occurs on the DPG.
7	Develop and maintain cooperative noxious weeds and invasive species management plans in consultation with appropriate partners and agencies.	1-3	5 years	2007	Cooperation is ongoing with grazing associations, county weed boards and the state of North Dakota. Cooperative agreements with partners have been established and over \$300,000 (in FY 2004) of appropriated money has been given to partners for weed control.
8	Develop and implement a certified noxious weed-free forage program in consultation with appropriate state agencies	1-3	3 years	2005	Implemented in 2001 as a large multi-agency effort of state and federal partners.
9	Implement an integrated prevention and pest control management program for noxious weeds and invasive plant species	1-4	10 years	2012	This is an ongoing process on all ranger districts. Work was started on the Dakota Prairie Grasslands Noxious Weed EIS, which includes an integrated approach for noxious weed management.
10	Complete site and recreation plans, including rehabilitation and re-vegetation strategies.	1-4	10 years	2012	Completed December 2002.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

#	Action Plan Commitment	Plan Page	Time Given (Years)	Year Due	Progress and Comments
11	Implement a science and marketing-based interpretive program strategy that uses a variety of communication media	1-4	5 years	2006	Interpretive Plan for Custer Trail completed. DPG wide Interpretive Plan scheduled for 2007-2008.
12	Develop and implement a heritage inventory strategy to survey and evaluate sites, in support of management actions and activities as agreed upon with State Historic Preservation Office (SHPO) and Tribal Historic Preservation Office (THPO).	1-5	5 years	2007	Heritage Inventory and Survey Strategy included with the 1997 Participating Agreement (PA) with SHPO and Advisory Council on Historic Preservation. Also, a Student Cooperative Education Program (SCEP) Archaeologist Masters Thesis project was completed in 2004.
13	Assess identified sites eligible for the National Register of Historic Places in conjunction with SHPO and THPO and provide interpretation for National Register of Historic Places (NRHP) sites where appropriate and consistent with developed preservation plans.	1-5	5 years	2007	The assessment for Initial Rock was completed in 2004. Work continued on the nominating process for the Custer Military Historic District. This is planned for FY 2006. The Custer Trail Self Guided Auto tour will open in the Spring of 2007, which includes six new interpretive sites, an auto tour brochure and two CDs.
14	Identify and protect traditional cultural properties in consultation with federally recognized American Indian tribes	1-5	3 years	2005	On going, Major Ethnographic Overview effort completed in 1995. Consultation is ongoing with federally recognized tribes.
15	Update prehistoric, ethnographic, and historic overviews	1-5	10 years	2012	Gathering reference material.
16	Develop and implement a management and monitoring plan for each RNA. (The time for accomplishing this starts at designation.)	1-5	5 years		Formal designation of RNAs is planned for FY07. Management plans will be completed after designation.
17	Revise allotment management plans (AMPs) to meet desired condition described in Geographic Area direction.	1-5	As needed	NA	The DPG has a schedule for updating all allotment management plans by 2010. Due to delayed implementation of the grazing portion of the Grasslands Plan, allotment planning continues, but signing decisions has been delayed on the Little Missouri and Sheyenne National Grasslands. AMPs were completed for Pastures 6-9 on the Grand River National Grassland in FY 05.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

#	Action Plan Commitment	Plan Page	Time Given (Years)	Year Due	Progress and Comments
18	Develop and implement conservation plans for significant geological and paleontological sites as information becomes available	1-6	15 years	2017	Initiated GPS surveys of known geological and paleontological sites in 2003. The data will be transferred to a GIS layer for inventory purposes. Data will be added as it becomes available.
19	Identify, develop, manage, and interpret important watchable wildlife and plant viewing sites	1-6	10 years	2012	In 2005 we published the 71-page book: "Bird Status and Distribution on the Grand River and Cedar River National Grasslands: 2005". We also created 1 display, led 14 field trips, published 24 newspaper articles, gave 4 radio and 1 television interviews, and presented 8 speeches. The focus of all this activity was to highlight the Dakota Prairie Grasslands' rich flora and fauna, and assist the public in understanding and enjoying their public lands.
20	Establish and implement credible inventory and monitor systems, develop survey methods, and initiate baseline and trend surveys to provide scientific information and decision support across all land ownerships.	1-7	Over life of Plan	NA	The DPG monitoring handbook will be completed in FY07. Monitoring of residual vegetation continued this FY.
21	Assess potential habitat capability at the local level for management indicator species by identifying existing or establishing new reference areas and implementing long-term monitoring.	1-7	Over life of Plan	NA	The DPG monitoring handbook provides the inventory and monitoring schedule for management indicator species. For the western prairie fringed orchid, population surveys and monitoring occur on an annual basis. Our annual, long-term monitoring of sharp-tailed grouse, greater sage-grouse, and greater prairie-chicken continued in 2004.
22	Identify travel opportunities and restrictions; including designating motorized travelways and areas, to meet land management objectives	1-7	5 years	2007	Non-motorized areas were marked on the ground in 2003 and special orders were written to enforce it. Site specific travel management planning was initiated on the Sheyenne in 2004 and scheduled for completion in FY06. The Cedar River/Grand River National Grasslands will be completed in 2007, and the Little Missouri National Grasslands completed in 2009.
23	Provide site-specific maps and information showing closures, restrictions, and opportunities for motorized and nonmotorized use.	1-7	Over life of Plan	NA	Maps of nonmotorized areas as identified in the Grasslands Plan were prepared in 2003 in conjunction with the special order limiting motorized use in these areas.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

#	Action Plan Commitment	Plan Page	Time Given (Years)	Year Due	Progress and Comments
24	Identify the minimum Forest service road system needed for administration, utilization, and protection of national grasslands resources using a science-based roads analysis process.	1-7	Over life of Plan	NA	Completed as part of the LRMP revision. Updates ongoing as inventory of level 2 roads continue.
25	Develop and implement an approved land ownership adjustment plan in response to resource management and public needs. Coordinate, review and update every 3 years	1-8	3 years	2005	The land adjustment plan was started in 2003. When completed, this will still continue to be a dynamic document.
26	Develop and implement a 5-year Rights-of-Way Acquisition program in response to resource management programs and access needs. Coordinate, review and update annually.	1-8	3 years	2005	Development of the 5-year ROW acquisition plan was started in FY 03. Current plans are to finish the report in FY07.
27	Develop 64 sample AMPs to be reviewed by a Scientific Review Team to determine if the grazing portion of the Grasslands Plan can be implemented and to verify that grazing levels are similar to those projected in the Revised Grasslands Plan FEIS.	ROD	2 years	2004	This was completed in 2004, and the Scientific Review Team report was accepted by the DPG in 2005.

Also considered in administration are things such as new inventory and monitoring systems established, establishing baseline and trend surveys and technology transfers.

Some highlights from FY 05 follow:

- GIS data exchanged/shared with other agencies or organizations include the following. Some of these were in support of Forest Service agreements.
 - ◆ USDA - USFS - LANDFIRE
 - ◆ USDA – Natural Resource Conservation Service
 - ◆ USDI - National Park Service – Theodore Roosevelt National Park
 - ◆ USDI – Office of Surface Mining
 - ◆ North Dakota State University
 - ◆ ND Parks and Recreation
 - ◆ ND Geological Survey
 - ◆ SD Game, Fish and Parks
 - ◆ SD Animal Industry Board (State Veterinary)
 - ◆ Perkins County
 - ◆ Cornell University
 - ◆ Dickinson State University
 - ◆ St. Cloud State University

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

- University of North Dakota
- University of South Dakota
- University of Minnesota
- Team Earthworks
- Tetra Tech EMI
- KLJ Inc., Billings County

- We initiated the first bat survey on the Grand River National Grassland in summer 2005.
- Butterflies were again surveyed on the Little Missouri National Grassland.
- Dakota buckwheat was again surveyed on the Grand River National Grassland.



Figure 2: Dakota buckwheat, Grand River National Grassland, summer 2005.

- The two-year long study of the Little Missouri National Grassland's stream fish community was completed by the University of Idaho.
- North Dakota State University initiated a focused study of the western prairie fringed orchid's likely pollinators.
- University of North Dakota completed their multi-year study of the Little Missouri National Grassland's small mammal community.
- Dakota Audubon began a multi-year study of the response of Sprague's pipit and Baird's sparrow to land management activities on the Grand River National Grassland.
- Residual vegetation transects were again sampled across the Dakota Prairie Grasslands to quantify the amount of residual vegetation remaining after the growing season.



Figure 3: University of Idaho researchers seining fish on the Little Missouri National Grassland, summer 2005

- Sharp-tailed grouse surveys were conducted on all four National Grasslands administered by the Dakota Prairie Grasslands. In addition, greater prairie-chicken trend surveys were completed on the Sheyenne National Grassland.
- Grassland bird surveys were continued across the Dakota Prairie Grasslands through cooperative efforts with Rocky Mountain Bird Observatory.
- Volunteer birders Ron Martin and David and Carolyn Griffiths again surveyed grassland birds across the Dakota Prairie Grasslands.
- Dr. Cunningham of Vassar University completed her research into bird community dynamics on the Sheyenne National Grassland.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

Community Relations

The Grasslands Plan includes three monitoring questions that address economic impacts of Plan implementation. The ultimate question is: “Are there economic effects from changes in grassland management, and what are they?”

CR1. What are the effects of National Grasslands management on adjacent communities?

Frequency of Reporting: Annually
Monitoring Type: Effectiveness

Assistance to Rural Communities

Since the year 2000, Dakota Prairie Grasslands worked in partnership with the North Dakota Forest Service and Department of Commerce to develop a ‘one-stop shop’ granting process to access Rural Community Assistance, National Fire Plan-Economic Action, and Leadership for Community Strategic Planning Grants. Over \$633,157 in grants were awarded to 64 rural communities, counties, non-profit organizations, and Native American Tribes between the years 2000—2004. The pilot partnership initiated a local delivery process that has since been adopted by Region One for implementation in Montana and Idaho. In 2005, the North Dakota Economic Action Team was nominated for and received a National Rural Community Assistance award acknowledging the interagency coordination and effective program delivery.

National events in 2005 such as Hurricane Katrina resulted in budget constraints and the Economic Action Program funds were cut drastically nationwide. Although no Rural Community Assistance grants were awarded through the Dakota Prairie Grasslands in 2005, we continue to assist with the review process for National Fire Plan-Economic Action grants awarded through North Dakota Forest Service. Several applications were received and reviewed by the committee and one community was awarded a National Fire Plan Economic Action grant from the North Dakota Forest Service.

The Dakota Prairie Grasslands and North Dakota Forest Service sponsored two people to the Wildland Urban Interface conference in New Mexico. Upon completion of the training, the two participants worked with Forest Service staff (state and Federal) to develop and implement local training sessions on wildfire and emergency planning. About 12 participants attended the workshop held in Dickinson, North Dakota.

At the District level, Forest Service employees participate in local planning processes to develop Community Action and/or Community Wildfire Protection Plans. In 2005, two communities conducted planning activities that involved Dakota Prairie Grasslands staff.

North Dakota Forest Service and the Dakota Prairie Grasslands work in partnership with the North Dakota Firefighter’s Association to provide training for rural firefighter’s at the Annual Firefighter’s School. About 250 communities participate in the training event each year, benefiting about 1200 firefighters. Forest Service employees instruct classes on Incident Command and Wild Land Fire at the 100 and 200 course levels. In addition to the Annual Firefighter’s School, rural volunteer firefighters are invited to local training events held at the District level.

Conservation Education and Centennial Activities

Dakota Prairie Grasslands celebrated 50 years of service in 2005 and the North Dakota Forest Service celebrates their centennial in 2006. To commemorate the centennials, the two agencies jointly sponsored conservation education events at the Denbigh Experimental Forest.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

Sixty-nine third, fourth, and fifth grade students from Towner and Granville schools participated in the Denbigh Arts in School Conservation Education event conducted at the Denbigh Experimental Forest in September 2005. The program was developed in partnership with the North Dakota Forest Service, Towner and Granville Unified (TGU) School District, and the Minot Area Council of the Arts.

Students researched the history of the Denbigh Experimental Forest and learned that the forest was planted in the early 1930s to combat wind and soil erosion on the Great Plains. A field trip to the Denbigh Experimental Forest provided the students an opportunity to engage in outdoor learning labs providing lessons on the following topics: 1) history of what it was like to live on the Great Plains during the Depression Era; 2) tree identification and forest health, 3) soil health, 4) birds and other wildlife; 5) outdoor recreation, 6) wildfire and fire-wise landscapes; 7) outdoor drawing and painting using natural areas as inspiration. USDA Forest Service, Dakota Prairie Grasslands provided \$2,500 toward the project to support the cost of supplies and instructor fees.

Over 40 sixth grade students from Jim Hill Middle School in Minot, North Dakota participated in a 'Trees, Trash, and Trails' project. Phase one of this project was conducted in September 2005 and consisted of a field trip to Denbigh to learn about forest health, outdoor recreation and landscape design. Phase II will be completed in 2006 to locate and GPS signs at Denbigh and develop an informational brochure about the Denbigh Experimental Forest.

Opportunities continue to grow for joint conservation education activities at the Denbigh Experimental Forest. This area has served the education community for many years and has great potential to become an 'outdoor environmental learning lab' for regional conservation education activities.

In conjunction with the 2005 centennial activities, the Sheyenne Ranger District sponsored a community information event in Granville, North Dakota to engage local residents in discussion regarding the interest in and use of the Denbigh Experimental Forest. About 25 people attended the event to discuss potential development opportunities at the Denbigh Experimental Forest.

Centennial funds in the amount of \$30,000 were awarded to the Dakota Prairie Grasslands for repairs to the historic Denbigh Bunkhouse. Long-term goals are to fix up the 1930 log house to use as a future rental unit and/or education facility. The restoration process will continue in 2006.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

CR3. What are the effects of National Grasslands management on economic conditions of local residents?

Frequency of Reporting: Annually
Monitoring Type: Effectiveness

We are reporting economic effects of three resource programs: livestock grazing, oil and gas production, and recreation. These three are the most quantifiable programs with regard to economics on the Dakota Prairie Grasslands.



Figure 4: Stock pond on the Grand River National Grassland.

Livestock Grazing

Livestock grazing is reported as HMs (Head Months) authorized to graze on Forest Service land. One AUM (Animal Unit Month) is the amount of forage required by a 1,000-pound cow and her calf grazing for one month. However, billing is done by Head Months. A Head Month is counted as one grazing animal (or cow/calf pair) for one month for cattle. In most cases, this is virtually the same as an AUM, and is used as such for the calculations in Table 3.

The number of AUMs is multiplied by economic response coefficients to determine total jobs and income that can be associated with the AUMs. Economic response coefficients used in calculating jobs and income were taken from spreadsheets used to determine economic effects in the Final Environmental Impact Statement for the Grasslands Plan. Information is reported for the Little Missouri National Grassland (McKenzie and Medora Ranger Districts), the Cedar River and Grand River National Grasslands, and the Sheyenne National Grassland because the response coefficients were different for each of the economic impact areas associated with these grasslands. Information for FY 2005 is currently unavailable and will be reported in the FY 06 report. Table 3 depicts the economic impacts from cattle grazing in FY 2004.

Table 2: Economic impacts from cattle grazing on the Dakota Prairie Grasslands in 2004.

Unit	2004 AUMs*	Effects from National Forest System Lands Grazing	
		Total Jobs	Total Income
Grand River / Cedar River National Grasslands**	59,610	76	\$1,134,826
Little Missouri National Grassland	339,015	617	\$7,726,015
Sheyenne National Grassland	55,680	121	\$1,355,988
Total Dakota Prairie Grasslands	454,305	814	\$10,216,828

* AUMs on National Forest System lands, determined from the final billing to permittees; does not include sheep AUMs.

** Grand River also grazed sheep head months but this was not included in the calculations as the economic response coefficients were developed for cattle, not sheep.

Due to delayed implementation of the grazing portion of the Grasslands Plan, as discussed on page 2, changes in livestock grazing and associated economics do not reflect the effects of the new Grasslands Plan. However, this data may help define the range of variability in the cattle

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

industry that can occur due to natural effects, such as drought, independent of effects from Grasslands Plan direction.

Oil and Gas

Oil and gas production occurs only on the Little Missouri National Grassland.

Oil and gas production numbers for the Dakota Prairie Grasslands are kept in collaboration with the Bureau of Land Management (BLM). The BLM keeps the “down hole” records and manages below surface resources. This data is stored with the Minerals Management Service. Due to an on-going lawsuit, and changes in accounting and computer systems, agency specific information for 2005 has not yet become available. The numbers used for the table below are from 2002.



Figure 5: Oil well pad on the Little Missouri National Grassland in the Tracy Mountain field.

The economic response coefficients used to calculate jobs and income came from spreadsheets used to calculate economic effects in the Final Environmental Impact Statement for the Grasslands Plan. Table 4 shows the economic impacts from oil production in 2002.

Table 3: Economic impacts from oil production on the Dakota Prairie Grasslands in 2002.

Unit	2002 Oil Equivalent Barrels of Oil and Gas	Effects from National Forest System Lands Oil and Gas Production*	
		Total Jobs	Total Labor Income
Little Missouri National Grassland	5,327,999	698	\$23,443,196

*These figures do not include the economic impacts associated with drilling.

While the total oil equivalent barrels are not yet available, the North Dakota Petroleum Council brochure lists the oil and gas revenues from the Little Missouri National Grasslands from Fiscal Year 2004 as \$13.4 million. Of that amount, one-fourth, or \$3.4 million was returned to McKenzie, Billings, Golden Valley and Slope Counties for schools and roads. (Source: North Dakota Oil & Gas Industry Facts and Figures brochure – 2005 edition).

Recreation

The Grasslands provide North Dakota's most extensive recreational trail systems; core habitat for greater prairie chicken, western prairie fringed orchid and bighorn sheep; key areas for mule deer, wild turkey, and sharp-tailed grouse hunting; and the largest expanse of public land in the state. These resources attract thousands of visitors each year.

The Forest Service National Forest Visitor Use Monitoring program collects information on National Forests and Grasslands about visitor satisfaction and use. Results of this effort show that recreation use on the Dakota Prairie Grasslands for fiscal year 2002 was 739,157 national forest (or grassland) visits. A national forest (or grassland) visit is defined as the entry of one person upon a national forest or grassland to participate in recreation activities for an unspecified

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

period of time. This 2002 survey data is the most up-to-date information available, as no estimates or surveys were done for 2005. The next National Forest Visitor Use Monitoring for the Dakota Prairie Grasslands is scheduled for 2007.

The economic effects calculations in the Final Environmental Impact Statement for the Grasslands Plan used Recreation Visitor Days. A Recreation Visitor Day (RVD) can be understood to mean one person visiting the National Grasslands (or National Forest) for a period of 12 hours. One RVD could be one person camping overnight or 12 people hiking for an hour.

Table 5 lists solely a potential averaged estimate of the recreation economic impact to the DPG. This is based on an estimated average visit of 3 hours in 2002. Coefficients used in the plan were broken out by National Grassland. The survey data was not readily available by unit, and so an averaging was used to produce the rough estimate of jobs and income listed below. This would correspond to between a 5 and 10 percent increase based on the estimates from the plan. With the increase in recreation facilities, and growing use on the various trail systems, this seems to be consistent with the economic analysis in the Final Environmental Impact Statement.

Table 4: Estimated economic impacts from recreation on the Dakota Prairie Grasslands in 2002.

Unit	2002 Recreation visits	2002 Estimated RVDs*	Estimated Effects from National Forest System Lands Recreation**	
			Total Jobs	Total Labor Income
Little Missouri National Grassland	739,157	184,789	459	\$6,009,615

*Estimated by dividing Recreation Visits by four (estimating each visitor spent an average of 3 hours on the National Grasslands during their recreation visit). Realize some people probably spent days on their trip, while others may have only spent an hour or less.

** Coefficients for jobs and income were different for the Grand/Cedar River National Grasslands, Sheyenne National Grassland, and Little Missouri National Grassland. The recreation visits were not broken out by National Grassland. To get this estimate, all the RVDs were attributed entirely to each unit with a coefficient, and then the totals were averaged.

CR4. To what extent are noxious weeds, invasive species, and animal damage spreading from the National Grasslands to other ownerships or from lands managed by other government agencies to the National Grasslands?

Frequency of Reporting: Annually
Monitoring Type: Effectiveness

Noxious weeds

Noxious weeds such as leafy spurge are present on all districts. Aggressive control practices are being implemented on ranger districts. These practices include herbicide spraying, biological control, mechanical treatment and grazing.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

Although emphasis is placed on treatment of new areas, yearly inventories continue to reveal new infestations. In reference to leafy spurge and salt cedar, transport of seeds along waterways continues to start new infestations across all land ownership boundaries.

In 2004, the Dakota Prairie Grasslands provided over \$300,000 of grant money to county weed boards, some grazing associations, and the North Dakota Department of Agriculture as part of a larger effort to help control noxious weeds on state and private lands within the administrative boundaries of the Dakota Prairie Grasslands. Fiscal Year 2005 data is currently unavailable, and will be included in the FY 2006 report.



Figure 6: Leafy Spurge.

In addition a concentrated effort was started to control noxious weeds in our campgrounds and system trails on the DPG in FY 2005.

Heritage

HER 1. To what extent are national register sites and districts being identified, protected, and preserved?

Frequency of Reporting: Every 5 years
Monitoring Type: Implementation

Through 2005, we inventoried, surveyed, and managed more than 224 sites that are on or are eligible for the National Register of Historic Sites. Over the years, archeologists inventoried a total of 249,373 acres which resulted in 2,047 new sites being recorded. Sites that were of particular concern included Initial Rock and Custer Trail/Sully's Battlefield. Efforts undertaken to project and preserve these areas between 2001 and 2005 were to nominate the Custer Trail/Sully campsites, battlefield areas as a National Register District. A final report was funded for the field work completed in the area between 1992-1994 and 1999. Renovation continues at Initial Rock. The Custer Trail Self Guided Auto Tour was developed, which will be open in the spring of 2007. This will include six new interpretive sites, an auto tour brochure and two CDs.

The Dakota Prairie Grasslands continued its assessment of the extent of livestock impacts on eligible historic sites. This effort was begun in 2000. The original Dragon (a mid-level landscape assessment) census monitored 892 sites. In 2001 we continued to conduct an intensive survey of 50 sites to assess cattle damage. Protocols followed the Regional Protocol and 1997 SHPO Memorandum of Understanding. Since then we have moved several water tanks off of cultural sites and fenced others off from livestock access. Sites continue to be avoided during pipeline reconstruction.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

HER 2. To what extent are traditional cultural properties being identified and protected?

Frequency of Reporting: Every 5 years
Monitoring Type: Implementation

Our approach has been to identify traditional cultural properties at the planning level through tribal consultation. We do not conduct pedestrian surveys to identify this particular group of cultural properties.

Since the planning stage, the tribes have not identified any specific traditional cultural properties. The Dakota Prairie Grasslands will continue consulting with the tribes on an ongoing basis through scoping documents, reports and meetings in an effort to identify these sites.

Implementation

IMP1. Have site-specific decisions implemented the Land and Resource Management Plan direction?

Frequency of Reporting: Annually
Monitoring Type: Implementation

This question is basically asking whether the Standards and Guidelines in the Grasslands Plan have been implemented for on-the-ground projects.

Standards are actions that must be followed or are required limits to activities in order to achieve Grassland objectives. Site-specific deviations from Standards must be analyzed and documented in amendments to the Grasslands Plan.

Guidelines are advisable actions that should be followed to achieve Grassland goals and objectives. Deviation from guidelines must be analyzed during project-level analysis and documented in a project decision document, but do not require an amendment to the Grasslands Plan.

Because of the “phased” decision on livestock grazing described earlier, standards and guidelines related to grazing may not be implemented until a final decision is made in 2006, except those “opted” out. Cedar River and Pasture 6 through 9 AMP project decisions included appropriate Standards and Guidelines.

All projects followed appropriate Standards. Only minor deviations from Guidelines, mostly relating to deciding to mow some vegetation instead of burn or treat with other methods, were found in the analysis.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

Management Indicator Species

MIS 1. Are the selected management indicator species and their response to management activities in habitats on local national forest system lands adequately representing the management effects on other species in the associated response guilds and is the species membership identified for each response guild reasonably accurate and complete?

Frequency of Reporting: Annually
Monitoring Type: Implementation

The Dakota Prairie Grasslands has designated five management indicator species (MIS). In this year's report, we will address two of these: black-tailed prairie dog and western prairie fringed orchid. The remaining three MIS will be addressed in future monitoring reports.

Note that this monitoring question has two aspects: 1) are population trends of management indicator and associated species correlated?, and 2) are the correct associated species being monitored?

Black-tailed Prairie Dog

Black-tailed prairie dogs provide food and shelter to a wide variety of wildlife. Among these are: bald eagle, badger, bobcat, ferruginous hawk, golden eagle, prairie rattlesnake, and swift fox. On the Dakota Prairie Grasslands, the species that is most closely associated with prairie dogs, is the burrowing owl.

Black-tailed prairie dog populations (and habitat) were measured on the Little Missouri National Grassland in 1997, 2002, and 2005 (see Table 5). Burrowing owl populations have been systematically surveyed on the Little Missouri National Grassland since 1998. Black-tailed prairie dog populations have increased substantially (~60%) in recent years (Table 5). Owl populations have also recently increased, albeit to a more modest extent. For example, in 1998, 14 of the 62 prairie dog colonies surveyed were occupied by burrowing owls, whereas in 2002, 17 of the 65 colonies surveyed were occupied. In 2004, 20 of the 71 prairie dog colonies surveyed were occupied by burrowing owls (Marco Restani, researcher, pers. comm.). At least a portion of this increase, however, is likely due to the more intensive searching done in 2004 (Marco Restani, researcher, pers. comm.).



Figure 7. Burrowing owl. Photo by Art Explosion.

The burrowing owl uses prairie dog burrows for nesting and shelter. Indeed, prairie dog burrows are selected by over 95% of the burrowing owls nesting on the Dakota Prairie Grasslands (Dan Svingen and Dr. Marco Restani, pers. obs.). Burrowing owls also use prairie dog colonies as foraging grounds, capturing the bulk of their small bird and invertebrate prey there (most of the owl's small mammal prey is captured off of prairie dog colonies). Based on these observations, the burrowing owl is appropriately classified as a prairie dog "associated species".

It should be noted that the Grasslands' burrowing owls are not only affected by the local availability of prairie dog colonies. This owl population is migratory, and so is also impacted by factors along the migratory route and on the winter grounds. This might explain why local

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

burrowing owl populations have seemingly not benefited proportionally from recent increases in prairie dog populations.

Western Prairie Fringed Orchid

We monitor western prairie fringed orchid populations annually. Data from these efforts is summarized below (see MIS 3).

Numerous plant species are believed to be associated with western prairie fringed orchid, including: adder's tongue, baltic rush, Canada goldenrod, fescue sedge, grass-leaved goldenrod, hedge-nettle, least grape-fern, northern reedgrass, panicked aster, prairie cordgrass, sandbar willow, smooth scouring rush, switchgrass, western ragweed, Wilcox dicantherium, wild strawberry, and wooly sedge. The species that is likely most closely associated with western prairie fringed orchid population fluctuations, however, is switch grass. It is our intention to monitor switch grass frequency and cover values in selected orchid areas. Such monitoring has not yet been initiated.

MIS 2. What is the current habitat suitability for each management indicator species?

Frequency of Reporting: Annually
Monitoring Type: Implementation

As noted above, the Dakota Prairie Grasslands has designated five management indicator species (MIS). In this year's report, we will address two of these: black-tailed prairie dog and western prairie fringed orchid. The remaining three MIS will be addressed in future monitoring reports.

Black-tailed Prairie Dog

Black-tailed prairie dog habitat is regularly monitored on the Dakota Prairie Grasslands. Every three years, we visit each known prairie dog colony on the ground. Using global positioning satellite (GPS) technology, we then map the outside perimeter of each colony. The outside perimeter is defined as the outermost active prairie dog burrow. This technique allows calculation of each colony's areal extent, which is the best measure of current habitat suitability.

We remapped all prairie dog colonies on the Dakota Prairie Grasslands in 2005. The results of this survey are shown in Table 5, and are compared to results from earlier periods. These data show that prairie dog acreage, and thus the amount of suitable habitat, has increased in recent years. These increases are making progress toward the Grassland Plan's objective to establish a series of black-tailed prairie dog colony complexes across the Grand River and Little Missouri National Grasslands.



Figure 8. Black-tailed prairie dog. Photo courtesy US Forest Service.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

Table 5. Approximate acreage of active prairie dog colonies on the Dakota Prairie Grassland in 1997, 2002, and 2005. Note: some of the 2005 GPS files were corrupted, and had to be redone in summer 2006

SITE	1997 ACRES	2002 ACRES	2005* ACRES
LITTLE MISSOURI NATIONAL GRASSLAND			
McKenzie Ranger District	1102	1653	2094
Medora Ranger District	1758	2491	2811
GRAND RIVER NATIONAL GRASSLAND	1519	1514	2110
TOTAL	4379	5658	7015

*Includes some data from summer 2006.

Western Prairie Fringed Orchid

On the Dakota Prairie Grasslands' Sheyenne National Grassland, the western prairie fringed orchid is associated with sedge meadows. The quantity and quality of this habitat varies widely, year-to-year, in response to fluctuating ground water levels.

To help quantify how orchid habitat conditions change over time, we conducted an orchid/ground water level monitoring program, in conjunction with the US Geological Survey. In late summer 2001, we established seven monitoring wells in both the Penberthy and McLeod allotments, and installed three monitoring wells in both the Venlo and R allotments. In 2002, the US Geological Survey monitored water level fluctuations in these wells, while the Dakota Prairie Grasslands established orchid monitoring plots (100 x 100 meters in size) nearby. The orchids in the selected swale were mapped (using GPS technology). The height of each orchid was then measured, and the number of flowers/buds of each plant was counted. Population counts of orchids at these plots are shown in Table 6. Data regarding orchid correlation to fluctuating water levels has yet to be fully analyzed.

Table 6. Number of western prairie fringed orchids counted in selected swales in conjunction with water table monitoring on the Sheyenne National Grassland, 2001-2005.

SITE	2002	2003	2004	2005
Penberthy A	6	20	1	12
Penberthy B	73	41	2	166
McLeod	25	12	30	45
Venlo	30	6	5	5
R	0	17	0	6
TOTAL	134	96	38	234

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

MIS 3. What are the population trends for western prairie fringed orchid and associated species? How have management activities affected this trend and the species' overall recovery?

Frequency of Reporting: Annually

Monitoring Type: Implementation

For the last several years, the Dakota Prairie Grasslands, in cooperation with The Nature Conservancy, USDI Fish and Wildlife Service, and North Dakota Department of Parks and Recreation, has monitored western prairie fringed orchid populations on the Sheyenne National Grasslands. Results are shown in Table 7, and show that the actual number of flowering orchids has varied widely, year-to-year. Management activities, particularly grazing, may impact orchid numbers. Undoubtedly the greatest impact, however, is fluctuating ground water conditions. The orchid is particularly sensitive to these fluctuations, as it prefers growing in sites with saturated soils. These sites dry quickly during drought years, greatly reducing habitat quality and population levels (for example, see Table 7, year 2003).

Table 7.. Number of western prairie fringed orchids counted at selected sites, and area censused, 2001-2005. Note that suitable habitat encompassed only a portion of each area censused.

SITE	2001	2002	2003	2004	2005
Viking Prairie	647 orchids, 160 acres	119 orchids, 160 acres	38 orchids, 160 acres	27 orchids, 160 acres	194 orchids, 160 acres
A Annex				1024 orchids, 50 acres	500 orchids, 22 acres
Sagvold West		204 orchids, 320 acres		124 orchids, 320 acres	1095 orchids, 320 acres
McLeod North		186 orchids, 480 acres		130 orchids, 480 acres	119 orchids, 480 acres
Milton Jr., North Middle	256 orchids, 160 acres				
Oledrud, West west1/2			7 orchids, 160 acres		
TOTAL # orchids	903	509	45	1305	1908
TOTAL area censused	320	960	320	1010	982

MIS 4. What are the population trends for black-tailed prairie dogs and associated species, and how have management activities affected this trend?

Frequency of Reporting: Annually

Monitoring Type: Implementation

As noted above, prairie dog colonies are periodically mapped across the Grasslands. In order to determine how many prairie dogs are associated with those acres, we initiated a cooperative study with the University of North Dakota to determine average prairie dog density. In 2003 the University determined that the average number of prairie dogs per acre of colony was 171. Therefore, based on the estimated 7,015 acres of occupied habitat, there were approximately 119,255 prairie dogs on the Dakota Prairie Grasslands in 2005. If we assume that prairie dog density was similar in 1997 and 2002 (when all prairie dog colonies on the Grassland were also mapped), then the 1997 population was approximately 74,443 prairie dogs, while the 2002 population was approximately 96,186 prairie dogs.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

As also noted above, researchers from St. Cloud State University have been monitoring the Dakota Prairie Grasslands' burrowing owl population for several years. Total population density varies year-by-year, but is consistently low (about 1 pair per 72-125 acres of occupied prairie dog colony). Productivity rates appear adequate to at least maintain a viable population. The



Figure 9. St. Cloud State University researcher measuring bill length of juvenile burrowing owl. Little Missouri National Grassland. Summer 2005. Photo courtesy US Forest Service.

percentage of prairie dog colonies occupied by burrowing owls has increased in recent years. However, the long-term population trend for burrowing owls in North Dakota, and on the Dakota Prairie Grasslands in particular, still warrant heightened concern.

Prairie dog numbers generally increase during drought, after prairie fires, or as a result of heavy grazing pressure. Conversely, prairie dog numbers decrease or remain stable during periods of heavy vegetative growth such as occurs in wet cycles, after poisoning, after excessive shooting, or in the absence of grazing. The primary management activities affecting prairie dog populations on the Dakota Prairie Grasslands in recent years have been those affecting vegetative structure, particularly grazing.

Recreation

REC1. To what extent are trails managed to meet regional standards and to minimize conflicts among users?

Frequency of Reporting: Annually
Monitoring Type: Effectiveness

The Dakota Prairie Grasslands has constructed all trails to meet Regional standards since 1995. We have some old trails, like Summit and Long X, which have short portions that do not meet Regional standards. We are in the process of getting these to standard via the Capital Investment Program. We have no user conflicts on our system trails that we know of. All the trails are non-motorized and have foot, horse and bicycle traffic. The trails were designed to provide sight distance to alleviate potential user conflicts. We perform normal maintenance activities with temporary work crews and with the help of the Recreational Trail Program (RTP) in concert with the ND Park and Recreation Department.

Since completion of the National Visitor Use Monitoring project in FY03, we are seeing an upward trend in recreation use within trail corridors. Likewise, we note an upward trend in day and overnight use of campgrounds. Over 5100 users were counted by trail counters on the Maah Daah Hey trail system in 2005.

The DPG trail coordinator conducts condition surveys on 20% of the National Forest System trails each year. The DPG will continue to work with partners like the Maah Daah Hey Trail Association, North Dakota Department of Parks and Recreation, National Park Service, and International Mountain Bicycling Association to minimize conflict among trail users and achieve volunteer maintenance projects. The DPG trails coordinator, facility engineer and recreation forester organize the job of entering trail condition survey data into the Deferred Maintenance (DM), Real Property, and INFRA database. The DPG trails program strives to work with a growing number of user groups and partners to minimize conflict among trail users, further education of user groups regarding trail etiquette, and emphasize Tread Lightly principles.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

Standard protocols for trail surveys are used as set forth in FSM 2350 and FSH 2309.18. The collected data is archived in the INFRA database for local use and annual reporting to Congress.

In an effort at public education, the DPG and Maah Daah Hey Trail Association publish and distribute a quarterly newsletter "Turtle Tracks". This newsletter invites and provides perspectives of all non-motorized trail user groups. The newsletter is a forum by which all users are involved in planning projects and trail maintenance issues.

The DPG recreation forester publishes and distributes recreation opportunity guides to all DPG offices and statewide visitor's bureaus. DPG trailhead and campground information kiosks now feature grassland maps, visitor information, and describe recreation regulations.

The 2003 DPG Recreation and Trails Plan establishes a management priority to offer a variety of recreation and trails experiences for various ages, abilities, and interests.

Special Interest Areas

SIA 1. To what extent have the special features found in Special Interest Areas been conserved or enhanced?

Frequency of Reporting: At least every 5 years
Monitoring Type: Effectiveness

The Grasslands Plan designated seventeen "Special Interest Areas" (a.k.a. Management Area 2.1). Land management at these sites is intended to maintain and enhance each area's special features. Few projects have been proposed in these areas since the Grassland Plan was initiated in summer 2002. Those that have been proposed and/or initiated are listed in Table 8.

Table 8. Land management activities proposed or initiated in Management Area 2.1 between July 31, 2002 and September 30, 2005.

SPECIAL INTEREST AREA	LOCATION	ACTIVITY
Grand River Sand Dunes	Grand River Ranger District	Continue to maintain the livestock enclosure fences around both parcels of this SIA in order to protect the unique botanical community and ecological processes associated with active sand dunes.
Custer Trail/Davis Creek and Battle of Badlands	Medora Ranger District	In 2005, we summarized the past 10 years of archeological and historical research conducted on these sites and then used that data to nominate them to the National Historic Register. In addition, we built a new shelter and interpretive signs at Initial Rock.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

Threatened and Endangered Species

TE1. To what extent is the Dakota Prairie Grasslands and its management contributing to the recovery and viability of black-footed ferrets?

Frequency of Reporting: Annually
Monitoring Type: Effectiveness

On the Dakota Prairie Grasslands, black-tailed prairie dog colonies provide potential habitat for the endangered black-footed ferret, although no ferrets currently occur there. The USDI Fish and Wildlife Service is interested in evaluating black-footed ferret reintroduction in any area where a prairie dog complex exceeds 1,500 acres. Currently no areas meet this criterion.

TE2. To what extent is the Dakota Prairie Grasslands and its management contributing to the recovery and viability of bald eagles?

Frequency of Reporting: Annually
Monitoring Type: Effectiveness

The Dakota Prairie Grasslands does not contain critical habitat for bald eagles. The species does not nest anywhere on the DPG, though a pair did nest near National Forest System land within the Grand River National Grassland in summer 2005. No winter roost site (as defined as a site with 5 or more regularly roosting eagles) occurs on the Dakota Prairie Grasslands. Bald eagles do regularly use the Dakota Prairie Grasslands during migration, and a few typically winter in widely scattered locales. Based on these facts, the Dakota Prairie Grasslands have very little potential to affect bald eagle recovery or viability.



Figure 10. Bald eagle. Photo courtesy Art Explosion.

TE3. To what extent is the Dakota Prairie Grasslands and its management contributing to the recovery and viability of whooping cranes?

Frequency of Reporting: Annually
Monitoring Type: Effectiveness

The Dakota Prairie Grasslands might occasionally be used by migrating whooping cranes, but no nesting or wintering habitat is available. In fiscal year 2005, no migrant whooping cranes were reported from the Dakota Prairie Grasslands. Based on these facts, the Dakota Prairie Grasslands has very little potential to affect whooping crane recovery or viability.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

TE4. Are actions identified in national recovery plans for threatened and endangered species being implemented where opportunities exist on national grasslands?

Frequency of Reporting: Annually

Monitoring Type: Implementation

Western Prairie Fringed Orchid – Threatened



Figure 11: Close-up of the western prairie fringed orchid.

On the Dakota Prairie Grasslands, threatened and endangered species include gray wolf, whooping crane, bald eagle, black-footed ferret, and western prairie fringed orchid. National recovery plans exist for all of these species. The Dakota Prairie Grasslands does not support breeding populations of black-footed ferret, gray wolf, whooping cranes, or bald eagles, nor does the Grasslands currently contain important habitat for these species' recovery. The Dakota Prairie Grasslands is vitally important, however, to the recovery of the western prairie fringed orchid.

The LRMP fine-tuned the orchid's national recovery plan for application to the Dakota Prairie Grasslands. This fine-tuning resulted in Appendix N of the LRMP. A key feature of Appendix N is the deferment of livestock grazing during the 1 June to 15 September season in selected pastures (referred to as "core allotments"). Areas that have received this treatment in recent years are detailed in Table 9.

Table 9. Areas deferred from livestock grazing, 1 June to 15 September, to benefit western prairie fringed orchid.

Allotment	2001	2002	2003	2004	2005
A Annex			50 acres (willow thicket)	50 acres (willow thicket)	22 acres (northeast corner)
Olerud/Sagvold				Olerud West pasture W1/2 160 acres	Sagvold West pasture 320 acres
McLeod				North P. 160 acres	South P. 160 acres
Venlo					South pasture 300 acres
Milton Jr	North Middle Unit 160 acres	West Pasture 320 acres deferment 6/10-9/25	North Middle Unit 160 acres	East Pasture 320 acres	SW unit 160 acres
LX					
Penberthy			South A Pasture 460 acres	South B Pasture 311 acres	South A Pasture 160 acres
North S			East N1/2 Pasture 245 acres	East S1/2 Pasture 274 acres	East N1/2 Pasture 245 acres
Wall		North Pasture 439 acres	West Center est. 160 acres	Southeast pasture 160 acres deferment 6/7- 9/20	Southeast pasture 160 acres deferment 6/1- 9/1
North Durler					
TOTAL ACRES	160	759	975	1435	1527

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

As explained in Appendix N of the Grasslands Plan (pp. N-6 to N-7), livestock may directly impact orchids (by grazing or trampling). Livestock may also indirectly impact orchids by altering habitat quality (by altering surrounding vegetation, churning the soil, or lowering the water table). Grazing systems that allow heavy, repeated grazing throughout the growing season are more likely to be detrimental to the orchid. Conversely, grazing systems that are timed correctly, and spatially diverse, can help create seral conditions that are advantageous to orchid establishment. Because of these facts, the Recovery Strategy for the Western Prairie Fringed Orchid on the Sheyenne National Grassland (p. N-16) directed that one-third of the acres historically occupied by orchids in core allotments be ungrazed between 1 June and 15 September each year. To be most effective, these deferred acres should change over time (i.e. the same acres should not be deferred from grazing year after year). There are approximately 3,100 acres of occupied orchid habitat on the Sheyenne National Grassland of which 1,365 are found within core allotments.

Viability

VIA2. To what extent is the Dakota Prairie Grasslands contributing to the viability of sensitive plant, animal, and fish species?

Frequency of Reporting: Five Years
Monitoring Type: Effectiveness

The Dakota Prairie Grasslands support numerous sensitive species. Addressing viability for each of this species annually is impractical. Therefore, we have scheduled viability monitoring and reporting for different species each year. In the 2003 Annual Monitoring Report, we discussed bighorn sheep and sensitive plant monitoring. In the 2004 Annual Monitoring Report, we discussed Dakota buckwheat and burrowing owl viability. This year, we are scheduled to address black-tailed prairie dog (a sensitive species). The black-tailed prairie dog, however, is also classified as a management indicator species. Therefore, we already provided prairie dog population monitoring data earlier in this report (see MIS and MIS 4, respectively).

Watershed

WSHD 1. To what extent has water quality condition of watersheds containing national grasslands been restored, maintained, or improved?

Frequency of Reporting: At least every 10 years
Monitoring Type: Implementation

Providing water for public uses is one of the original intents of the National Grasslands. We periodically monitor the quality of water produced from these lands to ensure that public uses can be met. We do this on a watershed by watershed basis. The basic land unit is called a "6th Hydrologic Unit Code Watershed". These are typically areas between 10,000 and 40,000 acres in size. Examples include the Sheyenne River, Sheep Creek, and Ash Coulee.

The first step is to map the boundaries of level 6 hydrologic units (HUCs) in the Dakota Prairie Grasslands. Concept lines delineating level 6 HUCs in the DPG were completed in 2002 by a private contractor, Titan, using 30-meter digital elevation models and standardized protocols. Detailed inspection and adjustments of concept lines and final digitization of level 6 HUCs will proceed in a coordinated, multi-agency effort involving the ND Department of Health, the NRCS, the Army Corps of Engineers, the US Forest Service, US Geological Survey, North Dakota Geological Survey, ND State Water Commission, and state governments of states surrounding North Dakota.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

Prior to FY 2004, the digitization of level 6 HUCS was completed for the Cedar River National Grassland and the Grand River National Grassland. The level 6 HUCs for the upper Little Missouri watershed were mapped and digitized by the state of Wyoming. The linework for North Dakota is essentially complete. Refinements of this work are on-going. The entire State of North Dakota will be submitted for approval to the NRCS at one time in the future. .

The next step will be to classify each 6th Hydrologic Unit Code to Class. Classification is done using standard protocols (NRCS 2002). It is our objective (see LRMP p. 1-2) to improve at least 20 percent of the watersheds in the next 10 years. We will reclassify the Dakota Prairie Grasslands watersheds in 2013, to assess how much progress has been made towards achieving that objective.

When this classification is done, each watershed will be in Class I, II, or III condition. A Class I watershed is one that is good shape, meaning that it exhibits a high degree of integrity and is capable of supporting beneficial uses, such as providing municipal, rural, or agricultural water, providing recreational opportunities, or supporting warm water fisheries. Class II watersheds are in fair shape, but are at risk of not being able to support beneficial uses. Class III watersheds are in poor shape, and are currently not providing all of the beneficial uses that they potentially could.

Riparian Monitoring

In addition, the geomorphic, hydrologic, and biotic integrity of streams and wetlands can be assessed using the Proper Functioning Condition Protocol of Pritchard et al. (1998, 1999). Brooks (2004, 2005a, 2005b) has performed PFC surveys on the Grand River, Medora, and McKenzie Ranger districts. In his work, he determined that 60% (by length) of stream reaches on the Grand River National Grassland were Properly Functioning, 24% were Functional-at-risk, and 16% were Non-functional (Brooks, 2004). On the Medora Ranger District of the Little Missouri National Grassland, Brooks determined that 26% (by length) of stream reaches were Properly Functioning, 48% of stream reaches were Functional-at-risk, and 25% were Non-functional (Brooks, 2005b). On the McKenzie Ranger District of the Little Missouri National Grassland, Brooks determined that 36% (by length) of stream reaches were Properly Functioning, 26% were Functional-at-Risk, and 38% were Non-functional (Brooks, 2005a).

Table 10 - Stream Health Assessed by the Proper Functioning Condition Protocol*.

Area	PFC	Functional-at-risk			NF	Total
		FAR-U	FAR-NA	FAR-D		
Grand River	73.0 miles (59.9%)	0 miles (0%)	5.8 miles (4.7%)	23.2 miles (19.1%)	19.8 miles (16.3%)	121.8 miles
Medora RD	28.7 miles (26.3%)	0 miles (0%)	33.0 miles (30.2%)	19.9 miles (18.1%)	27.8 miles (25.4%)	109.4 miles
McKenzie RD	34.0 miles (36.0%)	2.8 miles (3.0%)	16.8 miles (17.8%)	5.0 miles (5.2%)	35.8 miles (38.0%)	94.4 miles
Total	135.7 miles (41.7%)	2.8 miles (0.9%)	55.6 miles (17.1%)	48.1 miles (14.8%)	83.4 miles (25.6%)	325.6 miles

*PFC is Proper Functioning Condition; FAR-U is Functional-at-risk, upward trend; FAR-NA is Functional-at-risk, trend not apparent; FAR-D is Functional-at-risk, downward trend; and NF is Non-functional.

Water bodies assessed at PFC generally meet conditions of Class I watersheds. Those bodies assessed as NF generally are Class III watersheds. And those bodies assessed as FAR generally are Class II watersheds.

The DPG has contracted with the Bismarck field office of the Water Resources Division of the US Geological Survey to monitor groundwater quality in the Sheyenne delta area of the Sheyenne

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

National Grassland in 2002 and 2003. In addition, the DPG has hired A&L Midwest Laboratories, Omaha, Nebraska, to test groundwater for contamination by herbicides since 1990. The monitoring program is designed to detect chemicals typically used in treatment of noxious weeds and fertilization of crops.

Well-plugging program to protect groundwater supply and quality

The Dakota Prairie Grasslands has actively identified and searched for abandoned wells. Abandoned wells are plugged to comply with state law and to preserve the integrity of groundwater. Some wells flow at the surface. Plugging is required so that groundwater supply is not wasted. Well plugging also prevents contamination of aquifers by preventing surface runoff from entering aquifers and by preventing mixing of waters from different aquifers.

The well plugging program was initiated in 1997. From 1997 through 2005, 182 abandoned wells were plugged.

Dam obliteration and reclamation

Stock dams typically have a short lifespan on the grasslands as they fill with sediment and lose storage capacity in 15 to 25 years. Other impoundments have become dysfunctional due to breaches in the dam or erosion on the spillway. Many breached dams are the source of headwall erosion and stream-channel incision.



Dams in headwater positions of drainage basins typically alter the hydroperiod, drop the water table, and reduce or eliminate riparian areas downstream of the dams. The only way to restore proper stream function and riparian habitat is to remove the dams.

The DPG has been removing obsolete dams since 2001. From 2001 through 2005, 19 dams have been removed and the corresponding stream channels have been restored.

Figure 12. Recently reclaimed stock dam.

Wildlife

WL 2. Are oil and gas stipulations effective in protecting raptor nests, prairie grouse display grounds, and other special wildlife sites?

Frequency of Reporting: At least every 10 years
Monitoring Type: Implementation

During LRMP development, concern was expressed over both the need for oil and gas stipulations and the effectiveness of those stipulations. Of particular concern were the measures intended to protect nesting raptors. To assess stipulation effectiveness, the Dakota Prairie Grasslands enlisted the cooperation of the University of North Dakota to study golden eagle nesting ecology on the Little Missouri National Grassland. This multi-year investigation began in 2001, and is currently being supported by a variety of agencies, including North Dakota Game and Fish Department. Field work will be completed in



Figure 13: University of North Dakota researchers preparing golden eagles for banding, summer 2005. Photo courtesy of Margi Coyle.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

summer 2006, with study results expected in summer 2007.

Several other wildlife species are also sensitive to oil and gas development, including both the greater sage-grouse and elk. In 2005, we contributed additional funding to the multi-agency study of sage-grouse response to land management practices in southwestern North Dakota. Fieldwork is being conducted by South Dakota State University and is expected to be completed in autumn 2006, with study results available about one year thereafter.

In 2005, we also cooperated on the multi-agency monitoring of elk movements in and out of South Unit Theodore Roosevelt National Park. This effort, led by the US National Park Service and US Geological Survey, began in 2004 and is expected to continue through 2008. One important aspect of this research is determining elk response to oil and gas development.



Figure 14. National Park Service employees preparing an elk for radio collaring in winter 2005 as part of a multi-agency project to assess elk response to land management activities, including oil and gas development. Photo courtesy of Mike Oehler.



Figure 15. Surveying for western prairie fringed orchid. Sheyenne National Grassland. Summer 2005. Photo courtesy of US Forest Service.

Appeals and Litigation

Grasslands Plan Level Appeals

No decisions, and therefore no appeals, were made or filed in 2005.

Project Level Appeals

Ten Decision Notices/Finding of No Significant Impact and forty-eight Decision Memos were signed in FY2005 (data from the Planning, Appeals, and Litigation System Database). One project, the Pasture 6 through 9 Allotment Management Plan Revisions, was appealed once under 36 CFR 215 and once under 36 CFR 251. The 215 appeal was dropped after negotiations, and the 251 appeal was upheld at the first level. The second level appeal was not filed in a timely manner and was dismissed.

Litigation Involving the Grasslands Plan

In 2005, there was no new litigation involving the Grasslands Plan.

Grasslands Plan Amendments (or Implemented Changes)

No amendments were needed this Fiscal Year.

Contacts and Information

Following is a list of Grasslands personnel who can be contacted for more information about this monitoring and evaluation report.

Table 11: Names and telephone numbers of people who contributed to the monitoring and evaluation report for fiscal year 2005 and/or are members of the Dakota Prairie Grasslands Monitoring Team.

Name	Telephone Number	Resource Area(s) Addressed
Brenda Quale*	(701) 250-4443	Implementation, Amendments, Appeals, Litigation
Curt Glasoe*	(701) 225-5151	Engineering, Roads, Facilities, Trails
Sheila McNee*	(701) 250-4443	Range, Noxious Weeds
Larry Melvin*	(701) 250-4443	Oil and Gas, Paleontology
Phil Sjursen*	(701) 250-4443	Geographic Information Systems (GIS)
Dan Svingen*	(701) 250-4443	Wildlife, Fisheries, Botany
Tom Turck*	(701) 250-4443	Archeology, Recreation
Bernadette Braun	(701) 683-4342	Botany

* Indicates the person is a member of the Dakota Prairie Grasslands Monitoring Team.

Copies of the Grasslands Plan, the associated Final Environmental Impact Statement, and its Record of Decision can be found on the Web at <http://www.fs.fed.us/ngp/docs.html>. They can also be obtained from the Dakota Prairie Grasslands offices listed below:

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

Table 12: Dakota Prairie Grasslands offices with contact names and addresses.

Office	Line Officer	Address	Telephone Number
Dakota Prairie Grasslands	Dave Pieper, Grasslands Supervisor	240 Century Avenue Bismarck, ND 58503	(701) 250-4443
Grand River Ranger District	Jack Isaacs*, District Ranger	1005 5 th Avenue West PO Box 390 Lemmon, SD 57638	(605) 374-3592
McKenzie Ranger District	Frank Guzman, District Ranger	1901 South Main Street Watford City, ND 58854	(701) 842-2393
Medora Ranger District	Ron Jablonski, District Ranger	161 21 st Street West Dickinson, ND 58601	(701) 225-5151
Sheyenne Ranger District	Bryan Stotts, District Ranger	1601 Main Street PO Box 946 Lisbon, ND 58054	(701) 683-4342

*for FY 2005 – this position is currently vacant

The Dakota Prairie Grasslands website, <http://www.fs.fed.us/r1/dakotaprairie>, contains information and documents related to monitoring, evaluation and other aspects of Grasslands management.

Grasslands Supervisor Approval

I have reviewed this annual Grasslands Plan Monitoring and Evaluation Report for fiscal year 2005. This report meets the intent of the Grasslands Plan, Chapter 4, and 36 CRF 219.

This report is approved.

/s/ *David M. Pieper*

9/29/06

DAVID M. PIEPER

Date

References

- Bernadette Braun, District Rangeland Specialist, pers. comm., based on the Dakota Prairie Grasslands' 4 March 2002 GIS map layer of occupied orchid habitat.
- Brooks, Larry, 2004. Watershed Assessment on the Grand River National Grassland, South Dakota, 2003: U.S. Forest Service—Dakota Prairie Grasslands, Bismarck, North Dakota, 123 p.
- Brooks, Larry, 2005a. Watershed Assessment of the McKenzie Ranger District, Little Missouri National Grassland, North Dakota, 2004-2005: U.S. Forest Service—Dakota Prairie Grasslands, Bismarck, North Dakota, 91 p.
- Brooks, Larry, 2005b. Watershed Assessment of the Medora Ranger, District Little Missouri National Grassland, North Dakota, 2004: U.S. Forest Service—Dakota Prairie Grasslands, Bismarck, North Dakota, 104 p.
- Decision Notice and Finding of No Significant Impact for the Pasture 6 to 9 AMP Revisions Environmental Assessment.
- Martin, R. and D. Svingen. 2003. Bird status and distribution on the Sheyenne National Grassland: 2003. Dakota Prairie Grasslands, internal report. 68 pp.
- Milne, S. A. 2004. Population ecology and expansion dynamics of black-tailed prairie dogs in western North Dakota. M.S. Thesis, University of North Dakota. 120 pp.
- Murphy, R. K., K. W. Hasselblad, C. D. Grondahl, J. G. Sidle, R. E. Martin, and D. W. Freed. 2001. Status of the burrowing owl in North Dakota. *Journal of Raptor Research* 35:322-330.
- Pritchard, D., Anderson, J., Correll, C., Fogg, J., Gebhardt, K., Krapf, R., Leonard, S., Mitchell, B., and Staats, J., 1998. A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas: Technical Reference 1737-15, USDI-Bureau of Land Management, BLM/RS/ST-98/001+1737+REP02, Denver, Colorado, 127 pp.
- Pritchard, D., Berg, F., Hagenbuck, W., Krapf, R., Leinard, R., Leonard, S., Manning, M., Noble, C., Staats, J., 1999 (revised 2003). A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lentic Areas: Technical Reference 1737-16, USDI-Bureau of Land Management, BLM/RS/ST-99/001+1737+REV03, Denver, Colorado, 109 pp.
- Restani, M. 2002. Nest site selection and productivity of burrowing owls breeding on the Little Missouri National Grassland: 2002 annual report. Report to Dakota Prairie Grasslands. 11 pp.
- Restani, M. 2003. Nest site selection and productivity of burrowing owls breeding on the Little Missouri National Grassland: 2003 annual report. Report to Dakota Prairie Grasslands. 12 pp.

2005 Dakota Prairie Grasslands Monitoring and Evaluation Report

- Svingen, D. and R. Martin. 2004. Bird status and distribution on the Little Missouri National Grassland: 2004. Dakota Prairie Grasslands, internal report. 95 pp.
- Svingen, D., D. Griffiths, and C. Griffiths. 2005. Bird status and distribution on the Grand River and Cedar River National Grasslands: 2005. Dakota Prairie Grasslands, internal report. 71 pp.
- Tom Turck, Grasslands Archeologist, pers. comm.
- USDA Forest Service 2005. Grand River National Grassland Pasture 6 to 9 AMP Revisions. Environmental Assessment
- USDA Forest Service. 2001. Final Environmental Impact Statement for the Northern Great Plains Management Plans Revision, May 2001. pp. 3-260 to 3-262, H-19 to H-25, and H-190 to H-199).
- USDA Forest Service. 2001. Final Environmental Impact Statement for the Northern Great Plains Management Plans Revision, May 2001. p. H-20).



Figure 16. North entrance to Pasture 5a on the Grand River National Grassland. White Butte in the distance.