Thunder Basin National Grassland

2009-2010 Monitoring and Evaluation Report

October 1, 2008 through September 30, 2010

United States Forest Service
Rocky Mountain Region

April, 2011

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Cover Photo: Kellog Reservoir on TBNG.

Forest Certification

The Thunder Basin National Grassland Land and Resource Management Plan (Grassland Plan) was approved on July 31, 2002. The Grassland Plan is a dynamic document, subject to change based on annual monitoring and evaluation. Monitoring is intended to provide the information necessary to determine whether the Grassland Plan is sufficient to guide management of the Thunder Basin National Grassland for the subsequent year or whether modification of the plan or modifications of management actions are necessary.

Overall, the 2009 and 2010 Monitoring and Evaluation results indicate that the management of the Thunder Basin National Grassland is meeting the goals, objectives, standards and guidelines, and management area prescriptions in the Grassland Plan. I have reviewed the 2009-2010 Annual Monitoring and Evaluation Report that was prepared by the Forest Interdisciplinary Team (IDT). It contains the monitoring data and results from the past fiscal years. The district continues to make great headway in working collaboratively and in pioneering new tools and techniques to manage prairie dogs while reducing conflict with neighboring landowners.

The Forest IDT has identified several emphasis areas for continued monitoring, including sage grouse and prairie dog colonies. During the process of developing the prairie dog strategy, the management area identified for the Black-Footed Ferret Reintroduction Habitat Management Area (3.63) was adjusted and the Grassland Plan was amended to fully implement this strategy when it is finalized. The Grassland Plan is sufficient to continue to guide management of the National Grassland.

Please contact Tony Smith at the Medicine Bow-Routt National Forests and Thunder Basin National Grassland, 2468 Jackson Street, Laramie, Wyoming, 82070, or call 307-745-2300, if you have any specific concerns, questions, or comments about this report.

Acting for Phil Cruz
Forest Supervisor

10-17-2011
Date

Introduction

The Thunder Basin National Grassland (TBNG) is located in northeastern Wyoming in the Cheyenne and Powder River Basins between the Big Horn Mountains and the Black Hills. This semi-arid grassland ranges in elevation from 3,600 feet to 5,200 feet and is home to over 800 species of native plants. Land patterns are very complex because of the intermingled federal, state and private lands. The Grassland abounds with wildlife year-round, provides forage for livestock and is underlain with vast mineral resources. There are opportunities for recreation including hiking, sightseeing, hunting and fishing.

The Thunder Basin National Grassland Plan was revised as part of the Northern Great Plains Management Plans Revision process. The revision issued a combined Environmental Impact Statement (EIS) for the revision of eight national grasslands and two national forests in the northern Great Plains. Separate Records of Decision (ROD) were then signed for each unit, with the TBNG ROD being issued in July, 2002. The documents associated with the plan revision and ROD can be viewed at:

http://www.fs.fed.us/ngp/docs.html

This Monitoring Report is organized according to the *USDA Forest Service Government Performance and Results Act Strategic Plan: 2000 Revision* goals where practicable. These goals are: Ecosystem Health, Multiple Benefits to People, Scientific and Technical Assistance, and Effective Public Service.

The National Forest Management Act (NFMA) requires specific legally required monitoring items for forest and grassland plan implementation as well as additional monitoring that will be conducted based on the availability of funding and personnel.

The annual monitoring items are included in this report. All monitoring items were addressed in the TBNG Five Year Review, which was completed during FY08. This report is available on the web at:

http://www.fs.fed.us/r2/mbr/projects/forestmonitoring/index.shtml

As recommended in the TBNG 5 Year Review, the Bald Eagle and Mountain Plover monitoring items are not included as Threatened and Endangered (T&E) monitoring items since neither of these species currently has threatened or endangered status. Information concerning these species will be included under the appropriate Viability monitoring items in the next 5 year review, scheduled for 2012.

Scientific Technical Review Committee

As outlined in the Record of Decision, dated July 31, 2002, the Regional Forester realized that there are still concerns by some that the projected effects in the EIS may underestimate what the real effects will be and that there is uncertainty about the effects of implementing the revised standards and guidelines. In an attempt to address this concern, the Regional Forester directed the Forest Supervisor to establish a scientific technical review committee composed of representatives from Wyoming Game and Fish Commission, University of Wyoming, Office of the Governor, USDA Forest Service, and Wyoming Department of Agriculture and Oil and Gas Conservation Commission.

The purpose of the committee was to develop a monitoring implementation plan that will describe the methods of monitoring needed to determine how well we are implementing the direction in the Grassland Plan, to determine how effective implementation of Grassland Plan direction is in meeting desired conditions, and to help us validate assumptions and direction used in the Grassland Plan.

Scientific Technical Review Committee

Participating Agencies

- University of Wyoming:
  - College of Agriculture
    - Dept. of Agriculture and Applied Economics
    - Dept. of Renewable Resources
    - Wyoming Natural Diversity Database
- Office of Governor:
  - Planning and Policy
  - Endangered Species Coordinator
- State of Wyoming:
  - Wyoming Dept. of Agriculture
  - Wyoming Game and Fish Department
  - Department of Environmental Quality
    - Water Quality Division
    - Air Quality Division
  - Oil and Gas Conservation Commission
- USDA Forest Service
  - Medicine Bow - Routt NFs and TBNG
  - US Forest Service Research

On May 21, 2004, individuals from the participating agencies met at the Medicine Bow - Routt National Forests and Thunder Basin National Grassland Supervisor's Office in Laramie, WY (see box).

The intent of this meeting was to establish the need, purpose and interest of agency representatives to serve on the committee, and to discuss the expectations of what the product outcome would be.

An example of a Monitoring and Implementation Guide was presented that displayed the monitoring questions, measures and protocols. The group also reviewed Chapter 4 of the Grassland Plan - Monitoring and Evaluation.

From this chapter, the group decided to use a format for their Monitoring and Implementation Guide that displays the Monitoring Question, Monitoring Items, Protocols, Frequency of Measurement, Cost and Responsibility.

On August 5, 2004, a Memorandum of Understanding (MOU) was signed between the Medicine Bow - Routt National Forests and Thunder Basin National Grassland and the State of Wyoming to formalize the Scientific Technical Review Committee.

During calendar year 2005 the Scientific Technical Review Committee developed the Monitoring and Implementation Guide with final review concluding in calendar year 2006. During the fall of 2006 guidance on format for Monitoring and Implementation Guides to standardize this process at the National level was released. Work is continuing on the Thunder Basin National Grassland Monitoring Guide.

The Scientific Technical Review Committee will work with the Grassland Plan Monitoring and Evaluation Interdisciplinary Team to finalize the monitoring methods to

provide an adaptive management approach to make changes and/or evaluate the effectiveness of changes made to the 2002 Revised Plan.

Goals and Objectives

Chapter 1 of the Grassland Plan lists goals and objectives to be accomplished through grassland management. Goals and objectives provide broad, overall direction regarding the type and amount of goods and services the national grasslands and national forests provide and focus on achieving ecosystem health and ecological integrity.

Goals are concise statements that describe desired conditions, and expected to be achieved sometime in the future. They are generally timeless and difficult to measure. Goals describe the ends to be achieved, rather than the means of doing so.

Objectives are concise, time-specific statements of measurable planned steps taken to accomplish a goal. They are generally achieved by implementing a project or activity.

Many of the objectives are due to be accomplished over the life of the plan, usually considered to be 15 years. However, some objectives have earlier due dates, or are annual objectives. For the objectives due by 2008 or earlier, in addition to the annual objectives, the progress made towards these objectives is listed in Appendix 1.

The goals and objectives in the Grassland Plan are tiered to the *USDA Forest Service Government Performance and Results Act Strategic Plan: 2000 Revision*. This strategic plan presents the goals, objectives and activities that reflect the Forest Service's commitment to a sustainable natural resource base for the American people. All goals and objectives fall under the overall mission of the Forest Service, which is to sustain the health, productivity, and diversity of the land to meet the needs of present and future generations. "Caring for the Land and Serving People" expresses the spirit of this mission. Implicit in this statement is the agency's collaboration with people as partners in caring for the nation's forests and rangelands.

The Forest Service's mission and strategic goals and objectives are derived from the laws defining and regulating the agency's activities. Goals and objectives describe tangible progress toward achieving the agency's mission through implementing land and resource management plans. These plans guide on-the-ground natural resource management to ensure sustainable ecosystems and to provide multiple benefits. The Forest Service is committed to these goals and objectives.

Projects Completed During FY09 and FY10

Table 1 gives the decisions made for projects on the TBNG during FY09 and FY10. These decisions included Record of Decisions (ROD) from an Environmental Impact Statement (EIS), Decision Notices (DN) from an Environmental Analysis and Decision Memos (DM) from categorically excluded projects.

The list of projects was generated from the database that produces the Schedule of Proposed Actions (SOPA). This quarterly report is available at the following website:

http://www.fs.fed.us/sopa/forest-level.php?110206

Table 1. Projects Completed in FY09-FY10

Name	Decision Type	Date Signed	Primary Purpose
Ballard Petroleum Holdings LLC, Wildhorse Federal #14-18	DM	08/11/2010	Minerals
Baytex Energy Road Use Permit	DM	01/30/2009	Roads Management
Black Thunder Mine-Little Thunder Creek Diversion	DN	01/17/2009	Special Use Authorizations
Designation of Energy Corridors on Federal Land in the 11 Western States	ROD	01/14/2009	Regulations, Directives, Orders
Friend Creek Fuels Reduction	DN	07/28/2009	Fuels
Gunnysack and Cow Creek Mountain Permanent Repeater Sites	DM	09/03/2010	Facilities
Horseshoe Cottonwood Analysis Area Vegetation Management	DN	09/30/2009	Grazing Management Vegetation Management
North Antelope Rochelle and School Creek Mines 69 kV Powerline	DN	09/22/2010	Special Use Authorizations
North Antelope Rochelle Mine Road Relocation	DN	07/16/2009	Minerals
Plan Amendment for Prairie Dog Management	ROD	11/18/2009	Land Management
RT Communications, Inc.-South Upton Project	DN	03/18/10	Special Use Authorizations
Samson Resources Geophysical Exploration	DM	12/20/2010	Minerals
Thunder Basin Travel Management	DN	07/02/2009	Road Management
Upton-Osage Fuels Reduction	DN	01/30/2009	Fuels
West Antelope II Coal Lease Application	ROD	07/09/2009	Minerals
Williams West Cripple Creek Coal Bed Natural Gas Plan of Development	DN	12/09/2009	Minerals

Conclusions and Recommendations

Based on the information gained through the annual monitoring efforts, described in this report, the Interdisciplinary Team (IDT) recommends the following actions.

Conclusions

The FY 09/10 monitoring results were consistent with the 5 Year Evaluation Report completed in 2008. Management should continue to work towards completing the recommendations from that report.

Recommendations

Continue to implement the recommendations from the FY08 and Five Year review, as outlined below.

Progress made toward FY09-10 and TBNG Five Year Review Recommendations:

Cheatgrass

Annual bromes, especially cheatgrass, have expanded their populations substantially during the ongoing 8-year severe drought. Our predictive model indicates the entire 553,000 acres of Grassland are potentially capable of being infested. Cheatgrass has a high potential for adversely modifying wildlife habitat. It has specifically been identified in both the Statewide and local working group Sage Grouse Conservation Plans for its potential to replace native, desirable vegetation. It also can noticeably increase fire danger. In many cases, uncontrolled fire can adversely modify many wildlife habitats and reduce or eliminate its effectiveness.

Recommendation

Complete needed environmental analysis as soon as practicable to implement aerial application of approved herbicides for the control of invasive annual bromes.

Progress: ***The Forest/Grassland-wide Environmental Analysis to treat invasive species is currently in progress.***

Greater Sage-grouse

Overall, within the Hilight Bill Geographic Area, based on population data and impacts to the quality and quantity of habitat, it appears that population is declining. With continuing coal mine expansion and energy development, three of the Hilight Bill Geographic Area Objectives are likely not attainable.

Recommendation

Revise the Hilight Bill geographic area objectives as follows:

Greater Sage-grouse (MIS[1]) Objective 1

Current LRMP direction: *Provide diverse and quality sagebrush habitat across the geographic area at levels that, in combination with habitat on adjoining lands, helps support stable to increasing populations of Greater Sage-grouse and other wildlife with similar habitat needs.*

Recommended modifications: *Provide diverse and quality habitat where existing and possible, and encourage mine reclamation to reestablish this habitat type in order to provide habitat for the reestablishment of Greater Sage-grouse after mining operations are completed.*

Greater Sage-grouse (MIS) Objective 2

Current Grassland Plan direction: *As a part of reclamation efforts establish and maintain quality nesting habitat for Greater Sage-grouse (see Appendix H) and associated wildlife by meeting vegetation objectives for high structure sagebrush under-stories in areas identified as historical sage brush habitat.*

Recommended modifications: *Outside of active mineral development areas, establish and maintain quality nesting habitat for Greater Sage-grouse (see Appendix H) and associated wildlife by meeting vegetation objectives for high structure sagebrush under-stories within 10 years*

Greater Sage-grouse (MIS) Objective 3

Current Grassland Plan direction: *Reduce the impacts of extended droughts on Greater Sage-grouse populations and their recovery after droughts by managing land uses in Greater Sage-grouse habitat in a manner that does not significantly magnify the adverse effects of drought on grouse nesting, brooding and foraging habitats.*

Recommended modifications: *Within occupied habitat, reduce the impacts of extended droughts on Greater Sage-grouse populations and their recovery after droughts by managing land uses in Greater Sage-grouse habitat in a manner that does not significantly magnify the adverse effects of drought on grouse nesting, brooding and foraging habitats.*

Progress: *Discussions are in process on how and when to complete the necessary changes.*

Soils Objective

Goal 1a, Objective 1b: ***Achieve a 20 percent reduction in acres of eroded or disturbed soils by Forest Service permitted or management actions.***

This objective appears unattainable in light of the increasing permitted actions on the Grassland, primarily due to minerals development.

Recommendation:

Work with forest and regional soils staff to revise this objective to incorporate the original intent of reducing soil disturbance while acknowledging that it is likely that disturbance area will increase from increasing permitted actions.

Progress: *Discussions are in process on how and when to complete the necessary changes.*

[1] Management Indicator Species

Upton Osage MIS Species:

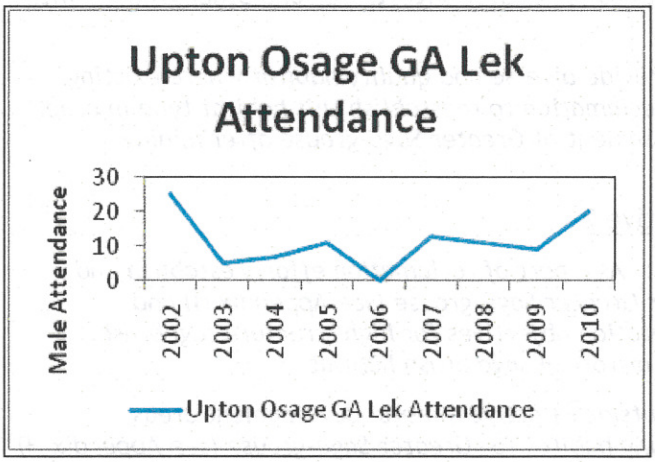


Figure 1. Upton Osage Lek Attendance

During 7 years of survey, no Greater Sage-grouse leks have been found on National Grassland Surface. Within the Geographic Area and within 2 miles of National Grassland Surface there are 4 historic sage grouse leks that make up 2 breeding complexes. Current literature indicates that sage grouse generally nest within 2 miles of their lek. Based upon the peak male attendance at these leks, the sage grouse population is increasing (Figure 1).

With the current cooperative agreements between government and non-government organizations to try to survey all sage grouse leks, access to this data should not be difficult. Since sage grouse habitat involves both National Grassland surface and non-grassland surface, this approach would give a reasonable approach to monitoring this local population.

Sharp-tailed grouse within this Geographic area also have been maintaining a stable population (see Sharp-tail Grouse report) as well. Currently, both of these species are reasonably well monitored, and have historical databases to use in developing trend information. By taking a slightly broader look at these species, it appears that they can continue to function as MIS for this Geographic Area.

Recommendation:

During the five year monitoring report, it was proposed that these two species be evaluated to determine their fitness to function as MIS for this geographic Area. Over the last 2 years this evaluation has been done.

Proposed Revisions of monitoring Items in Chapter 4 of the Grassland Plan:

Incorporate Bald Eagle under Viability 2 Monitoring Item since the Bald Eagle has been delisted and is no longer considered a T & E species and remove the **T & E 2** (Bald Eagle) monitoring item.

Incorporate mountain plovers into the Viability 4 Monitoring Item (prairie dog colony habitat), which includes reporting on sensitive species (reported every 5 years), and remove **T & E 3** Monitoring Item since mountain plovers are no longer being considered for Endangered Species Act listing.

Revise the **Wildlife Monitoring Item** (Oil and Gas Stipulations) to delete bighorn sheep as they are not present on the TBNG. The change in wording would be:

Are oil and gas stipulations effective, inadequate, or excessive in protecting and conserving raptors, prairie grouse, mountain plover, black-footed ferrets, and other wildlife species and their habitats?

Consider revising the **Damage Control 1 Monitoring Item** (Insect and Disease) to better reflect the current management of forested areas on the Thunder Basin National Grassland.

Progress: ***The proposed modifications are tentatively scheduled to be completed by in 2012.***

Proposed Revisions of monitoring Items in Chapter 4 of the Grassland Plan:

Incorporate Bald Eagle under Viability 2 Monitoring Item since the Bald Eagle has been delisted and is no longer considered a T & E species and remove the **T & E 2** (Bald Eagle) monitoring item.

Incorporate mountain plovers into the Viability 4 Monitoring Item (prairie dog colony habitat), which includes reporting on sensitive species (reported every 5 years), and remove **T & E 3** Monitoring Item since mountain plovers are no longer being considered for Endangered Species Act listing.

Revise the **Watershed 1 Monitoring Item** to better indicate that the monitoring item is evaluating watershed conditions. The revised monitoring item would read: *To what extent has watershed condition on watersheds containing National Forest System Lands been restored, maintained or improved?*

Revise the **Watershed 2 Monitoring item** to better evaluate changes in water quality. Revised wording would be modified as follows:

Existing wording:

To what extent have water bodies on National Forest System lands that have been degraded by Forest Service permitted or management actions been restored?

Proposed wording:

To what extent has water quality been restored, maintained or improved?[2]

Revise the **Wildlife Monitoring Item** (Oil and Gas Stipulations) to delete bighorn sheep as they are not present on the TBNG. The change in wording would be: ***Are oil and gas stipulations effective, inadequate, or excessive in protecting and conserving raptors, prairie grouse, mountain plover, black-footed ferrets, and other wildlife species and their habitats?***

Consider revising the **Damage Control 1 Monitoring Item** (Insect and Disease) to better reflect the current management of forested areas on the Thunder Basin National Grassland.

[2] This proposed wording is a slight modification of the wording proposed in the FY07 TBNG monitoring report, and is worded to be consistent with the Medicine Bow Forest Plan water quality monitoring item.

Progress: ***The proposed modifications will be completed as time and funding allows.***

Grassland Plan Appeals

Sixteen appeals were filed by a variety of groups and individuals who disagreed with the decisions made as a result of the Northern Great Plains Management Plan Revision Process. The Thunder Basin National Grassland Land and Resource Management Plan Revision was upheld in a decision by the Chief of the Forest Service on February 6, 2004. This appeal decision can be viewed at:

http://www.fs.fed.us/ngp/plan/appeals/appeals.html

Administrative Changes to the Forest Plan

Three amendments to the Grassland Plan have been completed to date.

Amendment 1: Dakota, Minnesota, and Eastern Railroad Corporation (DM&E)

This amendment was signed on September 4, 2003 by the Regional Forester and authorizes rail line construction, operation and maintenance on the Thunder Basin National Grassland, Wyoming. The amendment is in response to a proposal from the DM&E railroad to expand rail operations into the Powder River Basin. The USFS participated as a Cooperating Agency with the Surface Transportation Board in the analysis and preparation of the final Environmental Impact Statement (EIS) for the DM&E proposal.

The EIS concluded that there was a need for the DM&E to construct and operate a rail line across portions of the TBNG. It also concluded that approval of the project on National Forest System (NFS) lands would be inconsistent, in some instances, with the standards and guidelines in the Grassland Plan.

This amendment modified specific standards and guidelines for the railroad corridor and adjacent areas. The amendment can be found on the Forest website:

http://www.fs.fed.us/r2/mbr/projects/specper/adobepdf/appxEdoc.pdf

Amendment 2: Teckla to Antelope Coal Mine 69kV Power Line

This amendment was signed on June 26, 2006 by the Forest Supervisor and authorizes power line construction, operation and maintenance on the Thunder Basin National Grassland, Wyoming. The amendment is in response to a proposal from the Powder River Energy Corporation (PRECorp) to provide electrical service from the Teckla Substation to Antelope Coal Mine. The USFS prepared an Environmental Assessment (EA) to analyze the impacts of this proposal.

The EA concluded that there was a need for PRECorp to construct and operate a power line across portions of the Thunder Basin National Grassland. It also concluded that approval of the project on NFS lands would be inconsistent, in some instances, with the standards and guidelines in the Grassland Plan.

This amendment modified specific standards and guidelines for the power line corridor and adjacent areas.

Amendment 3: Thunder Basin National Grassland Prairie Dog Management Strategy

This amendment was signed on 11/12/09 proposing a full suite of tools to manage prairie dogs, modify MA 3.63 boundaries (black-footed ferret reintroduction habitat) and adjust shooting restriction boundary on the Thunder Basin National Grassland.

More information concerning this amendment can be found on the following link:

Prairie dog amendment

New Laws, Regulations and Policies

Planning Regulation Update

The 2008 planning rule was published in the Federal Register in April 2008 and now governs forest planning for the Forest Service. The regulations can be found at the following website:

http://fsweb.r2.fs.fed.us/strategic_planning/forest_planning/policies/2008_planning_rule.pdf

On December 17, 2009, Agriculture Secretary Tom Vilsack announced that the USDA Forest Service is beginning an open, collaborative process to create and implement a modern planning rule to address current and future needs of the National Forest System.

Throughout April and May 2010, the USDA Forest Service hosted a series of public meetings to provide opportunities for public input and dialogue on the development of a new planning rule. These meetings have been followed by additional conversations with Forest Service employees, the Fourth National Roundtable in July and the Second National Tribal Teleconference Call in August. The results from these meetings and the formal comments received on the Notice of Intent (NOI) are being used to develop the proposed planning rule and draft environmental impact statement (DEIS), which are expected in early 2011. For more information go to the following link:

http://www.fs.usda.gov/wps/portal/fsinternet/!ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gjAwhwtDDw9_AI8zPwhQoY6BdkOyoCAPkATlA!/?ss=119987&navtype=BROWSEBYSUBJECT&cid=FSE_003853&navid=091000000000000&pnavid=null&position=BROWSEBYSUBJECT&ttype=main&pname=Planning%2520Rule-%2520Home

Travel management

The Travel Management Rule announced in 2005 requires each National Forest and Grassland to identify and designate those roads, trails, and areas that are open to motor vehicle use. Forests and Grasslands in the Rocky Mountain Region are seeking public input and coordinating with federal, state, county, and other local governmental entities as well as tribal governments to implement the rule.

Travel management planning is one of the objectives listed in Chapter 1 of the Grassland plan. Goal 4a, Objective 1 states:

> *Within 5 years, identify travel opportunities and restrictions, including designating motorized travel-ways and areas, to meet land management objectives. Provide reasonable access for use of the national grasslands and national forests*

Travel management planning on the Thunder Basin National Grassland was completed in 2009, with a Decision Notice signed on June 26, 2009. Implementation for the plan began in the summer of 2010, with an emphasis on signing and decommissioning identified roads. The first edition of the Motor Vehicle Use Map was published in 2010, with a revision scheduled for publishing in June, 2011.

More information included a link to the new regulation can be found at the following website:

http://www.fs.fed.us/r2/mbr/recreation/travel_management/

Roadless Area Conservation

In 2001, the Forest Service enacted the Roadless Rule, which essentially prohibited road construction and reconstruction and timber harvesting, subject to certain limited exceptions, in inventoried roadless areas on a uniform nationwide basis.

In July 2003 the Wyoming District Court issued a nationwide permanent injunction against the Roadless Rule.

On May 5, 2005, the Forest Service adopted the State Petitions Rule, which is a process to provide Governors an opportunity to establish or adjust management requirements for National Forest System inventoried roadless areas within their States.

In September, 2006, a U.S. District Court in California reinstated the 2001 Rule and set aside the State Petitions Rule. In August 2008, the U.S. District Court for the District of Wyoming issued a permanent injunction and set aside the 2001 Rule. In December 2008 the U.S. District Court in California stayed its injunction outside of the 9th Circuit and New Mexico in the interests of judicial respect to other jurisdictions, pending further action by the Wyoming court or the Tenth Circuit.

There are six roadless areas on the Thunder Basin National Grassland. No roads have been constructed with in these roadless areas since the Thunder Basin Grassland Plan Record of Decision (ROD) was signed in 2002.

Information regarding roadless can be found at the following website:

http://www.roadless.fs.fed.us/

Monitoring items

The annual monitoring items are discussed below. As mentioned previously, all monitoring items were addressed in the TBNG Five Year Review, which was completed during FY08. This report is available on the web at:

http://www.fs.fed.us/r2/mbr/projects/forestmonitoring/index.shtml

As recommended in the TBNG 5 Year Review, the Bald Eagle and Mountain Plover monitoring items are not included as T&E monitoring items since neither of these species has threatened or endangered status. Information concerning these species will be included under the appropriate Viability monitoring items in the next 5 year review, scheduled for 2012.

Ensure Sustainable Ecosystems

Watershed 4 - Aquifer Protection

Goal 1.a, Objective 5
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

To what extent have aquifers been protected from contamination from abandoned wells?

Monitoring protocol/data collected: Compliance monitoring is conducted to determine if wells currently being abandoned are plugged properly. Monitoring to determine if past abandoned wells have been plugged occurs infrequently.

Results/Evaluation: Groundwater aquifers on the Grassland provide water for domestic and livestock uses. Abandoned wells, if not properly sealed, can provide a direct conduit for surface water to carry pollutants to groundwater. Groundwater contamination could limit or increase the costs of water use for domestic or livestock purposes.

Oil and Gas Wells: There are an estimated 850 abandoned and plugged oil and gas wells on the Grassland. Oil and gas wells abandoned in 2008 are shown in Table 2. Monitoring conducted by the Bureau of Land Management (BLM) and Douglas Ranger District Minerals Staff indicate that all wells were properly plugged in 2008.

BLM and Wyoming Oil and Gas Conservation Commission regulate plugging of oil and gas wells in part to prevent pollution of freshwater supplies. BLM policy requires a qualified BLM employee to witness the entire cementing portion of the plugging process. Since standard procedures are in place to ensure oil wells are plugged before they are abandoned, it is assumed that most of the oil and gas wells abandoned since the Grassland Plan was established have been properly plugged.

Table 2. Abandoned Oil and Gas Wells - Plugged in 2009 and 2010.

Well Name	Date Plugged	Qtr-Qtr	Section	T	R
USFS Pork NE Federal	2009-10	NENE	30	42N	70W
Rogers 7	2009-10	SWNW	15	44N	63W
1-26 Federal	2009-10	SWNW	26	45N	67W
44-18 USFS Wildhorse Fed.	2009-10	SESE	18	54N	69W
National Lead 3 (pvt. Min.)	2009-10	SESE	30	47N	63W

There are nine known abandoned open-well conventional oil wells on the Grassland (Table 3) that are all associated with private mineral estates. The Forest Service has jurisdiction over surface cleanup at these sites and would need to work cooperatively with the State of Wyoming Oil and Gas Conservation Commission to ensure proper plugging of these wells.

Table 3. Abandoned Oil and Gas Wells – Open as of 2010.

Well Name	Depth (ft)	Qtr-Qtr	Section	T	R
Bariod Fee PP7	350	SWSW	30	47N	63W
Bariod Fee PP2	362	SWSW	30	47N	63W
PP3	300	SESW	30	47N	63W
PP4	300	SESW	30	47N	63W
National Lead Patent 9	253	SESW	30	47N	63W
Bariod Fee PP1	360	SESW	30	47N	63W
PP15	462	SESE	30	47N	63W
PP20	350	NWNW	30	47N	63W
Mortons Inc. 1	5920	SENW	15	39N	69W

Water Wells: The number of abandoned domestic and livestock water wells has not been summarized, but efforts are underway to update this information. Wyoming State Engineer's Office (WYSEO) regulations require the plugging of abandoned stock and municipal wells, but it is unknown to what extent these regulations have been followed on the Grassland. A field inventory of abandoned stock and water wells, which have not been plugged according to WYSEO regulations or the abandonment methods are unknown, was initiated in 2008 (Table 4). There are four abandoned wells associated with homesteads from 1910-1930 that were presumably used for domestic and/or livestock uses. One of these wells is capped on the ground surface, but the others are not capped. Whether any means or the methods used to close/abandon these wells below the ground surface is not known. These wells are all presumed to be shallow (<100 ft). Use of one livestock well (Sauerkraut/East 231W80), which is ~300 feet deep, was discontinued in 2005; procedures to plug/abandon this well following WYSEO approved procedures have not yet been completed.

Table 4. Abandoned Domestic and Livestock Wells – Open as of 2008.

Well Name	Domestic or Livestock	Qtr-Qtr	Section	T	R
Sauerkraut/East 231W80	Livestock	SWSW	3	40N	68W
Old Homestead #1	Both	NESW	13	39N	71W
Old Homestead #2	Both	NWSE	7	39N	70W

Old Homestead #3	Livestock	NESW	6	40N	70W
Old Homestead #4	Both	SWSW	6	40N	70W

Figure 2. Abandoned Homestead Well on TBNG

Grassland Plan Goal 1.a, Objective 5 states, *"Throughout the life of the Plan, ensure proper plugging of abandoned wells to prevent cross contamination of aquifers (e.g., seismograph holes, water wells, etc.)."* Procedures are in place to ensure proper plugging of any newly abandoned oil and gas wells and monitoring has shown that these procedures are being implemented. Ten abandoned open-well conventional oil wells are known to exist on the Grassland; procedures to properly plug these wells have not yet been initiated. Five abandoned stock and water wells, which have not been properly plugged or with unknown abandonment procedures, are known to exist on the Grassland; procedures to properly plug these wells have not yet been initiated. There are no known incidents of aquifer cross contamination on the Grassland.

Recommendations: Continue efforts to monitor oil and gas wells currently being closed to ensure they are properly plugged to prevent contamination of freshwater supplies. A comprehensive effort to determine if historic abandoned wells have been properly plugged could be expanded when funding allows. Efforts should continue to obtain information related to abandoned stock and domestic water wells on the Grassland.

Specific Recommendations: As time and funding allow, consider:

1. Continue to inventory the number, location and status of abandoned open-well oil and gas wells.
2. Work cooperatively with the State of Wyoming Oil and Gas Conservation Commission to ensure proper plugging of the open-well oil and gas wells with private mineral estate.
3. Continue to inventory the number, location and status of abandoned open-well domestic and livestock wells.
4. Work with Thunder Basin Grazing Assocation to completely plug and abandon the original Sauerkraut/East 231W80 well.

5. Assess risk of abandoned domestic and stock wells on the Grassland which have not been properly plugged and initiate a well plugging program, initially focusing on high risk wells.

MIS 3 - Population Trends

Legal: 36 CFR 219.19, 20, 27
Goal 1.b, Objective 2, 4, & 6
Frequency of Measurement: Annual
Reporting Period: 5 years

This monitoring item asks the question:

What are the long-term population trends for each management indicator species and the relationships between long-term population trends and the effects of management activities on NFS lands?

Each geographic area has one or more designated MIS species. The following table gives the MIS for each geographic area.

Table 5. MIS Species by Geographic Area

Geographic Area	Management Indicator Species
Broken Hills	Black-tailed Prairie Dog, Greater Sage-grouse
Cellars Rosecrans	Black-tailed Prairie Dog, Greater Sage-grouse
Fairview Clareton	Greater Sage-grouse
Hilight Bill	Greater Sage-grouse
Spring Creek	Greater Sage-grouse, Plains Sharp-tailed Grouse
Upton Osage	Greater Sage-grouse, Plains Sharp-tailed Grouse

Black-tailed Prairie Dog:

Background

During 2005 and 2006, individuals from the US Forest Service (USFS), Thunder Basin Grasslands Prairie Ecosystem Association (TBGPEA), Wyoming Game and Fish Department (WGFD), Bureau of Land Management (BLM), US Fish and Wildlife Service, and Environmental Defense developed a collaborative management strategy for the black-tailed prairie dog in the Thunder Basin National Grassland (TBNG) (USFS, 2009). The USFS proceeded with a TBNG plan amendment to implement the cooperative strategy. The impetus for establishing this cooperative approach was to improve conservation of prairie dogs and associated species (e.g., black-footed ferret, mountain plover, etc.) on federal lands while minimizing conflicts with adjoining private landowners. The strategy prescribes objectives for managing and conserving the species at a landscape scale and across multiple land ownerships.

To successfully implement the objectives and attain goals outlined in the strategy, it is imperative that all management options be available to the USFS. One of the important conflicts that the strategy addresses is minimizing unwanted colonization of prairie dogs on adjoining lands along national grassland boundaries. The document provides guidance for use of lethal and non-lethal management options, as well as recommendations, such as encouraging prairie dog expansion into unoccupied Forest Service lands to address potential conflicts.

Tools from the strategy include: prescribed fire, dusting, mowing, land exchanges, translocation, rodenticide application, vegetative barrier, and a larger shooting closure. All of these tools were applied in 2010, with the exception of land exchanges. However, we are considering purchasing the adjoining ranch with LWCF funds, which several thousand acres within and around the MA 3.63. The objective is to be able to manage more acres for prairie dogs/ferrets, and also be able to alleviate future conflicts with grazing.

Current Population Data

All active prairie dog colonies on TBNG are mapped annually. Currently, the population for 2010 is 5,200 acres, with 3,489 of those acres within the 3.63.

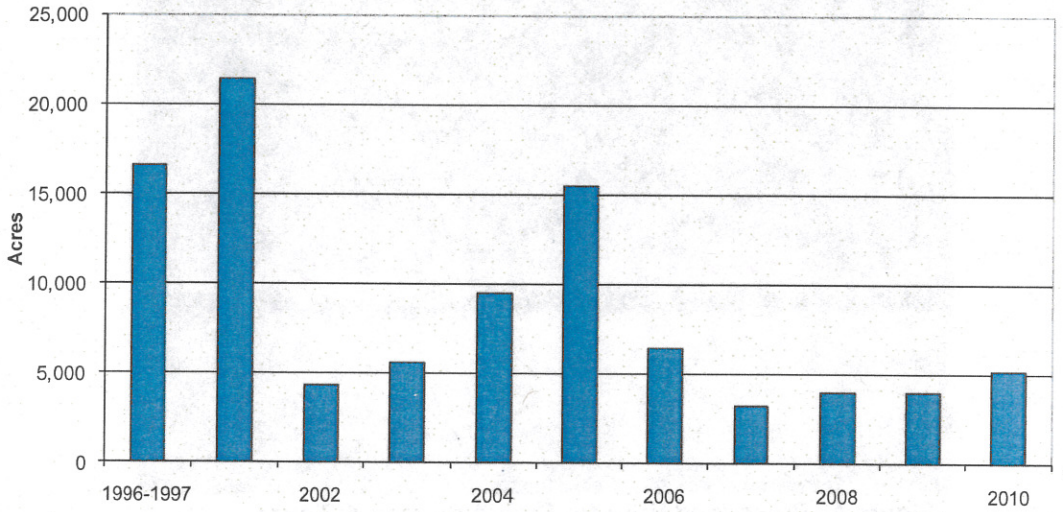


Figure 3. Acres of Active Prairie Dog Colonies on the TBNG.

Implementation

The TBNG Plan was amended to better provide for the conservation of black-tailed prairie dogs and their habitat, to address private landowner concerns about unwanted prairie dog encroachment onto private lands within and adjacent to the TBNG boundaries, and to facilitate future recovery of endangered black-footed ferrets. Implementation of the Grassland Plan in 2010 has included:

- Prescribed burning
- Mowing
- Temporary fence
- Permanent vegetative buffer fence
- Dusting
- Larger shooting closure
- No shooting portal signs installed
- Translocation
- Rodenticide application

Burning

Prescribed fire and grazing were identified in the TBGA AMP EIS as a tool that could be used to achieve desired conditions for vegetative resources. The purpose of this project is to provide diverse and quality grassland habitat across the geographic area at levels that, in combination with habitat on adjoining lands, helps support stable or increasing populations of plover and prairie dogs and other wildlife with similar habitat needs. This project was identified to move vegetation resources toward desired conditions, benefiting wildlife habitat. Guidelines in the LRMP direct management to schedule prescribed fire activities at intervals designed to improve or maintain habitats of desired plant and animal species.

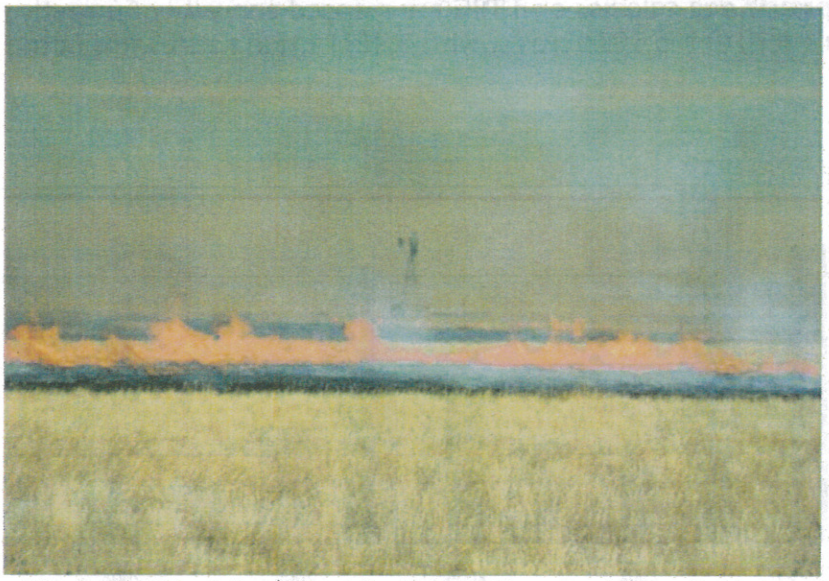


Figure 4. Prescribed Burn for Prairie Dogs and Plover

Translocation Project

In November 2009, the USFS received a complaint from an adjacent private landowner regarding a prairie dog colony along a TBNG boundary near his private residence. The private landowner had concerns that prairie dogs were dispersing from TBNG onto his private land, where he did not want them. The landowner is concerned about the proximity of the colony to one of his dwellings due to the possible transmission of plague.

In response, USFS proposed to remove two prairie dog colonies on USFS lands adjacent to the private landowner's property in a manner consistent with the amended grassland plan. During January and February of 2010, the USFS contacted conservation organizations to discuss the possibility of applying the non-lethal tools adopted in the plan to address the complaint raised by the private landowner.

Figure 5. Captured Prairie Dog

These conservation organizations are: World Wildlife Fund, Prairie Dog Coalition, Defenders of Wildlife, and Biodiversity Conservation Alliance. They in turn agreed to provide funding for translocation of the colonies causing the conflict. In March of 2010, the USFS contacted the Weston County Commissioners and discussed the project. They requested that USFS coordinate with APHIS (Animal Plant Health Inspection Service) prior to trapping. Beyond that they expressed no other concerns and appreciated being included. APHIS was contacted and worked with us on the project. Additionally, the Thunder Basin Grazing Association and Thunder Basin Grasslands Prairie Ecosystem Association (a collaborative composed of area landowners, coal mines, agencies, and non-governmental organizations who helped develop the TBNG prairie dog strategy) were contacted and are in support of the project.

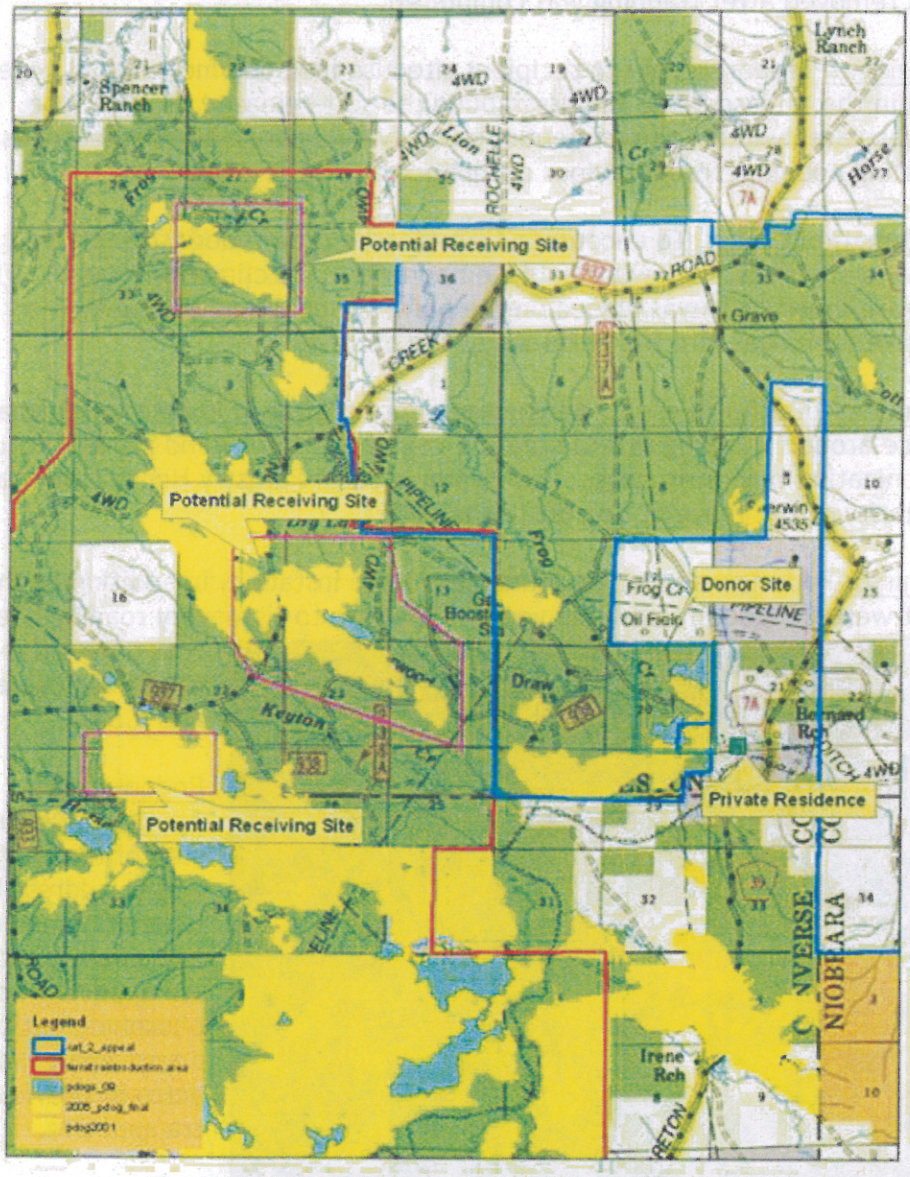


Figure 6. Translocation Project Area on the TBNG

Methods

Preparation of donor and recipient sites included plague surveillance and prevention. Prior to any translocation preparation, each donor and recipient site was surveyed and monitored for the presence of plague and dusted with Deltamethrin. If plague was detected, the project would be put on hold. The steps in the translocation process are described below:

Dusting: Applied Delta Dust to approximately 120 acres on the donor sites, and the 12 acres prepared on the receiving sites. It is worth noting that all the Delta Dust was donated by the Bayer Corporation.

Temporary Fence: Approximately 130 acres of temporary electric fence was constructed in the trapping area to prevent trampling by livestock. This fence was removed after trapping was completed.

Mowing: Preparation of the recipient site also included mowing tall vegetation within the release area, and assembling the soft-release infrastructure. The release area within the recipient site was twelve acres, and had burrows with existing openings from previous occupancy by prairie dogs.

Acclimation Cages: To encourage translocated prairie dogs to remain at their new colony-sites, they were held, temporarily, in acclimation cages. The above-ground cage was placed on the burrow mound and the tubing was inserted 6 inches into the entrance of the burrow.

Permanent Buffer Fence: Constructed approximately 150 acres of permanent fence around trapping site to create a vegetative buffer and prevent future re-colonization by prairie dogs. The Wyoming State Forestry Honor Farm built the majority of the fence at no cost to the USFS.

Signing: Four new shooting closure signs were installed, in addition to the four that were installed in previous years. Plans are to sign every road or two-track that enters the shooting closure area, and 3.63.

Figure 7. Prairie Dog in New Home

Rodenticide Application: Final step of this project was to address the issue of human health and safety concerns. We applied zinc phosphide oat bait on approximately 100 acres of previously trapped site.

Translocation Results

- Prescribed burning - 2,500 acres
- Mowing - 12 acres
- Temporary fence - 130 acres
- Permanent vegetative buffer fence - 150 acres
- Dusting - 132 acres
- Larger shooting closure - 165,000
- No shooting portal signs installed - 4
- Translocated 550 prairie dogs
- Rodenticide application - 100 acres

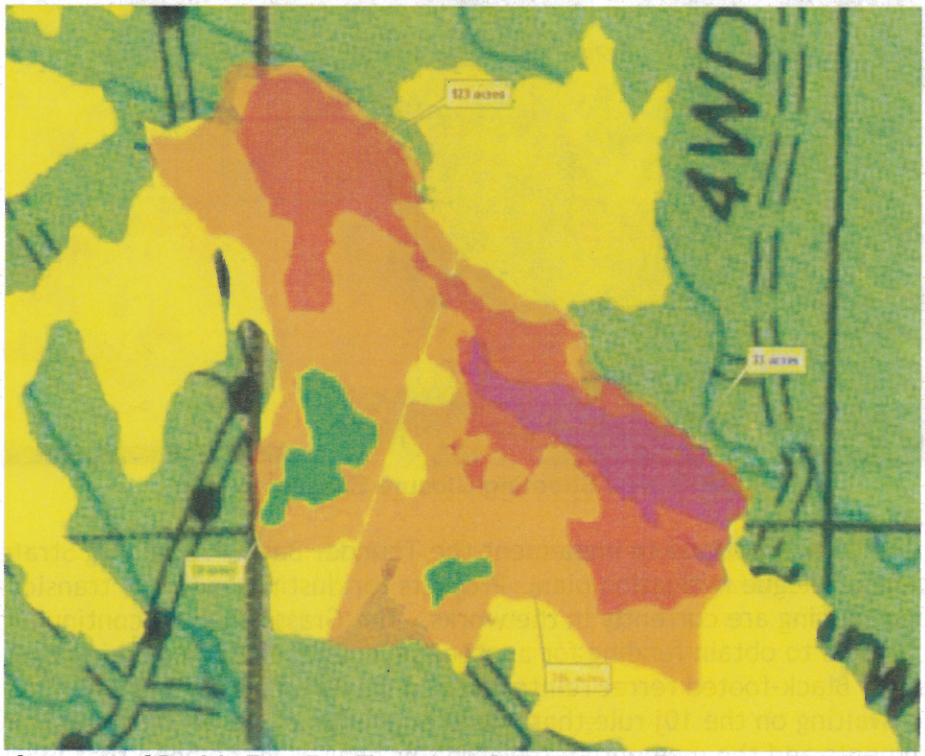


Figure 8. Acreage of Prairie Dog Pre-Translocation, Release Sites, and Post-Translocation Sites as described below:

- 2009: 33 acres of prairie dog colony (purple)
- 2010: pre-translocation = 123 acres of prairie dog colony (pink)
- 2010: release sites = 12 acres of prairie dog colony (green)
- 2010: post-translocation = 316 acres of prairie dog colony (orange)

In addition to translocating 550 prairie dogs, we re-established 7 new colonies, created an additional 193 acres. This project was not only precedent setting, but as a result , The Grassland has formed a new and exciting partnership with World Wildlife Fund, Prairie Dog Coalition, Defenders of Wildlife, and Biodiversity Conservation Alliance.

Shooting Closure Expansion

Expands shooting closure from 72,500 acres (area in yellow) to 100,460 acres (area in purple). Note that the new closure fully encompasses the 3.63 area (area in red)

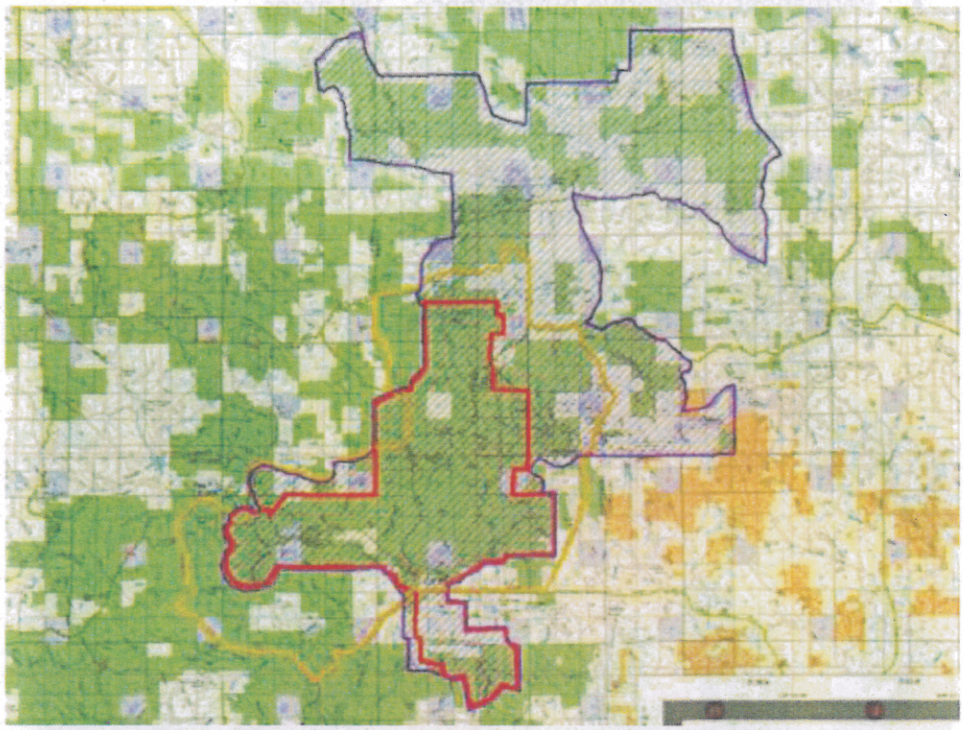


Figure 9. New Shooting Closure Expansion Map

Next Steps

For 2011, TBNG will continue to implement the Thunder Basin Prairie Dog Strategy, and to include a plague mitigation plan. Projects for dusting, mowing, translocation, burning, and fencing are currently in the works. The Grasssland will continue to work with our partners to obtain funding for another successful season of prairie dog management. Black-footed ferret reintroduction is still a primary goal, and the TBNG is currently waiting on the 10j rule that would allow this to occur. With these recent accomplishments and the momentum towards this goal, it is the hope that black-footed ferrets will soon be returned to the TBNG.

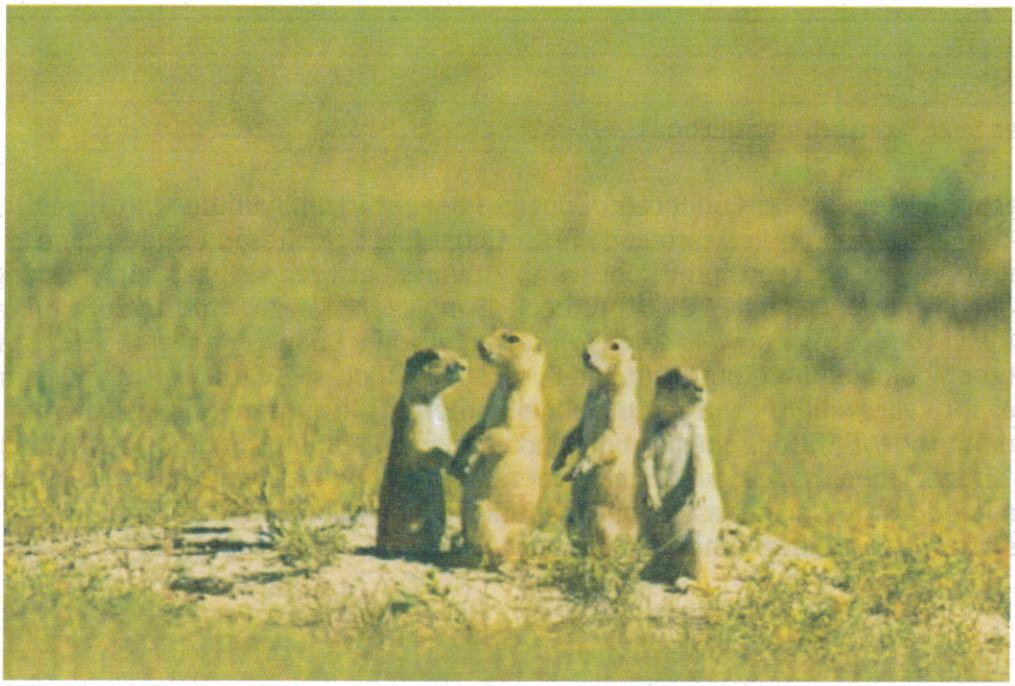


Figure 10. Prairie Dogs Relocated on the TBNG

Partners

Wyoming Game and Fish Department
Conserving Wildlife – Serving People

U.S. FISH & WILDLIFE SERVICE

PRAIRIE DOG COALITION
THE HUMANE SOCIETY OF THE UNITED STATES

DEFENDERS OF WILDLIFE

WWF

BIODIVERSITY CONSERVATION ALLIANCE
Working to Protect Wildlands and Wildlife

Greater Sage-grouse Populations

Monitoring Protocol/Data Collected: Douglas Ranger District wildlife staff monitors greater sage-grouse leks in March and April. Count leks (monitored to determine population) were checked three times with 7-10 days between visits as per Wyoming Game and Fish Department (WGFD) protocol. Survey leks were visited to determine activity and to identify new leks. Leks were surveyed by Douglas Ranger District staff and other Medicine Bow/Routt National Forest personnel, WGFD biologists and game wardens, private wildlife contractors and volunteers. This information was then provided to the WGFD for compilation. Once the compiled information was available to the district, mean sage-grouse males per lek values were generated. This can then be compared to the Northeast Wyoming Working Group area trend, as well as the trend state wide as shown in the graph below

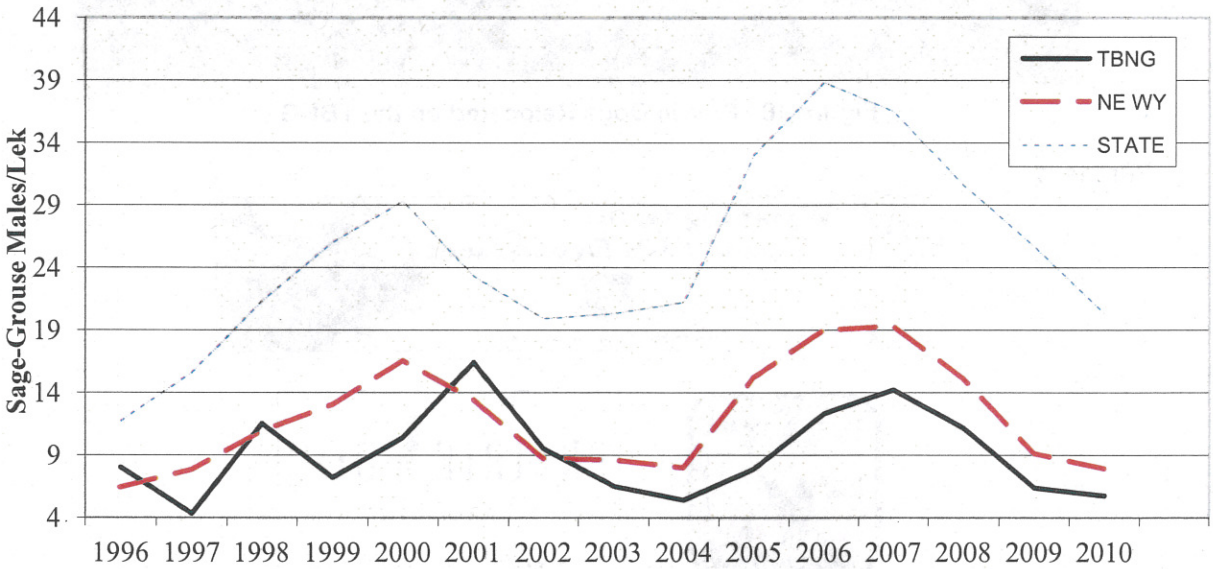


Figure 11. Average Sage Grouse Males per lek.

This graph shows that the fluctuations in male attendance per lek on Thunder Basin National Grassland is consistent with what appears to be happening across both northeast Wyoming, and state-wide

Population estimates for greater sage-grouse are based upon using this average number of males attending leks per year as an index to calculate the *minimum population estimate*. This estimate is generated using mean males/complex then multiplying by three to account for a 2 females: 1 male sex ratio. Then multiply that over the total number of complexes over a specific time period. Although this is a rough estimate, it is valuable for looking at long term trends. The formula for the minimum population estimate is:

MPE = [(Total Males/Complexes Checked) x 3] x Total Complexes over Survey Period

The following Graph illustrates the minimum estimated sage grouse population for Thunder Basin National Grassland over the last 14 years using this formula.

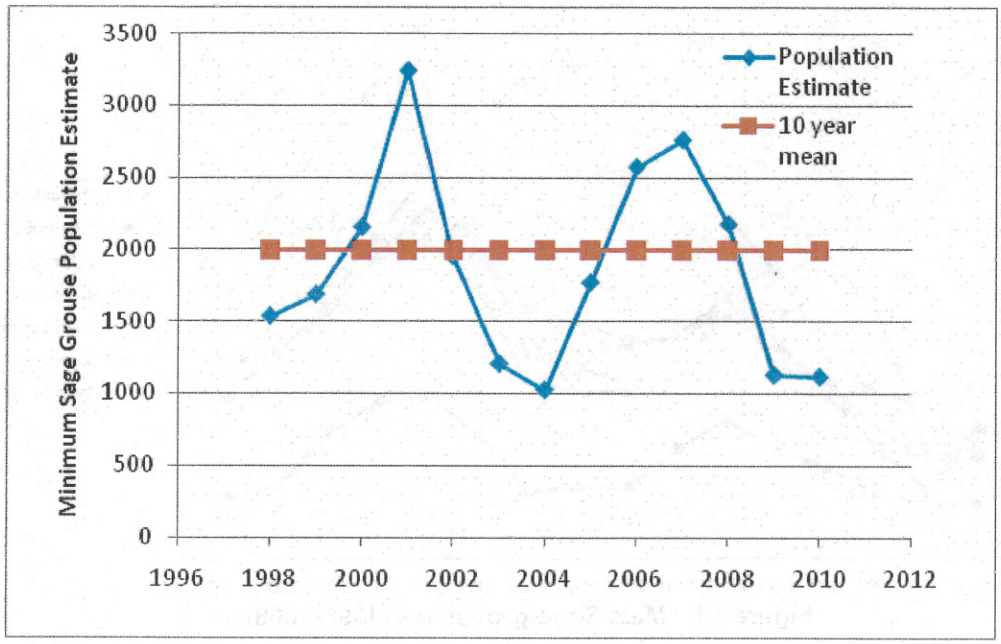


Figure 12. Minimum Estimated Sage Grouse Population on Thunder Basin National Grassland

Results/Evaluation: Based on this measure, the *minimum* estimated population of greater sage-grouse on the TBNG in 2010 was estimated at 1,119 birds, which is only a decline of 13 birds from the 2009 estimate of 1,132. Since the 10-year low in 2004, the minimum greater sage-grouse population estimate on TBNG has increased from 1,027 to 2,746 individuals in 2006 and back down the present 1,119. Sage-grouse experience natural fluctuations in population levels from year to year. This variation has oscillated between approximately 3,200 birds as a high in 2001 and a low of 1,000 birds in 2004. Currently this pattern appears to be on a 5- 6 year cycle.

The following graph shows this same information for each of the Wyoming Working Group areas as well as the entire state. While northeast Wyoming (and Thunder Basin National Grassland) has the lowest males per lek, it does follow the same general pattern of fluctuation on an approximately 5-6 year rotation. This indicates that, while management and human disturbance can, and often do influence sage grouse population trends, there is a naturally occurring cycle that also occurs. This can account for the overall fluctuation at the Grassland-wide level.

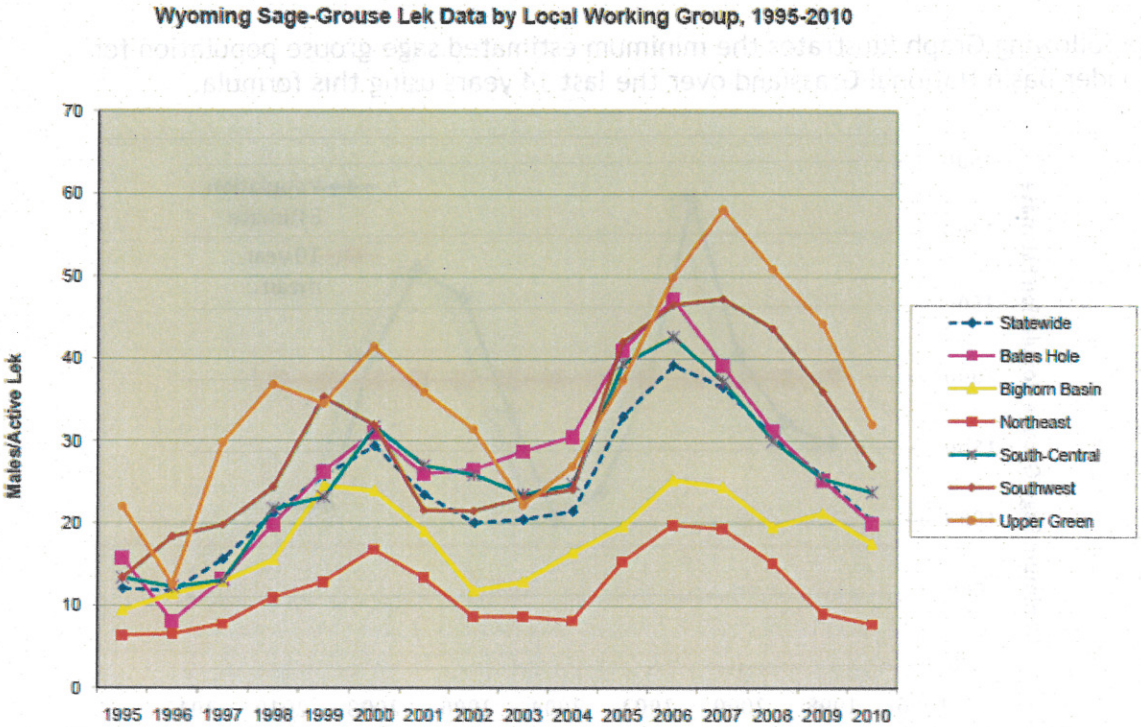


Figure 13. Male Sage-grouse/lek (1998-2008)

The National Grassland is also divided up into Geographic Areas as subunits for management. Each Geographic Area also has sage grouse as a Management Indicator Species. Sage Grouse are therefore monitored at this level as well. The graphs and table below show illustrate the population dynamics within each Geographic Area.

During 7 years of survey, no Greater Sage-grouse leks have been found on National Grassland Surface.
Within the Geographic Area and within 2 miles of National Grassland Surface there are 4 historic non-grassland sage grouse leks that make up 2 breeding complexes. Current literature indicates that sage grouse generally nest within 2 miles of their lek. Based upon the peak male attendance at these non-grassland leks, the sage grouse population is increasing (Figure 26).

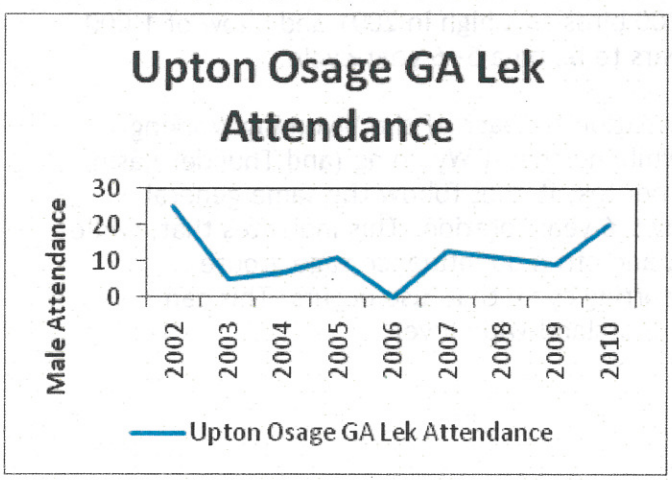


Figure 14. Sage Grouse Monitoring Results on Non-NFS lands within the Upton Osage GA.
NFS land

Table 6. Sage Grouse Monitoring Results (2002 - 2010).

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Cellars/Rosecrans									
Males/Lek	14.9	9.6	6.6	13.0	22.5	31.7	23.1	13.2	10.9
Leks Checked	10.0	8.0	12.0	9.0	11.0	13.0	14.0	11.0	14.0
9-year mean	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2	16.2
Highlight Bill									
Males/Lek	2.9	2.0	0.9	1.6	2.0	2.4	0.6	0.0	0.3
Leks Checked	8.0	6.0	7.0	9.0	8.0	9.0	8.0	8.0	7.0
9-year mean	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Fairview Clareton									
Males/Lek	10.3	10.5	7.5	18.7	19.4	11.8	9.5	6.9	5.2
Leks Checked	8.0	6.0	10.0	6.0	10.0	13.0	10.0	9.0	10.0
9-year mean	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1	11.1
Spring Creek									
Males/Leks	10.0	4.2	5.4	15.2	17.3	7.7	4.1	10.5	4.0
Leks Checked	2.0	5.0	5.0	6.0	6.0	7.0	7.0	4.0	7.0
9-year mean	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
Broken Hills									
Males/Lek	9.0	9.7	15.5	17.2	29.2	21.8	17.5	8.6	7.3
Leks Checked	2.0	6.0	6.0	9.0	9.0	9.0	11.0	9.0	12.0
9-year mean	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1
Upton Osage	**No leks have been found on NFS lands.**								

Table 7. TBNG, NorthEast Wyoming and Statewide Sage Grouse Monitoring Results (2002-2010).

	2002	2003	2004	2005	2006	2007	2008	2009	2010
TBNG									
Males/Lek	9.5	6.5	5.4	7.9	12.3	14.2	11.2	6.4	5.7
9-year mean	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
Total Leks	38	38	38	38	38	38	39	39	40
Leks Checked	19	19	27	24	28	30	31	24	26
Percent Checked	50	50	71	63	74	79	799	62	65
Active Leks	13	14	14	14	15	20	27	13	15
Percent Active	68	74	52	58	54	67	69	54	58
NE WY WG Males/Lek	**8.7**	**8.6**	**8.0**	**15.2**	**19**	**18.8**	**15.2**	**9.1**	**7.9**
Statewide Males/lek	**19.9**	**20.3**	**21.2**	**33.0**	**39.2**	**36.5**	**30.6**	**25.7**	**20.3**

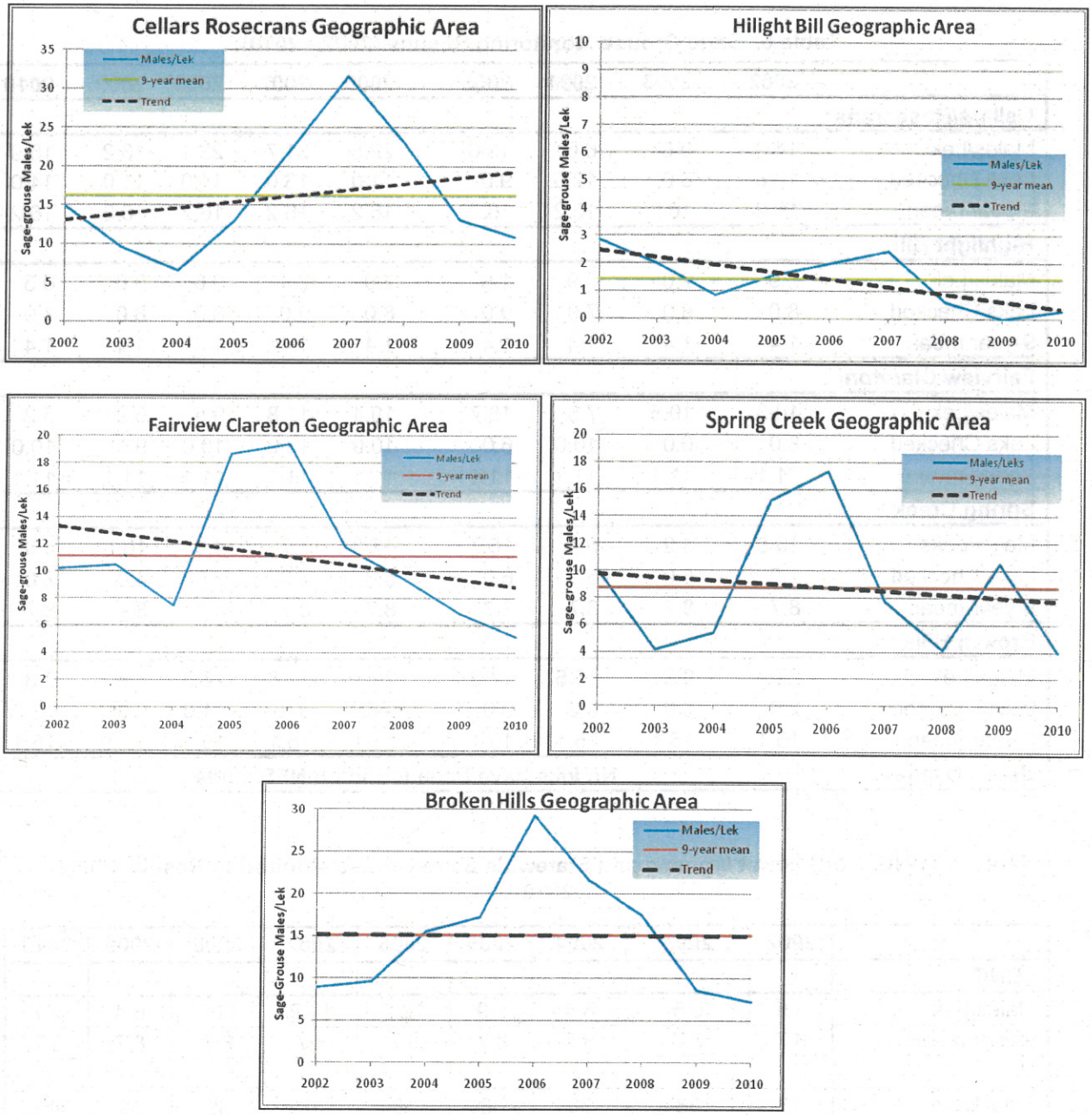


Figure 15. Sage Grouse Monitoring Results (2002-2010) for the Geographic Areas on TBNG. (Upton Osage has no leks on NFS lands.)

Results/Evaluation: All of the Geographic Areas (GA) were below their 9 year mean in 2010, and all but the Spring Creek Geographic Area were below the 9 year mean in 2009. Three of the 5 Geographic Areas with leks on National Grassland Surface are showing a downward trend. The Upton Osage GA is already at zero, and the Broken Hills GA is currently stable. Only the Cellars Rosecrans GA is showing an increasing trend over the 9 year analysis period that the National Grassland Plan has been in effect.

Recommendations: Continue to monitor greater sage-grouse lek activity.

Plains Sharp-tailed Grouse

Introduction

Plains sharp-tailed grouse (*Tympanuchus phasianellus jamesi*) is a Management Indicator Species (MIS) for both the Upton Osage and Spring Creek Geographic Area of the Thunder Basin National Grassland (TBNG). This grouse requires open grasslands and prairies, although sagebrush and other shrubs provide winter shelter and can provide foraging areas. This species was selected as an MIS for high-structure grasslands.

Methods

Sharp-tailed grouse populations on TBNG are monitored through lek counts. The total number of males observed on leks is used to indicate population fluctuations. Leks are observed during late March and early April as this is usually the peak attendance period. Leks are monitored using the following parameters:

1. Counts should be conducted during the month following the peak of mating activity, which is usually early April in Wyoming. Research has shown that the highest numbers of male grouse are observed during this period.
2. Counts should be conducted from the ground. Counts from fixed wing aircraft are not accurate enough to be used for monitoring purposes.
3. Counts should be made as close to sunrise as possible and may extend for one hour after sunrise. The phase of the moon may affect use patterns on leks. During a full moon, grouse may display at night and consequently terminate activity earlier in the morning.
4. Counts should be conducted a minimum of three times each year per lek for at least one count every 7-10 days over a three to four week period.
5. Optimum weather conditions for counts are clear, calm days. Winds should be less than 20 mph since high winds inhibit lekking activity.

Incidental observations of non-lekking sharp-tailed grouse were also recorded to refine search areas in future years.

Results

There was one new sharp-tailed grouse leks identified during the 2010 survey period, the Kern Lek. It is likely that this is a satellite lek off of the Horse Creek Lek.

Ten sharp-tailed leks were surveyed in 2010 with a total of 148 males observed. All males observed were on leks that occur on NFS lands. There were also approximately 15 total females observed on leks, but these are not added to the total population estimate. Survey conditions were difficult due to snow, but we were able to access most leks later in the season. With the 2010 survey information there is a continued increasing trend of sharp-tailed grouse on NFS lands (Figure 28).

Table 8. Sage Grouse Lek Monitoring Results 2003-2010.

Lek Name	Complex	Geographic Area	Land Status	2003	2004	2005	2006	2007	2008	2009	2010
Duck Creek	Duck Creek	Spring Cr.	USFS				8		0	9	12
York 1	York	Spring Cr.	USFS		2	0	0	0	0		
York 2	York	Spring Cr.	USFS			3	9	2	0		
York 3	York	Spring Cr.	USFS		4		0	0	0		
York 4	York	Spring Cr.	USFS			7	0	0	0		
York 5	York	Spring Cr.	USFS	5			0	0	0		
York 6	York	Spring Cr.	USFS		7	2	12	9	11	11	13
York 7	York	Spring Cr.	USFS						17	12	18
ZV Creek 1	ZV Creek	Spring Cr.	USFS		15	0	0	0	0		
ZV Creek 2	ZV Creek	Spring Cr.	USFS			2	10	0	0		
ZV Creek 3	ZV Creek	Spring Cr.	USFS/ Private						18		16
Horse Creek 2	Horse Creek	Spring Cr.	USFS						20	0	
Horse Creek	Horse Creek	Spring Cr.	USFS			9	23		0	19	14
Kern	Horse Creek	Spring Cr.	USFS								7
Prairie 1	Prairie	Spring Cr.	Private								
Prairie 2	Prairie	Spring Cr.	Private			6			11		
Gleason	Soda Well	Spring Cr.	Private								
Mountain	Soda Well	Spring Cr.	USFS							16	12
Heald	Soda Well	Spring Cr.	USFS				0	0			
Turner Creek	Turner Creek	Upton-Osage	BLM				2		0	9	25
Arch Creek 1	Arch Creek	Upton-Osage	USFS						6	8	12
Cedar Knoll	Arch Creek	Upton-Osage	USFS							23	19
Leks in bold font are considered active under the Grassland Plan.			**Total Males**	**5**	**28**	**29**	**64**	**11**	**83**	**107**	**148**

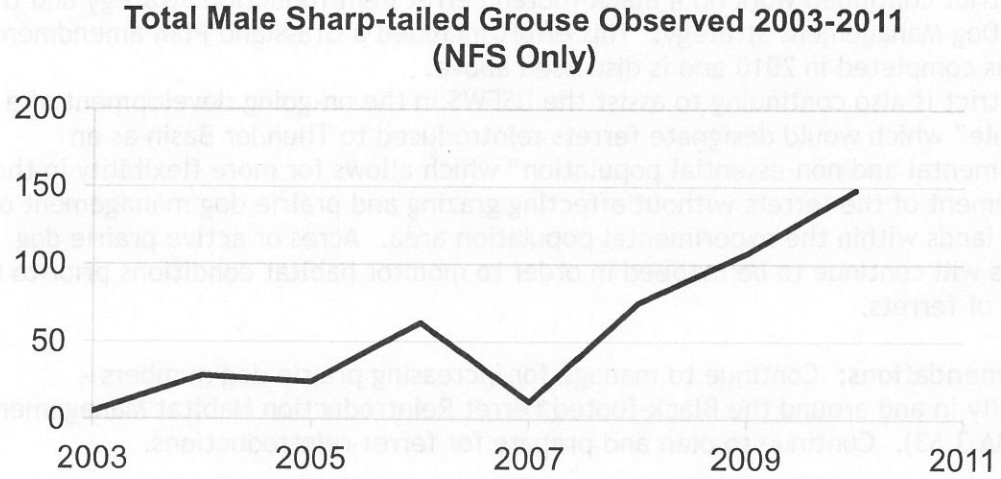


Figure 16. Total Male Sharp-tailed Grouse Observed on all Leks

Discussion

There were concerns about sharp-tailed grouse after the 2007 survey season showed poor lek attendance. After that season additional funding was requested to do intensive surveys and ensure that poor survey conditions were not the cause of the decline. Although the increased survey effort is not accounted for in the observations, it appears that the sharp-tailed grouse on NFS lands are trending upward.

T & E 1 - Black Footed Ferret

Goal 1.b, Objective 2
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

> ***To what extent are NFS lands and their management contributing to the recovery and viability of black-footed ferrets?***

Monitoring Protocol/Data Collected: Acres of active prairie dog colonies (prey for ferrets, should they be reintroduced in the future); acres planned for ferret reintroduction; progress toward such a reintroduction effort.

Results/Evaluation: In 2005, Thunder Basin managed 47,890 acres for the potential reintroduction of the black-footed ferret. Black-tailed prairie dogs, the primary forage of ferrets, continued to increase in this area. Prairie dog populations decreased sharply in 2001 due to a sylvatic plague epidemic. Populations have since rebounded somewhat but continue to be very low (see Figure 3 on page 19).

To date no black-footed ferrets have been released on the TBNG as the current total acreage and distribution of black-tailed prairie dogs is not likely to support a ferret reintroduction at this time due to the plague epidemic.

The District continued work on a Black-footed Ferret Reintroduction Strategy and the Prairie Dog Management Strategy. This effort included a Grassland Plan amendment that was completed in 2010 and is discussed above.
The District is also continuing to assist the USFWS in the on-going development of a "10J Rule" which would designate ferrets reintroduced to Thunder Basin as an "Experimental and non-essential population" which allows for more flexibility in the management of the ferrets without affecting grazing and prairie dog management on private lands within the experimental population area. Acres of active prairie dog colonies will continue to be mapped in order to monitor habitat conditions prior to the release of ferrets.

Recommendations: Continue to manage for increasing prairie dog numbers - especially in and around the Black-footed Ferret Reintroduction Habitat Management Area (MA 3.63). Continue to plan and prepare for ferret reintroductions.

Multiple Benefits to People

Recreation 1 - Trails

Goal 2.a Objectives 1 and 7
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

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

Monitoring protocol/data collected: Miles of trail maintained to standard, reports of conflicts among trail users.

Results/Evaluation: The Thunder Basin National Grassland has 45 miles of single track motorized trail and 73 miles of two-track motorized trail (see Table 9). The entire two-track trail system was either converted and/or designated in the Thunder Basin Travel/Management Analysis completed in 2009. All of the trail systems already existed either as user-created trails or as two-track roads which have been converted to motorized trails. Since none of the newly designated trails were purposely-designed and/or built for OHV use, route widths are often too wide; there are inadequate drainage and erosion controls; tread surfaces are either nonexistent or inadequate for the type of use the route is now designated for; and some routes are poorly placed in relation to drainages or other sensitive areas.

Specifically, in the Weston Recreation Area, which encompasses approximately 12.3 miles of two-track trail, and is the most popular motorized recreation area on the grassland; the many user-created creek crossings have caused considerable damage, in addition to the damage from some riders using the creekbeds as trails. In the travel management analysis, all but two of the crossings are to be closed, and bridges to be constructed over the creek. The closed crossings were signed closed in 2010. The district applied for and was awarded the Wyoming State Trail crew to construct the bridges in 2010; however, they were unable to complete the project due to scheduling conflicts. There are still plans to complete the bridge project in 2011.

As part of the Travel Management Analysis, two trailheads are to be built for recreational riders to access the newly designated motorized trails systems. One is south of the Steckley Road, using an abandoned gravel pit, and another is just south of the Dull Center Road on a flat area, which access the trails in the Lake Creek area. No construction has occurred at this time, but with an update to the implementation plan for 2011, these may come forward as a priority.

Implementation of the Travel Management Analysis started in the summer of 2010 with an emphasis on signing all the trail systems. There was some confusion by the public, especially hunters, regarding the new designations and the subsequent limitations for their use (i.e. 50" or less in width). However, overall the public appear happy with the changes and especially pleased with the signing.

In previous monitoring reports, the reported mileage for the single-track trail system on Forest Service land was 20 miles, which has been verified using field GPS mapping. This trail system is used for a motorcycle enduro event one day each year and is the only single track trail system on the TBNG. This trail is part of a larger enduro circuit, and has been deemed one of the best in the Rocky Mountain circuit. A volunteer group out of Upton, Wyoming organizes the event and maintains the trail system.

Table 9. FY09/10 Trails Meeting Agency Standards.

Trails on District (miles)	Trails meeting agency standards (miles)	Percent (%)
118	45	38%

Recommendations:

- Provide on-site training to the volunteer group for trail maintenance, reconstruction and construction techniques.
- Arrange for a complete assessment of the single-track system to confirm the erosion issues. Arrange for repairs/maintenance/reconstruction as required.
- Secure funding to purchase a small UTV so the trails can be patrolled regularly and checked for maintenance needs.
- Complete maintenance inventories for each trail.
- Identify immediate problem areas and schedule reconstruction/maintenance either with a district trail crew, or apply to the Wyoming State Trail crew.
- Expand the Weston bridge construction projects to include decommissioning and fencing out the closed creek crossings.

Travel and Access 1 - Effects of Off Road Vehicles

Legally Required Monitoring Item
Goal 2.a and 4.a
Frequency of Measurement: Two Year
Reporting Period: Two Year

This monitoring item asks the question:

What are the effects of vehicle use off roads?

Monitoring protocol/data collected: This item is assessed using field observations, Forest patrol responses, and official law enforcement statistics.

Results/Evaluation: In 2003, a Special Order was signed by Forest Supervisor, Mary Peterson, which restricted motorized travel to existing roads and trails. Law Enforcement statistics for the years 2003 - 2006 (see Table 10) are of limited value in evaluating off-road use trends as the amount of patrolling has varied year to year. Also, since much of the off-road use occurs out of sight of the patrolling (which occurs on legal roads) it isn't observed, so much of the off-road use goes undetected. However, the statistics do reflect some of the effects of dedicated patrolling during hunting season, which historically had been the largest impact. During the 2002 hunting season (October 2002, which is in FY2003), very little patrolling occurred because of changes in personnel. The following year a large emphasis was placed on off-road issues during hunting season; especially closing any illegally-created trails, which is reflected in the larger number of incident reports and violation notices. The result is a downturn in off-road incidents during hunting season in subsequent years. Between active patrolling and enforcement, the message had gotten through and incidents markedly decreased.

Table 10. Off Road Vehicle Violations on TBNG from 2003 thru 2010.

Fiscal Year	Warnings	Incidents	Violations/ Tickets	Total
2003	1	1	0	2
2004	0	18	3	21
2005	5	1	4	10
2006	2	9	1	12
2007	1	6	2	9
2008	4	12	4	20
2009	1	15	7	23
2010	3	5	18	26

The more recent statistics (2007-2010) reflect mostly spring patrolling efforts in the Weston portion of the grassland. It was discovered that this area sees a marked increase in use from March 1 through May 31. Recreationists are drawn to the area in spring due to a nearby popular reservoir is frozen and because other public lands are often still under snow. Additionally, the weather is generally pleasant and the ground usually dry during this period. In a study conducted in the summer of 2004 (Weston Recreation Use Survey, October 2004), the average number of vehicles counted in

Weston per day was 27. This contrasts with the 200 contacts made in one busy weekend in spring 2010.

Everywhere on the grassland, year-round recreational all terrain vehicle (ATV) use appears to have increased, while hunting use of ATVs may be decreasing.

The grassland is unique in that it is generally open for use the entire year, with just a few areas and times that it is inaccessible to motorized use. The Upton/Osage area and parts of the Spring Creek unit can become snowed in, but the heart of the grassland is generally open and dry year-round. Use occurs throughout the grassland, however, the hardest hit area is the Weston portion of Spring Creek. Other hot spots are the Rochelle Hills, and the Upton Osage area which also has towns nearby for easy access to public lands. Also, because the minerals industry is the predominant employer, most folks in the area have rotating schedules throughout the week. As a result, recreational use occurs throughout the week and does not necessarily peak on weekends as occurs elsewhere.

Effects of Off Road Use: Most off-road use occurs in the sage lands, which with the mostly wet springs and cooler summers over the past two years, have recovered quickly. Most off-road use appears to have been one-time only for game retrieval or to take a hunter closer to their target hunting area, so damage is often limited and recovery happens quickly. The hardest hit areas are any knolls where hunters drive to the top to glass an area below. These get driven over and over and have suffered considerable damage, primarily from loss of vegetation and topsoil.

Other hard hit areas are access "roads" to Woody Creek, Antelope Creek and the Cheyenne River which have been caused almost entirely by trappers driving in to check their trap lines throughout the winter and spring. The trap lines have to be checked every 72 hours, and according to one trapper, his entire line is a round-trip of 270 miles; much, if not all, on the grassland. These "roads" usually skirt the top of stream embankments and often cross drainages. The "roads" the trappers have created have become well-established and are used by hunters and other recreational riders who believe they are legitimate. They are causing the usual loss of vegetation and erosion any ground disturbance creates, as well as increasing the supposed road system on the grassland and future decommissioning burden.

Effectiveness of Past Actions to Reduce Off Highway Vehicle (OHV) Use: Education and enforcement efforts during the hunting seasons these past years have proven very effective. Signing roads closed with a carsonite post has proven effective in some instances. Buck and pole fencing has also proven effective for stopping off-road use, but only in those areas that have other natural features to work with.

FY09-10 Actions taken to address this problem: The biggest change between 2009 and 2010 was implementation and enforcement of the Thunder Basin National Grassland Travel Management Plan and the subsequent publication of the TBNG Motor Vehicle Use Map (MVUM). In the years leading up to the completed analysis, we had heavily educated the public, and especially hunters, to the anticipated new regulations and closures. This proved very effective in 2010 with the unveiling of the TBNG MVUM as hunters were prepared for the changes. Emphasis was placed on decommissioning 28 miles of user-created and redundant roads, signing road closures and open trails.

These measures, along with the MVUM and emphasis patrols during high use periods, were very effective in reducing off-road use as well as chronic confusion by the public regarding legal road and off-road use.

"No Motor Vehicle" signs were placed on trapper-created routes with varying success. Hunters appeared to stay off of them, although there were some tracks to show they were driving around the signs. The larger problem of the trappers themselves using the routes regularly has not been adequately addressed and continues to be a problem.

Recommendations:

- Continue to seek funding to support having trained Forest Protection Officers in the field.
- Continue to work towards filling a Reserve Law Enforcement Officer position on the district.
- Test and evaluate a variety of methods to effectively close unnecessary travel routes on the Grassland.
- Identify, decommission, and barricade hunter-created "glassing" spots on knolls.
- Strategize engineering and enforcement to reduce and eventually eliminate trapper-created routes.

Community Relations 2

Goal 2.c
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

What are the effects of National Forest System Management on adjacent communities?

Monitoring protocol/ data collected: This monitoring item is answered using National Grasslands 25% payments to counties from the National Grassland.

Table 11. 25% Payments to Counties for Thunder Basin National Grassland (in Dollars).

County	TBNG Acres	2004 Payment	2005 Payment	2006 Payment	2007 Payment	2008 Payment	2009 Payment
Campbell	139,775	287,141	215,602	288,676	140,987	219,580	156,763
Converse	182,274	346,567	267,680	376,449	183,354	286,345	204,428
Crook	302	595	453	624	305	474	338
Niobrara	840	1,656	1,260	1,735	847	1,319	942
Weston	224,429	446,767	336,599	463,511	226,374	352,568	251,707
Total	547,620	1,082,726	821,594	1,130,995	552,367	860,289	614,180

Results/Evaluation: The 25% payment to counties for National Grasslands (7 U.S.C. 1012) provides 25% of net (rather than gross) receipts from grazing, minerals (excluding royalties from coal) and other uses of the national grasslands directly to

counties where the grasslands are located. These funds are to be used for roads and schools. These payments are calculated on a calendar year basis and are given in Table 11 above. The 2010 data will be available for the FY011 monitoring report. In 2005, the Minerals Management Service withdrew funds to cover a large royalty overpayment from previous years, which accounts for the drop in payments from 2004 to 2005. The drop in payments from 2006 to 2007 is thought to be for the same reason.

TBNG has the largest area of public land in these counties and so has the majority of tourism activities related to outdoor recreation, such as hunting and sightseeing. One measure of the effects of tourism is to consider the money spent by travelers in the area. Travel related employment ranges from 4 to 8% of total employment by county. Revenue from travel spending has increased over the past 10 years in all counties, most markedly in Campbell and Converse counties. Wyoming tourism data can be found at the following website:

http://www.deanrunyan.com/impactsWY.html

Recommendations: Continue tracking payments to grassland for this monitoring item.

Comparison of Estimated and Actual Outputs and Services

Legally Required Monitoring Item
Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

> ***Are the projected annual outputs and services being met annually and at anticipated costs?***

The outputs tracked for this monitoring report include forage provided to domestic livestock, noxious weed control, terrestrial wildlife habitat, and minerals permit processing and operations, as these are the primary outputs of the Thunder Basin National Grassland. Costs are tracked for the Douglas District of the Medicine Bow - Routt NFs and Thunder Basin National Grassland. The figure below does not reflect administrative costs, which are common to all program areas (cost pools). Costs shown do include costs for the Laramie Peak Unit as that area is also administered by the Douglas District. Fiscal Year (October 1 to September 30th) allocated budgets for 2003 to 2010 are given below in Figure 32.

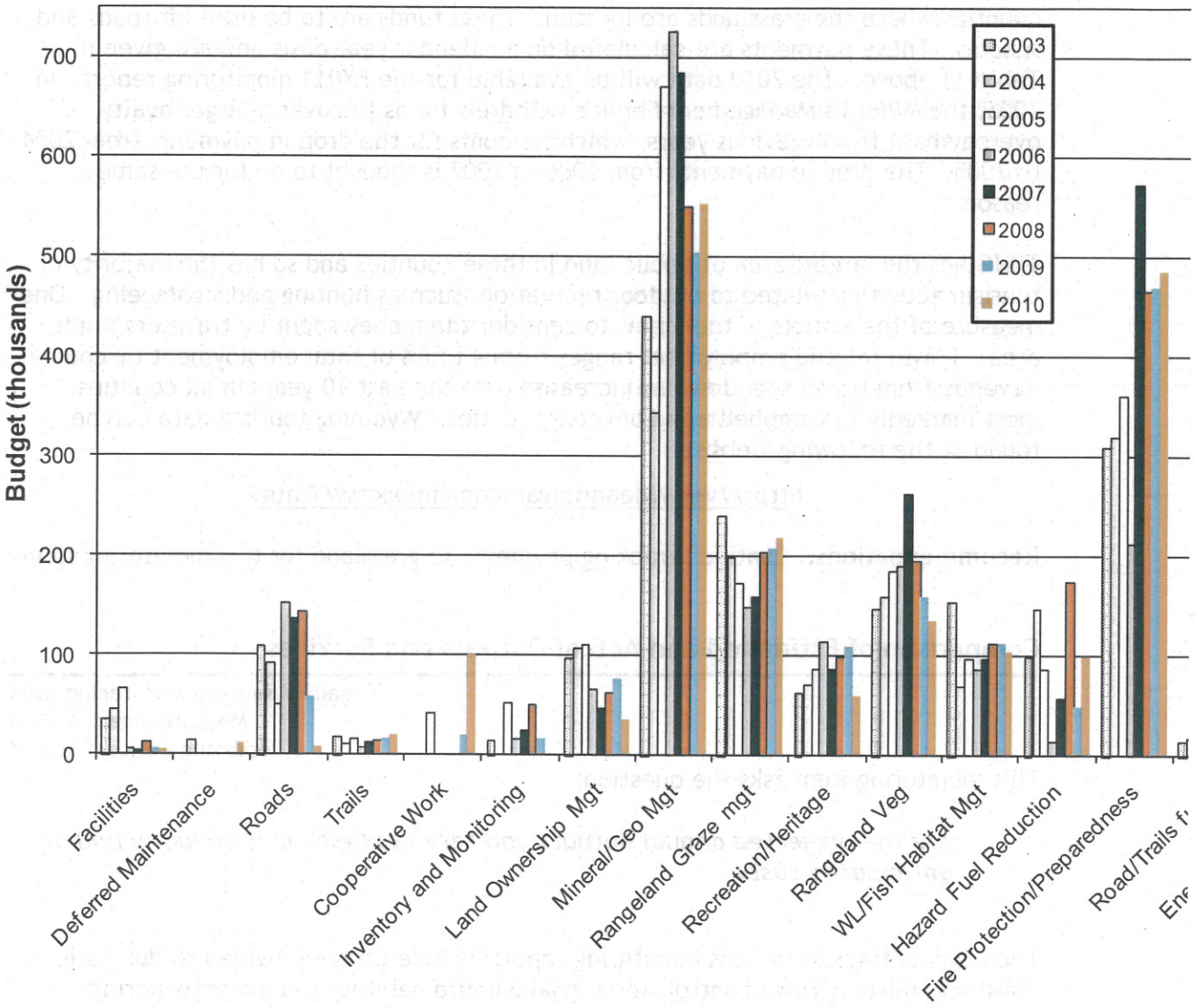


Figure 17. Budget for 2003 - 2010 for The Douglas Ranger District of the Medicine Bow - Routt NFs and Thund Grassland. (Graph does not Include Costs for Administrative Programs Common to all Program Areas).

Rangeland Outputs , Rangeland Health and Noxious Weed Control for 2009 and 2010 will be reported in the FY2011 Monitoring Report

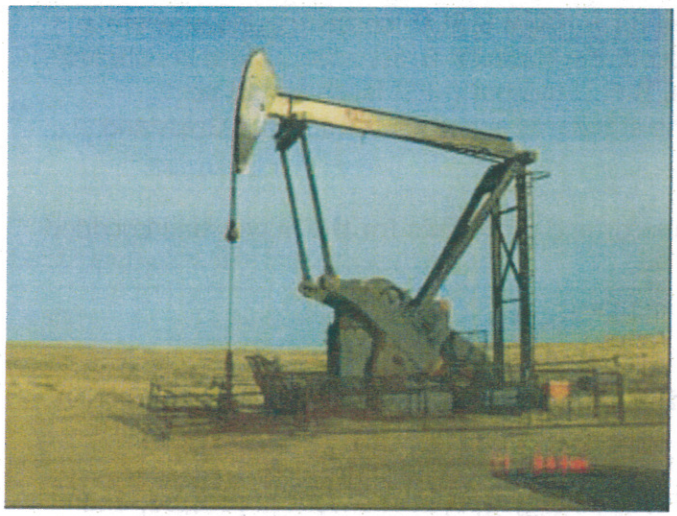
Minerals

Mineral Operations during FY 2009

The following administration and permit processing was accomplished on the TBNG during 2009.

Energy Operations Processed: In 2009, 47 Energy Operations were processed, and are broken down as follows:

- 9 Oil/Gas Sundry Notices
- 4 New Mineral Related Special Use Permits (SUP) issued (tank batteries, power lines to well sites, pipelines, etc)
- 7 Mineral Material Permits processed
- 26 Oil/Gas Lease requests processed and sent to the Regional Office
- 1 Geophysical Exploration Authorization processed
- 1 New Coal lease consent decision signed - West Antelope II



Only a few oil & gas leases were processed, but then were placed on hold due to the BLM request due to concerns with NEPA sufficiency on the BLM side. The leases will be on hold status until there is a new or updated NEPA document for leasing made.

Figure 18. Oil well on TBNG.

Operations Administered to Standard: In FY 2009, 615 operations were administered to standard, including:

- 2 Bonded Mineral Material Sales
- 481 Oil/Gas well inspections
- 30 Follow up inspections
- 48 Tank Battery site inspections
- 1 Bioremediation inspections performed
- 4 Surface Coal Mine Plans

- 46 Mineral related Special Use Permits
- 3 Geological Resources

Oil and Gas Wells: There were no oil/gas wells drilled, 4 bond releases for wells were approved, and 1 spill was inspected and administered.

Geologic Resources: Prepared 11 Geologic Permits and Reports.

Groundwater Resources: Completed four hydro geological evaluations for water wells.

Mineral Operations during FY2010:

Amendment 2: NARM & SCM 69kV Power Line: This amendment was signed on September 22, 2010 by the Forest Supervisor and authorizes power line construction, operation and maintenance on the Thunder Basin National Grassland, Wyoming. The amendment is in response to a proposal from the North Antelope Rochelle Mine & School Creek Mine provide rerouted electrical service from Teckla to the respective coal mines as the mining advances. The Forest Service prepared an Environmental Assessment (EA) to analyze the impacts of this proposal.

The EA concluded that there was a need for NARM & SCM to construct and operate a power line across portions of the Thunder Basin National Grassland. It also concluded that approval of the project on National Forest System (NFS) lands would be inconsistent, in some instances, with the standards and guidelines in the Grassland Plan.

This amendment modified specific standards and guidelines for the power line corridor and adjacent areas.

Minerals

The following administration and permit processing was accomplished on the TBNG during FY 2010.

Energy Operations Processed: In FY 2010, 37 Energy Operations were processed, and are broken down as follows:

- 10 Oil/Gas Sundry Notices
- 15 Oil/Gas Wells processed through the Application of Permit to Drill
- 6 New Mineral Related Special Use Permits (SUP) processed (tank batteries, power lines to well sites, pipelines, etc)
- 5 Mineral Material Permits processed
- 1 Geophysical Exploration Authorization processed

No new lands were processed for lease due to the BLM request to place on hold until BLM NEPA sufficiency issues are addressed sufficiently in the BLM RMPs.

Operations Administered to Standard: In FY 2010, 627 operations were administered to standard, including:

- 2 Bonded Mineral Material Sales
- 481 Oil/Gas well inspections
- 31 Follow up inspections
- 48 Tank Battery site inspections
- 1 Bioremediation inspections performed
- 4 Surface Coal Mine Plans
- 57 Mineral related Special Use Permits
- 3 Geologic Resources

Oil and Gas Wells: There were no new oil/gas wells drilled, 2 Bond releases for wells were approved, and 3 spills inspected and administered.

Geologic Resources: Prepared 12 Geologic Permits and Reports.

Groundwater Resources: No groundwater resource investigations were completed during FY2010.

Table 12. Summary of Mineral Activities 2004-2010.

	FY2004	FY2005	FY2006	FY2007	FY2008	FY2009	FY2010
Oil & Gas Well Inspections	470	495	576	595	528	529	529
Follow-up Inspections	23	25	34	25	34	30	31
Mineral-related SUPs	5	20	n/a	n/a	21	21	57
Bond releases	2	2	5	3	7	4	2
Spills	2	4	3	2	2	1	3

Scientific and Technical Assistance

Administration - Action Plans in Goals and Objectives

Goal 3, Objectives 1,2 & 3
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

> ***Are the action plans identified in Goal 3 - Scientific and Technical Assistance, being completed on schedule?***

Monitoring Protocol/Data Collected: A review of the opportunities to implement national recovery plans was conducted and actions taken in support of a National Recovery Plan are described below.

Objective 1; Inventory and Monitoring:
Inventories and monitoring were conducted for nesting raptors, breeding sage grouse, breeding sharp-tailed grouse, bald eagle, prairie dogs, breeding songbirds and foraging bats. The results of prairie dog and grouse monitoring are discussed above in the *MIS 3 - Population Trends* monitoring item.

Raptors
In 2009, nesting raptors (bald eagles, golden eagles, Red-tailed, Swainson's, and ferruginous hawks) were inventoried on 5,510 acres of the Thunder Basin National Grassland to provide resource information for land management decisions, and to assist other ongoing raptor projects. Ground searches were conducted in known nesting areas to locate new and known nest sites. Species present, activity level, and nest condition were recorded. A total of 123 raptor nests were located, 11 nests were active.

Table 13. Raptor Nests Monitored on TBNG 2003-2008.

Year	Total Inventoried	Number Active	Percent Active
2003	208	37	18
2004	155	62	40
2005	104	64	61
2006	337	152	49
2007	151	76	50
2008	231	98	42
2009	123	11	09
2010	126	23	18

In 2010, approximately 82,440 acres of Thunder Basin National Grassland (TBNG) were surveyed to inventory known raptor nests and locate new nests. In total, 126 raptor nest locations were surveyed including 110 previously known nests and 16 new nests found during these surveys.

It is suspected that the remainder was inactive due to a lack of prey caused by a crash in the local rabbit population. In recent years, when rabbit populations were at higher levels, raptor productivity was recorded at a much higher rate. This year likely marks the low end of the rabbit's cyclical pattern.

In 2009, ground survey only 11 nest sites were occupied. Of the eleven known occupied nest sites, nine raptor pairs attempted to nest. The two other pairs appeared to only occupy the sites without making any attempt to nest. This included 5 Red-tailed Hawk (*Buteo jamaicensis*), 4 Ferruginous Hawk, 1 Swainson's hawk and 1 Great-horned Owl (*Bubo virginanus*)

In 2010, 23 nests were occupied by raptor species including; 11 Red-tailed Hawk (*Buteo jamaicensis*), 2 Golden Eagle (*Aquila chrysaetos*), 7 Ferruginous Hawk, 2 Swainson's hawk and 1 Great-horned Owl (*Bubo virginanus*).

The number of nests monitored by year is listed below. However, it does not represent a totally accurate percent of active nests. Each year specific areas are targeted for survey, leaving other areas with an undetermined status for many nests. Depending on the habitats available, the raptor species using it will vary. The active category only represents the least amount of active nests found in one year.

Table 14. Number of Nest Monitored (T = Total nests monitored, A = Active nests).

Species	2003		2004		2005		2006		2007		2008		2009		2010	
	T	A	T	A	T	A	T	A	T	A	T	A	T	A	T	A
Bald Eagle	5	1	5	1	1	1	1	1	7	1	1	0	0	0	0	0
Golden Eagle	0	0	36	31	10	9	29	19	14	8	45	27	12	0	6	2
Ferruginous Hawk	146	17	41	17	40	14	144	46	46	14	85	27	54	4	42	7
Swainson's Hawk	0	0	2	1	4	4	6	7	1	1	2	2	2	1	4	2
Red-tailed Hawk	52	17	70	11	29	28	144	80	73	44	48	27	54	5	70	11
Great Horned Owl	5	2	1	1	6	6	13	13	10	8	9	9	1	1	4	1
TOTAL	**208**	**37**	**155**	**62**	**104**	**64**	**337**	**166**	**151**	**76**	**190**	**92**	**123**	**11**	**126**	**23**

Bats

Monitoring Protocol/Data Collected: Bats were again surveyed on the TBNG in 2008 using two bat identification techniques (mist netting and ANABAT ultrasonic detection). Mist nets may be used to assess the presence or absence of bat species, determine the species composition of bat communities, and/or determine the relative abundance of bat species. Mist nets are deployed ½ hour prior to sundown and monitored continuously for a minimum of 2.5 hours. All bats are removed as soon as possible after capture, identified and released. Not all bat species have the same capture probabilities and some may go undetected even though they are present at the survey site. Also, some less abundant species may successfully avoid capture during a single sample period.

To effectively detect the full suite of species present at a given site, an ANABAT Ultrasonic Bat Detector is utilized in conjunction with mist nets. This type of survey is used to document presence/absence and species composition of bat communities. It provides the ability to detect all species, including those not easily mist netted. The ANABAT records bat calls while they are foraging; the calls are then run through a computer program to identify the particular bat species making the call.

Survey locations were chosen based on the likelihood of encountering several species of bats and to survey in areas infrequently sampled during the 1994 - 1996 statewide bat survey of caves and abandoned mines. All summer bat surveys were conducted between June and October of 2009. No surveys were completed in 2010. These surveys are consistent with objectives and management goals developed in the Land and Resource Management Plan for the TBNG, the Wyoming Bat Conservation Plan, Wyoming Game and Fish Department, Wyoming Bat Working Group, Western Bat Working Group and Bat Conservation International.

Results/Evaluation: Because of a focused effort to monitor bats on the Medicine Bow-Routt NFs, the Douglas Ranger District was restricted to monitoring for bats at project locations on Thunder Basin National Grassland in 2008. Both were new locations in the Spring Creek Unit of the Grassland.

Table 15. TBNG Bat Survey Results 2005-2009.

Common name	Scientific name	2005	2006	2007	2008	2009
Little brown bat	*Myotis lucifugus*	Y	Y	Y	Y	Y
Western big brown bat	*Eptesicus fuscus*	Y	Y	Y	Y	Y
Long-eared myotis	*Myotis evotis*	Y	Y	N	N	Y
Long-legged myotis	*Myotis volans*	Y	Y	N	N	Y
Fringed myotis	*Myotis thysanodes*	Y	Y	N	N	N
Western small-footed myotis	*Myotis ciliolabrum*	Y	Y	Y	N	Y
Red bat	*Lasiurus borealis*	Y	N	N	N	N
Hoary bat	*Lasiurus cinereus*	N	Y	Y	Y	Y
Northern long-legged myotis	*Myotis septentrionalis*	N	Y	N	N	Y
Silver haired bat						

Over the past four years bats have been monitored at 17 sites on the TBNG. Nine different species have been identified, including the fringed myotis (a sensitive species) (see Table 15). To date, there have been no detections of the Spotted or Townsend's big-eared bat. In addition, bat surveys have increased the known range of the Red bat to include areas near the Cheyenne River.

Results of these surveys have helped identify species composition as well as important habitats for bats on the TBNG, and also help planning efforts to minimize impacts to bats. Additionally, information collected has contributed significantly to the knowledge of bats and habitat use on the TBNG and throughout northeast Wyoming.

Recommendations: The presence of bat feeding and breeding activity within the administrative boundary of the TBNG reveals the importance and need for additional

surveys. The ANABAT has proven to be an accurate and time efficient method of sampling for bats to establish presence/absence of individual species and will be used in subsequent years to document the bat species present. The data will be used to establish current distribution, and will also be used by the Wyoming Game and Fish Department to address range and distribution objectives for the 18 bat species that are known to occur in Wyoming as listed in the 1996 Nongame Bird and Mammal Plan.

Objective 2: Provide Research Results:

Ferruginous hawk: The TBNG continues to participate with a variety of partners in the *Tri-National Investigation of Ferruginous Hawk Migration*. Several Ferruginous hawks from the TBNG have been trapped and equipped with radio collars as a part of this effort. The site below provides information about this raptor species and up-to-date information about the Tri-National Migration Study.

http://www.ferruginoushawk.org/index.html

Objective 3: Establish new monitoring and implement existing monitoring for MIS.

Monitoring was continued for all known sage and sharp-tailed grouse leks. New leks were added into the established monitoring plan. We continued to monitor activity of black-tailed prairie dog colonies and new colonies were entered into monitoring plans.

Recommendations: Continue to monitor, inventory, and pursue administrative studies, as appropriate. Especially maintain inventory and monitoring of sensitive species, MIS, and species of local interest. The continued viability of sensitive species is being maintained through project level surveys to detect occurrences, avoidance of sensitive species occurrences in project implementation, and implementing conservation measures to minimize impacts to populations or habitats.

Effective Public Service

Threatened and Endangered Species - Action Plans

Goal 4b
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

> ***Are actions identified in national recovery plans for threatened and endangered species being implemented where opportunities exist on the national grasslands and forests?***

Wildlife

Monitoring Protocol/Data Collected: With the federal de-listing of the Bald eagle and the change for the Mountain plover to a proposed species. The Black-footed ferret and the Mountain plover are the only federally listed wildlife species relevant to the TBNG.

Results/Evaluation: As part of the recent draft National Black-footed Ferret Recovery Plan (US Fish and Wildlife Service (USFWS), 2006), TBNG has been identified as a potential reintroduction site. The following items were taken from the draft Recovery Plan, and identify actions needed to recover ferret populations:

Figure 19. Black Footed Ferret (Photo Courtesy of the USFWS)

1. Maintain a captive ferret population of optimal size and structure to support genetic management and reintroduction efforts.
2. Complete the search for remnant wild ferret populations to support genetic management and reintroduction efforts.
3. Reduce disease-related threats in wild populations of ferrets and associated species.
4. Ensure sufficient habitat to support a wide distribution of self-sustaining ferret populations.
5. Establish free-ranging populations of ferrets to meet downlisting and delisting goals.
6. Promote partner involvement and adaptive management through regular programmatic review and outreach.

Items 4-6 are action items that TBNG can contribute toward ferret recovery. To ensure sufficient habitat is available, TBNG has established a prairie dog shooting closure, maps prairie dog colonies annually, and through LRMP direction provides additional standards and guidelines for activities within prairie dog colonies. LRMP direction also outlines ferret reintroduction habitat by establishing a management area designation for black-footed ferrets. TBNG is also currently part of the proposed statewide 10(j) designation for the identified ferret reintroduction habitat. This would allow for release of black-footed ferrets on TBNG as nonessential experimental population. As a part of this process, the TBNG has developed a prairie dog strategy, which involved other Federal agencies, state agencies, private landowners, and a private land owner group. Programmatic review of the Forest Plan/Grassland Plan occurs annually.

Proactive management actions for TBNG include developing a prairie dog strategy involving partners, pursuing a 10(j) designation, and continually monitoring prairie dog populations. Many of these partnerships have been long in the making, and are now at a place where we are making new strides in the management of prairie dogs and the reintroduction of ferrets. These partners include: US Fish and Wildlife Service, Wyoming Game and Fish Department, Thunder Basin Prairie Ecosystem Association, Thunder Basin Grazing Association, The Nature Conservancy, Defenders of Wildlife, Coal Companies, Biodiversity Conservation Alliance, Bureau of Land Management, etc. These actions and partnerships are expected to provide long term conservation of prairie dogs, and contribute to a future ferret reintroduction.

Recommendations: Continue to monitor active prairie dog colonies within the black-footed ferret recovery area.

Plants

Figure 20. Ute Ladies' Tresses

Monitoring Protocol/Data Collected: Project level botanical surveys, Wyoming Natural Diversity Database (WYNDD) botanical surveys and data.

Results/Evaluation: There are now two Threatened and/or Endangered plant species for which potential habitat has been identified on the TBNG.

1) **Ute ladies' tresses** (*Spiranthes diluvialis*, threatened)

2) **Blowout penstemon** (*Penstemon haydenii*, endangered)

National Forest System lands provide the basic habitat for these plant species. In addition, activities on NFS lands of the TBNG have been identified to affect potential habitat on adjacent lands.

In Wyoming, Ute ladies ' tresses (*Spiranthes diluvialis*) is known to occur in riparian wetlands at the southern extent of the North Platte River drainage in Converse, Goshen, Laramie and Niobrara Counties. Potential distribution of species and suitable habitat was modeled in 2003 (Fertig and Thurston) and included several drainages that extend onto the TBNG. Ute ladies' tresses potential habitat was identified in the analysis for the Thunder Basin Analysis Area Vegetation Management Final Environmental Impact Statement in 2007 and several additional projects to date. No populations of Ute ladies' tresses have been found on TBNG as of 2010, despite extensive field surveys. Projects with impacts to riparian wetlands include field reconnaissance for this species but typically result in biological determinations of "may affect, not likely to adversely affect" because no plants are found and design criteria are adopted to avoid or minimize impacts to suitable but unoccupied habitat. Field surveys for this species will continue for all relevant projects and additional

TBNG-wide surveys of potential Ute ladies' tresses habitat are scheduled for August, 2011. There is a draft recovery plan for Ute ladies' tresses (USFWS 1995).

Figure 21. Blowout Penstemon (Photo Courtesy of Walter Fertig)

Blowout penstemon, *(Penstemon haydenii*), is a regional endemic of the Nebraska Sandhills, and the northeastern edge of the Great Divide Basin in Carbon County, Wyoming. There are currently three known occurrences in Wyoming and ten populations globally. Most recently surveyed in 2008 (WYNDD 2010), the TBNG sits between the 2 known population centers. As of the 2010 field season there has been no suitable habitat identified on the TBNG, but there will be additional surveys and analyses to locate any potential habitat. Blowout penstemon is considered in biological assessments on the project level, but because there has yet to be suitable habitat identified on the TBNG, all projects have reached the biological determination of "no effect" on this species. There is a recovery plan for blowout penstemon (Fritz et al. 1992).

Conclusions: All actions were in compliance with the draft recovery plans for Blowout penstemon (Fritz et al. 1992) and Ute Ladies Tresses (USFWS 1995).

Recommendations: Continue to monitor these species and survey for species occurrences and suitable habitat. No needed changes to the plan have been identified to date.

Implementation Monitoring

Implementation of Standards and Guidelines

Legally Required Monitoring Item
Frequency of Measurement: Annual
Reporting Period: Annual

This monitoring item asks the question:

> ***Have site-specific decisions successfully implemented the Land and Resource Management Plan Direction?***

Monitoring Protocol/Data Collected: Interdisciplinary Team (IDT) monitoring trips in September 2009 and November, 2010 by the Forest Monitoring and Evaluation Team and Douglas District Personnel reviewed the following projects. The results of these reviews are summarized below.

2009 Field Trip

Sauerkraut Small Water Projects

This project was included in the TBNG EIS and ROD, as an adaptive management option. The EIS included appropriate design criteria for this project. The project includes 2 wells, a storage and stock tanks and a total of 17 miles of pipeline. Funds came from the TBGA grazing association, Conservation Districts, and the Wyoming Water Development Commission small water projects program. Landowners also contributed to the project. Archeological clearances were completed prior to implementation including tribal consultation.

The tanks are large tires with float valves and escape ramps for wildlife. The tanks can be individually turned on and off to alter livestock distribution. One of the storage tanks is buried as it was on a hill and by burying the tank it less obtrusive. The pipeline was installed by using heavy equipment to first rip the line, then push it into the ground and drive over to pack it down. This created a narrower swath of disturbed soil than with using a backhoe to dig a trench. Where feasible the line was co-located with existing roads as well. The line has been mapped so it can be added to the corporate database. This project is designed to reduce use in riparian areas and increase prairie dog habitat in the uplands. Photopoints and plots in the riparian area and uplands will be used for monitoring.

Invasive species along the pipelines are a concern, and it will take several years to revegetate. Russian thistle tends to diminish as the native grasses revegetate.

IDT Team Evaluation

Resource Area	Evaluation
Renewable Resources	Good project with clean installation. Escape ramps installed in tanks.
Engineering	Good project - recycling old tires. Good it will be mapped and put into the infra database. Storage tanks may be considered confined spaces - they need to comply with OSHA regulations with signing, etc.
Soils	Good to increase cattle distribution. Rock around each tank good as there will be increased soil disturbance.
Wildlife	Good for water projects to improve riparian conditions. Should look at old water stock tanks to see if they should be moved. Good tool to use to manage grazing to meet our objectives.
District Rangers	Important to build these correctly to keep livestock out of tank and have an

	escape ramp for wildlife.
Forest Supervisor	Efficient to have many allotments in one NEPA process - and to use adaptive management for the grassland plan. Three types of monitoring needed - validating assumptions, implementation and effectiveness. Should think about how to do validation monitoring for the grassland plan assumptions. This is implementation monitoring and it looks really good. Effectiveness monitoring is really key - important to see how this works to improve riparian area and prairie dog habitat. Effectiveness monitoring - need to choose a sample across multiple allotments and we can't monitor everything everywhere. Should focus on effectiveness monitoring next year.

Thunder Basin Fuels and Habitat Burn

This prescribed burning project has multiple objectives: Re-introduce fire into the ecosystem, Reduce hazard fuels accumulation and to enhance plover and prairie dog habitat. 850 acres were burned in early march. This was an old prairie dog area, and the colony died out due to plague in about 2001. The burning may attract prairie dogs back into the area. Plovers key into blackened areas for breeding sites. Fuels funding was used to implement the project. No fireline was necessary, and could have used black line if needed. The East Pasture did not burn as well, likely due to less wind and cool temperatures. Cheatgrass will be monitored to determine if herbicide treatment is needed.

IDT Team Evaluation

Resource Area	Evaluation
Fire / Fuels	For future burns, will get a few portable RAS weather stations to be able to have a better forecast. There is a weather station on Rochelle Hills. We will try to work with the county to get more county reserves. There are difficulties with the budget process, but the Black Hills has a process to improve buyoff from local folks.
Renewable Resources	Having fire in the ecosystem is great, and I support resources for implementing this. Good wildlife objectives to get the prairie dogs to move to where we want to manage them. It is appropriate to use fuels funding as this meets other objectives, however the fuels grow back quickly. Should work on better coordination with the range program.
Range	Hopefully, the permittees will see the next prescribed fire project more favorably as the ranchers will see that this did not eliminate the forage. Difficult coordination with permittees as we don't know the burn will happen until the last minute.
Planning	This is an example of implementing the grassland plan.
Soils	Looks good from a soils viewpoint
Wildlife	It would have been better to have grazing on site afterwards to keep the grass down. Could utilize more Forest personnel from other areas of the forest, but luckily we had the BLM from Casper. Consider having public field trip to educate about project used to improve prairie dog management.
District Rangers	Learned we need to coordinate with grazing association and permittees early in the process. Possibly next time we can include external partners now that we have an example for them to see.

Forest Supervisor	Nice project, good to have multiple objectives. Will be good to improve working with partners and obtain additional funding sources. Proud of the Douglas District for re-introducing fire into the grassland ecosystem. The local culture is negative towards fire so this is a good step towards building trust.

2010 Field Trip

M Creek Pipeline

This project was an adaptive option under the TBGA Record of Decision. Following the adaptive management decision process, livestock use and distribution was monitored to determine if additional stock tanks were needed. The district used a checklist process to determine that all standards and guides are met, which design criteria are appropriate and to ensure that the appropriate clearances are completed.

Funding for this project came from the state small water projects program, the permittee and the Conservation District. This project was implemented in 2009. Three additional tanks, with pipeline were added to an existing well which already had pipeline to 3 tanks. The storage tank was buried up on a hill and an underground pipeline and 3 more tanks were added, for a total of 6 stock tanks and 6 miles of pipeline. The purpose and need for this project was to add more tanks to better manage distribution in this pasture of 13,000 acres. Each tank can be turned on and off to control where livestock move. The storage tank is not obtrusive as it is buried, and provides gravity feed to the stock tanks. Each tank has a float system to conserve water. Challenges were the roadless area, and to keep visual impact to a minimum. The pipeline was co-located with the road as much as possible, to minimize disturbance. The disturbance from the pipeline was not seeded, although there are weeds on neighboring private lands. The primary weed species of concern is russian thistle, but this plant tends to disappear in time. Monitoring will determine if future action is needed. The grazing associating applied for the water right first, so the water right is in joint ownership, the permittee and the NFS.
This is in sage grouse habitat and one tank is keeping the vegetation down which maintains a lekking site.

Lessons learned: The district learned more about the Wyoming water rights process, and implemented an example of co-locating pipelines with roads. This is another example of how the district uses partnerships to accomplish work. From the TBGA EIS, too many projects had been grouped together, which led to a long time to reach the implementation stage. It is better to group them into smaller, more manageable projects to have more efficient implementation.

IDT Team Evaluation

Resource Area	Evaluation
Archeology	Pipeline and tank are in a good location for culture resource, the adaptive management checklist and process worked well for this project.
Renewable Resources	Good project and well engineered. Tire tanks are durable; and burying the storage tank was good for visuals.
Planning	The district is implementing the TBGA EIS and successfully using the adaptive management process with monitoring.
Engineering	Good project.

Scenery / Visuals	Good location and good project.
Soils	Concentrated cattle use around the tanks, as you would expect. Monitoring would reveal if there is reduced impacts elsewhere in the pasture.
Recreation	No recreation issues, did a good job with visual quality.
Minerals/ Lands	Good to be consistent with burying tank and co-locating the pipeline with roads.
Wildlife	Beneficial side of the project is to be able to improve sage grouse habitat. This took the pressure off of other areas.
Range	This has improved livestock distribution and vegetation management.
Hydrology	Good project. The tanks have float valves which conserves water and reduces erosion around the tanks.
District Rangers	The project went well. The largest issue was roadless areas and going through the RO approval process. Learned to group projects into a more manageable size. Also learned to be the lead in applying for water rights so they can be in the name of the NFS.

Prairie Dog and Plover Prescribed Burns

The purpose and need for these burns is to improve habitat for prairie dogs and plovers. The burns were funded by fuels, with wildlife funding the NEPA process. The burn plans cover multiple years and the possibility of burning the same area more than once a year if the first burn does not achieve objectives. The NEPA was included in TBGA EIS as adaptive management.

Prairie dogs have already expanded into the burned area, and two breeding pairs of plovers were observed in the burn area this spring. Burning may be a tool to use to draw prairie dogs away from private lands.

One issue is the concern of local landowners with burning of sagebrush because of sage grouse as the sage grouse are being considered for listing under the Threatened and Endangered Species Act. Sage grouse core area and the ferret reintroduction area overlap in this area. The District is monitoring the effects of this burn to determine the effects on sage brush.

Some areas may be burned every other year, others not as often. If prairie dogs expand into an area, then that area will not need to be burned as the grass will be kept clipped short. Currently the prairie dog population is sufficient to re-introduce ferrets, but a 10J rule is needed to first. The IDT Evaluation is included with the next stop.

Prairie Dog Translocation

The Prairie Dog Translocation project, described above was also monitored. Refer to the ***MIS*** section above for a description of this project.

IDT Team Evaluation

Resource Area	Evaluation
Archeology	The burns were very well planned. There is a programmatic agreement with SHPO about burns, but did need to look at the mowed fire break. Did survey

	the fence prior to construction. Need to go through the checklist to see that everything is completed.
Renewable Resources	The District deserves much credit for this project. Good to see all the tools being used to manage prairie dog towns and population. This increases our credibility with the environmental community.
Planning	The district did a tremendous job pulling it all together.
Scenery / Visuals	Good project.
Soils	Looks good, we are not managing for soil productivity in prairie dog towns.
Minerals	The burn went right up to an oil well, but the mowing around the site kept it safe. There was concern by the oil well operators over the gate in the fence.
Fire / fuels	The fire program is happy to be involved in this project. This project constituted the majority of our program this year.
Wildlife	Great Project. This project was written up by High Country News as a positive project by the TBNG.
Range	We are working together with the permittees to get their agreement on the prescribed burning projects. Managing for prairie dogs means we are managing for the full spectrum of range conditions. All of the district helped with the fence, in addition to Christi being able to pull in many partners.
District Rangers	This project started 7 years ago and this is the start of implementation with immediate success. It is critical to involve individuals, not just the association boards. We don't want to alienate anyone. We were able to show the permittees that we are serious about dealing with prairie dog conflicts and that translocation is a viable tool. We are now testing to see if we can create a viable buffer. This project was a good opportunity for cross communication between the ranchers and the environmental groups.

Antelope Road Relocation

The Antelope Road needed to be relocated as the coal mine was digging through the existing road. The original NEPA was for a temporary permit to construct the new road. The district learned during the project that the Regional Forester was the deciding official to transfer the easement to the county. The result was another CE for the easement. Two CE's were completed based on an EA. The decision was done just in time. The mine did not let the public use the new road until the county had the easement in place. Regional office decisions take time, so need to plan on extra time for projects. The district originally thought this would be a forest decision. There were some issues at the last minute for some resource areas as well.
The new road location should not be mined through until 2020. At that time, the road would need to be either put farther out or back behind the reclaimed area. It is not recommended to put a new road on reclaimed land.

Lessons Learned:

- Archeological sites were avoided as there was no time to do mitigation for the sites.
- There is a lack of gates in the new ROW fence, which is difficult for the range permittee. Permittees need to be involved from the beginning to get input on how the action would affect their operations.
- Check decision authorities in the beginning as that can change the project and the required paper of record.

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Literature Cited

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Douglas District Staff contributed much of the content in addition to photographs for this report.

Photographs are from USFS personnel unless otherwise noted.

Acronyms

AMP	Allotment Managment Plan
APHIS	Animal Plant Health Inspection Service
ATV	All Terrain Vehicle
AUM	Animal Unit Months
BLM	Bureau of Land Management
BMPs	Best Management Practices
CE	Categorical Exclusion
COA	Conditions of Approval
DM	Decision Memo
DM&E	Dakota, Minnesota, and Eastern Railroad Corporation
DN	Decision Notice
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FPO	Forest Protection Officer
FY	Fiscal Year
GA	Geographic Area
GPS	Global Posistioning System
IDT	Interdisciplinary Team
LRMP	Land and Resource Management Plan
MA	Management Area
MIS	Management Indicator Species
MOU	Memorandum of Understanding
MVUM	Motor Vehcile Use Map
NEPA	National Environmental Policy Act
NFS	National Forest System
NGP	Northern Grasslands Plan
NRHP	National Register of Historic Properties
OHV	Off-Highway Vehicle
PREcorp	Powder River Energy Corporation
PSD	Prevention of Significant Deterioration
R2	Region 2 (Rocky Mountain Region of USFS)
RNA	Research Natural Area
ROD	Record of Decision
SHPO	State Historic Preservation Officer
SIA	Special Interest Area
SOPA	Schedule of Proposed Actions
SUP	Special Use Permit
TCP	Traditional Cultural Properties
T&E	Threatened and Endangered Species
TBNG	Thunder Basin National Grassland
TBGPEA	Thunder Basin Grasslands Prairie Ecosystem Association
THPO	Tribal Historic Preservation Officer
USDA	United States Dept. of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
UTV	Utility Vehicle

WGFD	Wyoming Game and Fish Department
WYDEQ	Wyoming Department of Environmental Quality
WYNDD	Wyoming Natural Heritage Database
WYSEO	Wyoming State Engineer's Office

Appendix 1. Goals and Objectives

This section gives progress made toward the objectives which are due annually or by Fiscal Year 2010. Progress updates as of FY07 toward all grassland-wide and geographic objectives in the Grassland Plan were given in Appendix 2 of the TBNG Five Year Review, which is posted on the forest website at: http://www.fs.fed.us/r2/mbr/projects/forestmonitoring/index.shtml.

Goal 1: Ensure Sustainable Ecosystems: Promote ecosystem health and conservation using a collaborative approach to sustain the Nation's forests, grasslands and watersheds.	
Objective 5. Throughout the life of the Plan, ensure proper plugging of abandoned wells to prevent cross contamination of aquifers (e.g., seismograph holes, water wells, etc.).	**Year Due Annually**
See the Watershed 4 – Aquifer Protection Monitoring Item.	
Goal 1.b: Provide ecological conditions to sustain viable populations of native and desired non-native species and to achieve objectives for Management Indicator Species (MIS).	
Objective 1. As scientific information becomes available, jointly develop with the US Fish and Wildlife Service and other agencies conservation and recovery strategies for plant and animal species, listed as threatened or endangered under the Endangered Species Act, and implement established conservation or recovery strategies over the life of the Plan.	**Year Due Annually**
See the T & E 1 - Black Footed Ferret Monitoring Item. Ute Ladies' Tresses (Spiranthes diluvialis), a plant T&E species with potential to be found on the TBNG has a draft conservation/recovery plan. In addition there is a petition to delist this species.	
Objective 3. Develop and implement conservation strategies for Forest Service sensitive species, as technical information becomes available	**Year Due Annually**
Plants: Conservation assessments were published for all US Forest Service Region 2 sensitive plant species known or suspected to occur on the TBNG (available at: http://www.fs.fed.us/r2/projects/scp/assessments/index.shtml). Conservation strategies specific to the TBNG have not been developed at this time. There is no documentation that any project actions at this time will lead to a trend towards federal listing for any of these species, so it appears that adhering to project level analysis will conserve these species on the TBNG in the near future. Aquatic Species:	

No conservation strategies exist for R2 aquatic sensitive species in the planning area, although aquatic assessments have been constructed for these species. It will take time, personnel, and money to accomplish the prerequisite inventories to construct conservation strategies. Aquatic personnel have accomplished very limited inventories in the planning area as of FY05 due to existing workload priorities.	
Objective 5. Identify rare plant and animal communities, inventory them, and develop associated management strategies to conserve them. Support the development and implementation of State and Regional Conservation Plans as they apply to the grassland or forest units.	**Year Due Annually**
Aquatic Species: Although the sturgeon chub and other aquatic sensitive species are considered locally rare in the planning area, there were no ad hoc inventories or management strategies developed to conserve them up to FY05 due to staffing, budget, and other workload priorities. Selected baseline inventories were conducted from 2002 through 2006, no surveys were conducted in 2007-2010. The WG&F has not developed a specific conservation strategy for either the sturgeon chub or other sensitive, aquatic species extant in the planning area. Plants: Projects that influence more than insignificant amounts of vegetation include inventory and analysis for rare plant communities. There is no documentation that any project actions will lead to a disturbance or change to rare plant communities that would reduce their continued presence on the TBNG, so adhering to project level analysis will conserve these plant communities on the TBNG in the near future. There is no documentation of trends (positive or negative) in habitat availability and quality, or any other applicable factors for rare plant communities. There have not been any proposals for State and Regional Conservation Plans that applied to the rare plant communities of the TBNG.	
Objective 7. Establish scientifically credible monitoring programs, develop survey methods, and initiate baseline and trend surveys for populations, habitats and/or ecological conditions to contribute to viability of threatened and endangered species, species at risk, and MIS.	**Year Due Annually**

Plants:

Based on USFWS published survey protocol, suitable, unoccupied habitat for Ute Ladies' tresses has been identified in project level surveys. As needed and as possible, projects have been modified to avoid or minimize effects to this habitat.

Several occurrence of Barr's milkvetch have been visually monitored over at least 3 years. While visual observations are not conclusive, occurrences appear to respond to available moisture and no consistent downward trend has been noted. Additional occurrences have been noted in recent years. Other R2 sensitive species are either in the process of identification confirmation or location confirmation at this time.

Plant species that are at risk but not covered by Threatened, Endangered and Sensitive Species (TES) direction have been identified as plant species of local concern and habitat described. These plant species of local concern are included in botanical target surveys at the project level. Survey protocol is based on national direction for TES plant species and scientific protocols. Protocols are available at: http://www.warnercnr.colostate.edu/frws/research/rc/tesintro.htm [06/05/06].

Objective 8. Complete and initiate implementation of conservations strategies for globally rare plant species (G2-3 rankings) including Barr's milkvetch and other high priority species in cooperation with other conservation agencies and organizations.	**Year Due Annually**

Barr's milkvetch is no longer tracked by WYNDD because surveys documented a sufficient level of abundance. Smooth goosefoot (*Chenopodium subglabrum*), a globally rare species (G3) documented to occur on the TBNG has been added to the plant species of local concern list and as such is included in botany surveys and project level analysis.

Objective 9. Conduct target surveys for globally rare plant species (Barr's milkvetch, smooth goosefoot, Ute ladies' tresses) and other rare plant species with viability concerns.	**Year Due Annually**

Target surveys are currently conducted as part of project level analysis for Barr's milkvetch and smooth goosefoot based on habitat and phenology (timing of flowering). As part of recent allotment management plan analysis, target surveys within appropriate habitat were conducted over 505,876 acres.

Goal 1.c: Increase the amount of forests and grasslands restored to or maintained in a healthy condition with reduced risk and damage from fires, insects and diseases, and invasive species.

Objective 3. Within 5 years, develop and implement cooperative noxious weeds and undesirable non-native or invasive species management plans in consultation with appropriate partners and agencies	**Year Due 2007**

An Invasive Species Strategy was developed in 2005 for all of the Thunder Basin National Grassland for terrestrial and aquatic species as well as for invasive plants. An analysis for an Integrated Management approach to the control of noxious weeds was completed for the entire area in 1996, and in Implementation Plan for that effort was completed in 2000. Currently, an EIS is underway that proposes aerial spraying to control noxious weeds. Cooperative Agreements are in place with Campbell, Converse, Niobrara, and Weston counties for control of noxious weeds on the Grasslands. Thunder Basin, Inyan Kara, and Spring Creek Grazing Associations cooperate physically and financially with the Forest Service and those counties in weed control. Thunder Basin Grassland Prairie Ecosystem Association has also contributed financially in the inventory and control of weeds on federal, state, and private lands in the Grasslands.	
Objective 4. Within 3 years, develop and implement a certified noxious weed-free forage program in consultation with appropriate state agencies	**Year Due 2005**
A certified weed-free forage program has been in place for all National Forest System lands in the state of Wyoming since 1995. The existing Closure was strengthened in 2005 to include products such as hay cubes and pelleted forage products.	
Objective 7. Immediately initiate hazardous material cleanup on identified sites	**Year Due Annually**
All previously identified hazardous material sites have been cleaned up. Hazardous material spills associated with on-going minerals operations are administered through the minerals permits.	
Objective 8. In a timely manner, review Prevention of Significant Deterioration (PSD) permit applications, and make recommendations where needed to reduce impacts to air quality related values for all Class I and Class II areas.	**Year Due Annually**
There have been no known PSD permits for review.	

Goal 2: Multiple Benefits to People: Provide a variety of uses, values, products, and services for present and future generations by managing within the capability of sustainable ecosystems.
Goal 2.a: Improve the capability of the Nation's forests and grasslands to provide diverse, high-quality outdoor recreation opportunities.

Objective 1. Annually maintain or reconstruct 20% of National Grassland to regional standards.	**Year Due Annually**
See the Recreation 1 – Trails Monitoring Item.	
Objective 3. Within 5 years, provide appropriate directional signing to key recreation sites and inform people about the public access routes to national grasslands and national forests.	**Year Due 2007**
Beginning in FY07, a large emphasis has been placed on installing repaired, corrected and new directional signing on the grassland. Plans are underway to continue this effort into the future as funding allows. This emphasis was very successful with a noticeable increase in legible signs throughout the grassland. Hunters in particular, as well as landowners, have made positive comments on the higher quality and quantity of signs. Recommendations: • Maintain funding levels to allow hiring of a sign crew and to purchase supplies to continue this effort. • Place U.S. flag stickers on all signs to prevent vandalism and reduce replacement costs.	
Objective 5. Within 5 years, draft and begin implementing a science and marketing based interpretive program strategy that uses a variety of communication media. The purpose of the strategy will be to effectively use communication principles and methods based in the field of interpretation to "Communicate with target audiences regarding management concerns or issues, changes in management direction, and specific projects". Enhance visitor's recreation experiences by identifying and implementing interpretive projects that highlight national grassland and forest resources and management.	**Year Due 2007**

Thunder Basin National Grassland was included in the forest interpretive plan which was updated and finalized in 2005. Grant money was secured from the Wyoming State Trails program in FY08 to create a "media blitz" for the Campbell County population. The message will be "responsible riding on national forests and grasslands" to discourage off-road use by ATV riders. This effort is in partnership with the Bighorn National Forest, Black Hills National Forest, and the Buffalo Field Office BLM, as all of these areas, as well as the grassland, are greatly affected by Campbell County recreation users. The message/s will be conveyed through print and radio media. Recommendations: • Identify similar message needs as warranted. • Use 2008 media program as a pilot and adjust for use in other communities as needed.	
Objective 6. Provide nonmotorized and motorized trails for a wide variety of uses and experiences.	**Year Due Annually**
The Thunder Basin Travel Management Decision addresses the need for motorized trails. Budgets have been too prohibitive to create any plans for a non-motorized trail system.	
Objective 7. Manage trail systems to minimize conflicts among users.	**Year Due Annually**
The Thunder Basin Travel Management Analysis should identify conflicts by type, user groups, and geographical locations.	
Objective 8. When appropriate, authorize special use permits for outfitter-guide services on NFS lands.	**Year Due Annually**
Outfitter and guide permits are regularly authorized.	
Objective 9. Through partnerships, encourage, establish, and sustain a diverse range of recreational facilities and services on NFS lands. Encourage outfitters and guides who support interpretive and educational awareness of grassland ecosystems or who provide services to people with disabilities.	**Year Due Annually**
Outfitters are encouraged to provide educational and interpretive awareness in their programs.	

Objective 10. When appropriate, designate, and manage outfitted camp locations.	**Year Due Annually**
There are no outfitter camps on the Grassland.	
Goal 2.b: Improve the capability of wilderness and protected areas to sustain a desired range of benefits and values.	
Wilderness Objective:	
Objective 1. Within 5 years of Congressional designation, revise or develop wilderness plans to emphasize recreational, aesthetic, and educational experiences consistent with values of those areas.	**Year Due 2008**
There are currently no designated Wilderness Areas on the Grassland.	
Heritage Sites Objectives:	
Objective 1. Within 5 years, develop and implement a heritage inventory strategy and implementation schedule to survey and evaluate sites, in support of management actions and activities as agreed upon with the State Historic Preservation Offices (SHPO), Tribal Historic Preservation Offices (THPO) and to include compliance with laws Sec. 106 and Sec. 110 of the National Historic Preservation Act.	**Year Due 2007**
The Forest has finalized a comprehensive Programmatic Agreement for many aspects of the National Historic Preservation Act, especially under section 106. In addition, national direction now includes Section 110 survey and site reporting as part of meeting a Heritage Program Managed to Standard.	
Objective 2. Within 5 years, assess identified sites eligible for the National Register of Historic Places (NRHP) in conjunction with SHPO and THPO and provide interpretation for National Register of Historic Places sites where appropriate and consistent with developed preservation plans.	**Year Due 2007**
Project associated sites continue to be evaluated to the NRHP. No sites on TBNG are currently listed on the National Register of Historic Places. We currently have a draft nomination for the Dorr Place, an historic homestead and ranch headquarters. If placed on the NRHP a plan will be developed for the site in consultation with the SHPO. At this time, we prefer off-site interpretation for most sites since we cannot maintain new developments due to limited budgets and do not want to attract vandalism and theft.	

Objective 3. Within 3 years, identify and protect traditional cultural properties in consultation with federally recognized American Indian tribes	**Year Due 2005**
Two Traditional Cultural Properties (TCP) have been identified on TBNG and are under protection with Plan standards and guidelines as well as other legal protections. One TCP lies only partially in a Special Interest Area (SIA) and it is recommended the SIA boundary be expanded to include the entire TCP. Many tribes have concerns about identifying TCPs to federal agencies unless the sites are threatened by a project and have told us they will share the information only as needed. We continue to work to develop and maintain relations with tribes to aid in the identification and protection of TCPs, although most of this relationship building comes in the form of project consultation. The Grassland has participated in a Department of Defense Legacy project called "after the smoke clears" on protecting TCPs and sacred sites during and after fire suppression on Grasslands.	
Objective 5. Educate, interpret, and promote partnerships to increase public awareness, protect heritage resources, and further the goals of research.	**Year Due Annually**
Information from treatments on TBNG has been made available for Forest partners at regional archaeological and anthropological conferences. The Grassland unit has conducted volunteer projects during the period to help record and protect historic properties and increase public involvement. The unit has worked with and presented to some local historic societies and museums to protect sites and enhance local understanding of area history. Forest Service living history has been presented to thousands of school children via outdoor education expos in Gillette and Casper. Project work that impacts cultural resources as well as cultural resource inventory has been used to further the goals of research and interpret the archaeological record of the Grassland. One grassland partner was awarded the 2007 National Grasslands' Grassland Research and Technology Award. The Grassland has provided internships for MA candidates at the University of Wyoming to aid in our partnering expertise and experience with the University.	
Special Areas Objective:	
Objective 1. Within 5 years, develop and implement a management and monitoring plan for each Research Natural Area.	**Year Due 2007**
There are no establishment reports currently completed for any of the Research Natural Areas (RNAs). There were several grazing analysis projects that will continue livestock grazing within the RNAs. Livestock grazing in the RNAs is not excluded by the LRMP because the ecological communities represented by these RNAs were in part created by large grazing animals.	
Goal 2.c: Improve the capability of the Nation's forests and grasslands to provide a desired sustainable level of uses, values, products, and services. :	

Livestock Grazing Objectives	
Objective 1. Annually, provide forage for livestock on suitable rangelands. Annual grazing levels will be adjusted, as needed, during periods of drought or for other conditions	**Year Due Annually**
Consistently, and historically, grazing levels are adjusted annually according to local climatic conditions as well as any other factors that may be affecting vegetative production. Discussion of conditions during the life of this Plan is included in the Comparison of Estimated and Actual Outputs and Services Monitoring Item.	
Objective 2. As needed, revise allotment management plans (AMP) to meet desired vegetative conditions described in Geographic Areas and to implement all appropriate management plan direction	**Year Due Annually**
The allotment management EA for the Spring Creek Unit was completed in 2005; following appeal, and partial remand, the decision was completed in late 2007. The decision has been implemented on all 15 allotments. Few updates will be required for AMPs as existing conditions are almost entirely meeting desired conditions across the area. The allotment management decision for the 71 allotments in the Thunder Basin Grazing Association EIS was issued in October 2007. The decision was upheld on appeal in March 2008. The AMPs have yet to be updated, but adaptive management is already being implemented. The Decision Memo for 18 allotments in the Inyan Kara Grazing Association planning area was signed in September 2007. By definition, using the 2005 legislative categorical exclusion authority means that existing management is meeting or moving toward desired conditions, and current management will be continued. No AMPs have been updated for these allotments at this time, and there are few anticipated changes. The EIS for the remaining 77 allotments in the Inyan Kara area was completed in September 2008. Field analysis for these allotments was completed in 2007, and the results are included in this report regarding rangeland vegetation structure and seral stage. Thus, allotment management planning will have been completed and updated for all 552,480 acres of the Grassland within the next six months. As data in the above tables show, most areas of the Grassland as a whole are already meeting desired conditions.	
Mineral and Energy Resources Objectives:	
Objective 1. Ensure reclamation provisions of operating plans are completed to standard.	**Year Due Annually**

Inspections are completed and formal approval is sent to the WYDEQ by the Forest Service. All provisions are completed before reclamation bonds are released.	
Objective 2. Honor all valid existing legal mineral rights,	**Year Due Annually**
Operating Plans are addressed annually. New proposals are addressed through the National Environmental Policy Act (NEPA) process. Mitigations necessary to ameliorate concerns are included in Special Use Permits and Plans of Operations.	
Miscellaneous Products Objective:	
Objective 1. Provide appropriate opportunities to satisfy demand for miscellaneous products (special forest and grassland products, such as mushrooms, floral products and medicinal plants) through environmentally responsible harvest and collection methods on National Forest System Lands.	**Year Due Annually**
Proposals for collection of special forest products are analyzed for effects on sustainability of populations and collection methods. Where conditions are met, permits for collection are issued.	
Scenery Objective:	
Objective 1. Implement practices that will meet, or move the landscape character toward scenic integrity objectives. Reference Geographic Area direction.	**Year Due Annually**
Standard Lease Terms (SLT) provide guidance on color requirement for oil and gas facilities on TBNG to blend with the surrounding grassland landscape and meet and maintain the adopted scenic integrity objective and the desired landscape character. CSU stipulations for areas with High and Moderate Scenic Integrity Objectives (SIOs) provide guidance on meeting and maintaining the adopted scenic integrity objective and the desired landscape character. Coal companies are required to reclaim mined lands to meet and maintain the adopted scenic integrity objective and the desired landscape character.	
Special Uses Objective:	
Objective 1. Ensure all special use permits are meeting requirements for customer service and are in compliance with the terms of their permits or contracts.	**Year Due Annually**
Customer service requirements will continue to be met through the cost recovery process. The grassland meets or exceeds its' target for "Administered to standard". Several "Notice of Non-Compliance With Opportunity To Cure" letters were issued and compliance was obtained.	

Goal 3: Scientific and Technical Assistance Develop and use the best scientific information available to deliver technical and community assistance and to support ecological, economic, and social sustainability.	
Goal 3.a: Improve the knowledge base provided through research, inventory, and monitoring to enhance scientific understanding of ecosystems, including humans, to support decision making and sustainable management of the Nation's forests and grasslands.	
Objective 1. Implement inventory and monitoring systems to provide scientific information and decision support across all land ownerships.	**Year Due Annually**
Four Ecological Classification Types developed by rangeland research scientist Dr. Daniel Uresk of the Forestry Sciences Laboratory at Rapid City, South Dakota were used in the Cover-Frequency transects installed across the Grassland to gather and evaluate data for species composition (seral stages). Methods and results were used to support allotment management decisions and assure sustainable management of the rangelands. Results are applicable for all land ownerships across the grassland landscape. The Grassland collaborated with The Nature Conservancy, an adjacent landowner with conservation goals; and coordinated with BLM and USFWS level 1 team on survey strategies, flowering timing and determinations for Ute Ladies' tresses.	
Objective 2. Provide research results and tools through technology transfer to support effective management, protection, and restoration of ecosystems.	**Year Due Annually**
Between 2004 and 2007, five conservation assessments have been completed for the following TBNG fish and amphibian species: plains killifish, flathead chub, plains minnow, and northern leopard frog.	
Objective 3. 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. Some reference areas will need to be managed for multiple-year accumulation of vegetation and litter for those management indicator species of high structure grasslands and sagebrush habitats.	**Year Due Annually**
The Grassland needs to evaluate whether the habitat capability and suitability models are the most effective measure of habitat quality for MIS species or if another protocol should be used. Habitat quality for MIS will be assessed for the next 5 year evaluation.	

Objective 4. Assess the 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.	**Year Due Annually**
Because of budget, time, personnel, and other workload priorities, there have been no systematic efforts to make this determination in recent years.	
Objective 5. Assess the condition of watersheds containing aquatic habitats of sensitive fish species that are found primarily in clear-water streams and rivers.	**Year Due Annually**
There are no aquatic sensitive species extant in the planning area that primarily prefer clear-water streams. This objective may not be applicable to the TBNG.	
Goal 4: Effective Public Service. Ensure the acquisition and use of an appropriate corporate infrastructure to enable the efficient delivery of a variety of uses.	
4.a: Improve the safety and economy of the USDA Forest Service roads, trails, facilities, and operations and provide greater security for the public and employees	
Objective 1. Within 5 years, identify travel opportunities and restrictions, including designating motorized travel-ways and areas, to meet land management objectives. Provide reasonable access for use of the national grasslands and national forests.	**Year Due 2007**
Travel management planning for the Grassland began in 2007, and the MVUM (motorized vehicle use map) has been published, with annual updates as needed.	
Objective 2. Within 5 years, provide site-specific maps and information showing closures, restrictions, and opportunities for motorized and non-motorized use using a science-based Roads Analysis process.	**Year Due 2007**
The 2004 Roads Analysis for the Grassland is being used as the starting point for the travel analysis planning. The MVUM shows site-specific motorized travel opportunities.	
Objective 3. Within 5 years, identify the minimum Forest Service road system for administration, utilization, and protection of National Forest system lands and resources, while providing safe and efficient travel and minimizing adverse environmental effects	**Year Due 2007**
The Thunder Basin Roads Analysis was completed in 2004 providing a framework for motorized uses on the Grasslands. Recommendations for a minimum road system will be implemented in project level decisions.	

Objective 4. Where appropriate, encourage and authorize recreation opportunities for people with disabilities.	**Year Due Annually**
All newly constructed and reconstructed facilities will be accessible to the extent possible within physical constraints.	
Goal 4.b: Provide appropriate access to NFS lands and USDA Forest Service programs.	
Land Ownership and Access Objectives:	
Objective 1. Within 3 years, develop and implement approved land ownership adjustment plan in response to resource management and public needs. The plan shall be coordinated, reviewed, and updated annually.	**Year Due 2005**
A landownership adjustment plan has not proven to be the best tool due to the existing pipeline of projects and the political nature of land exchanges. The pipeline of projects is addressed each year and priorities are set in conjunction with resource management needs and budget. The current pipeline of projects exceeds five years of projects.	
Objective 2. Within 3 years, develop and implement a 5-year Rights-of-Way Acquisition Program in response to resource management programs and access needs. This 5-year plan will be coordinated, reviewed, and updated annually.	**Year Due 2005**
A Rights of Way Acquisition plan will be developed over the next several years as a necessary byproduct of implementing the Travel Management Decision. Priority projects have been identified.	
Unauthorized Uses Objective:	
Objective 1. Take appropriate law enforcement or administrative actions on all unauthorized uses.	**Year Due Annually**
All discovered or reported unauthorized use is investigated. Where appropriate, law enforcement action is taken.	
Public and Organizational Relations Objectives:	
Objective 1. Provide opportunities for federally recognized American Indian tribes to participate in planning and management of the national grasslands and national forests, especially where tribes have claimed special geographic, historical, or cultural interest.	**Year Due Annually**

Federally recognized Tribes that have evinced interest are regularly scoped for projects and plan revisions. These tribes are in Wyoming, Oklahoma, South Dakota, North Dakota, and Montana. Tribes with Tribal Historic Preservation Officers regularly comment on project and site protection. Site visits have been made with tribes and treatment plans reviewed by Tribal Historic Preservation offices and tribes are regularly invited to participate, although with the long distances involved it is difficult for many tribes to get to the Grassland. These tribes will be on mailing lists for Forest Plan revisions.	
Objective 2. Work in cooperation with federal, state, and county agencies, individuals, and nongovernment organizations for control of noxious weeds and invasive species and animal damage.	**Year Due Annually**
See Community Relations 1 Monitoring Item	
Objective 3. Create and foster partnerships with other agencies, accredited educational and research institutions, and other appropriate public and private sector organizations to further the goals of research, education, protection, and interpretation.	**Year Due Annually**
A Challenge Cost Share Agreement was developed with Wyoming Natural Heritage Database (WYNDD) in 2002 which has and continues to contribute to research, education, protection, and interpretation - specifically for Barrs Milkvetch and Ute's lady's Tresses Orchid. The Botany Program is working with other partners to develop sources of local native plant materials which are genetically appropriate for use on Thunder Basin National Grassland.	
Objective 4. Cooperate with the appropriate state and federal agencies in balancing desired wildlife and fish population objectives with desired habitat conditions.	**Year Due Annually**
On a regular basis we meet with the Wyoming Game and Fish Department to discuss and review their population goals and objectives. The District develops habitat improvement projects to meet the population goals set by the Wyoming Game and Fish Department	
Objective 5. Identify opportunities for partnerships to provide new recreational fisheries and/or waterfowl and wetlands habitat.	**Year Due Annually**
The DM&E decision identified the creation of wetlands as part of mitigation. The location has been selected and is currently being analyzed for site specific effects.	