

All photographs are courtesy of the U.S. Fish and Wildlife Service or the National Park Service unless otherwise noted.

SUMMARY

INTRODUCTION

Jackson Hole is home to one of the largest concentrations of elk and bison in North America, with an estimated 13,000 elk and over 1,000 bison. The elk migrate across several jurisdictional boundaries in northwestern Wyoming, including the National Elk Refuge, which is managed by the U.S. Fish and Wildlife Service (USFWS), and Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway, which are managed by the National Park Service (NPS). Ranges also extend into Yellowstone National Park, Bridger-Teton National Forest, Bureau of Land Management (BLM) resource areas, and state and private lands.

The bison range largely within Grand Teton National Park and the National Elk Refuge, with some crossing into Bridger-Teton National Forest and onto state and private lands in the Jackson Hole area.

Both species contribute significantly to the ecology of the southern greater Yellowstone ecosystem because of their large numbers, wide distribution, effects on vegetation, and their importance to the area's predators and scavengers.

The U.S. Fish and Wildlife Service and the National Park Service have selected a plan for managing bison and elk on the National Elk Refuge and in Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway for a 15-year period. The plan was developed in accordance with the National Environmental Policy Act and included extensive public input and close collaboration with several cooperative agencies and partners. These agencies include

- the Wyoming Game and Fish Department (WGF), which manages resident wildlife species throughout most of the state
- the U.S. Forest Service, which administers Bridger-Teton National Forest
- the Bureau of Land Management, which administers BLM resource areas in Jackson Hole
- the U.S. Department of Agriculture's Animal and Plant Health Inspection Service, which is in part responsible for preventing the introduction and spread of significant livestock diseases

Extensive opportunities for input were also provided to local governmental agencies, tribal



Sleigh ride on the National Elk Refuge, with the Teton Range in Grand Teton National Park as a backdrop.

Photo courtesy of Diana L. Stratton



Bison and elk on the National Elk Refuge.

governments and organizations, nongovernmental organizations, and private citizens, as well as during review of the *Draft* and *Final Environmental Impact Statements*.

BACKGROUND

The Role of Elk

Elk figure prominently in Jackson Hole's history and culture. In the late 1800s, when elk populations all over North America were being extirpated, the residents of Jackson Hole protected elk from "tusk hunters" and from large-scale commercial hunting operations. At the same time changes in land use and development reduced access to significant parts of elk native winter range. Before Euro-American settlement, elk had wintered to some degree in the southern portion of Jackson Hole (the location of the National Elk Refuge and the town of Jackson), as well as the Green River, Wind River, and Snake River basins.

By the end of the 19th century the Jackson elk herd was largely confined to Jackson Hole and the immediately surrounding area, and it was at the mercy of severe winter weather when snow accumulation and subzero temperatures made foraging difficult. Substantial numbers of elk died during several severe winters in the late 1800s and early 1900s. This prompted local citizens and organizations in Jackson Hole, as well as state and federal officials, to begin feeding in the winter of 1910–11. On August 10, 1912, Congress appropriated \$45,000 for the purchase of lands and

maintenance of a "winter game (elk) reserve," which subsequently became the National Elk Refuge.

The Role of Bison

Bison in the Jackson Hole area are popular with visitors and residents as a symbol of the West, and they are central to the culture and traditions of many American Indian tribes. Because there are so few opportunities to see bison in the wild, viewing and photographing these animals in Grand Teton National Park is a unique opportunity for many of the valley's visitors, especially with the Teton Range serving as a backdrop.

The presence of prehistoric bison remains indicates that bison had long inhabited the Jackson Hole area. But by the mid-1880s they were extirpated outside Yellowstone National Park. In 1948, 20 bison from Yellowstone were reintroduced to the 1,500-acre Jackson Hole Wildlife Park near Moran. Over the next two decades bison were maintained in a large enclosure. In 1968 the herd (down to 11 animals) escaped from the wildlife park, and a year later the decision was made to allow them to range freely. In 1975 the small bison herd (then 18 animals) began wintering on the National Elk Refuge. The use of standing forage by bison on this natural winter range was viewed as natural behavior and was not discouraged by managers. In 1980, however, the bison began eating supplemental feed that was being provided for elk.

Since discovering this supplemental food source, the Jackson bison herd has grown to over 1,000 animals, increasing by 10%–14% each year. Bison on the elk feedlines have at times disrupted feeding operations and displaced and injured elk. In order to minimize conflicts between bison and elk, managers have provided separate feedlines for bison since 1984, but this has become increasingly difficult as the bison population has grown. It is not clear how large the population could become in the absence of human control measures.

Concerns about the rapidly increasing bison herd include greater damage to habitats, competition with elk, risk of disease transmission to elk and

domestic livestock, risk to human safety, damage to private property, and costs of providing supplemental feed for bison. Many of the management issues surrounding the bison herd are controversial. Because of its distribution, the herd falls under the wildlife management jurisdictions of Grand Teton National Park, the National Elk Refuge, and the Wyoming Game and Fish Department. In addition, the Wyoming Livestock Board has authority to remove bison from some public and private lands if there are conflicts with landowners.

U.S. Forest Service related to elk, bison, and their habitat in Bridger-Teton National Forest.

PURPOSE OF AND NEED FOR ACTION

Purpose

The purpose of the *Bison and Elk Management Plan* is to provide managers with goals, objectives, and strategies for managing bison and elk on the National Elk Refuge and in Grand Teton National Park for the next 15 years. The plan will contribute to the missions and management policies of the U.S. Fish and Wildlife Service and the National Park Service. Given the substantial contributions that the refuge and the park make to the Jackson bison and elk herds and the effects that the herds can have on surrounding habitats, the plan will also contribute to the herd objectives set by the Wyoming Game and Fish Department, as well as to several goals and objectives established by the

The identification of current issues does not discount the highly successful past and present efforts to conserve elk and bison in Jackson Hole. The success of the management program over the long history of the refuge and the park is due in large part to issues being identified and resolved, a process that is and should be ongoing.

Need

The plan considers changes in how the bison and elk herds are currently managed on the National Elk Refuge and in Grand Teton National Park in order to meet legal obligations, to address problems related to high animal concentrations and effects on habitat, and to take advantage of unmet opportunities. The need for action comes from many directions, as described below.

1998 Lawsuit to Stop Bison Hunting — In 1996 a *Jackson Bison Herd Long-term Management Plan and Environmental Assessment* was completed by the National Park Service and the U.S. Fish and Wildlife Service, with the

Wyoming Game and Fish Department and the U.S. Forest Service participating as cooperating agencies. The selected alternative called for public hunting on the refuge and in Bridger-Teton National Forest to control the rapidly growing bison population and the artificial concentration of bison during the winter. Both of these factors were contributing to the increased risk of disease transmission, competition with elk and other wildlife, property damage, erosion, and overgrazing.



Elk migration on the National Elk Refuge.



Neotropical migratory birds nest on the refuge and in the park.

Before the plan was implemented, the Fund for Animals successfully sued in 1998 to prevent any “destructive management” of bison for population control until the effects of the refuge’s winter feeding program on bison were more fully analyzed in accordance with the National Environmental Policy Act.

Following the lawsuit, the U.S. Fish and Wildlife Service and the National Park Service decided to broaden the management planning process to include all aspects of elk management, in addition to bison management.

Issues Related to Elk/Bison Concentrations — While there have been many benefits associated with wintering large numbers of elk and bison on the refuge, high animal concentrations have created an unnatural situation that has contributed to the following problems:

- an increased risk of potentially major outbreaks of exotic diseases, including bovine tuberculosis and chronic wasting disease, neither of which has yet been documented in the Jackson herds
- damage to and loss of habitat due to browsing of willow, cottonwood, and aspen stands, with resultant reductions in wildlife associated with healthy stands

The need for winter feeding remains much the same as it was in 1912 — there is an insufficient amount of winter range to support the numbers of elk that occupy the Jackson Hole area, and this has been true for more than 100 years. Supplemental feeding to make up the deficit in native forage has also contributed to an expanding bison population, adding to the overall problem.

- unusually low winter mortality of bison and elk, which affects predators, scavengers, and detritivores and which necessitates intensive hunting programs
- a high level of brucellosis in the elk and bison herds

Winter Feeding as a Response to Insufficient Winter Range — All of the biological issues identified above stem from the winter feeding program on the National Elk Refuge. Even though winter feeding was started to mitigate the loss of former winter range to other land uses, it has benefited the elk population by reducing winter mortality and allowing the herd to grow. At the same time local ranchers’ haystacks and livestock pastures have been protected from depredation by foraging elk. As previously discussed, supplemental feeding has also contributed to a growing bison population.

LEGAL AND POLICY GUIDANCE

National Elk Refuge

The National Elk Refuge is part of the National Wildlife Refuge System. The *fundamental* mission of this system, according to Congress, is the conservation of fish, wildlife, and plants, where conservation is defined as sustaining healthy populations of these organisms. Characteristics of a healthy wildlife population include a

stable and continuing population (i.e., the population returns to an initial equilibrium after being disturbed) and a minimized likelihood of irreversible or long-term effects.

While the National Elk Refuge was established in 1912 as a “winter game (elk) reserve,” over the years its purpose has been broadened to include “refuges and breeding grounds for birds, other big game animals, the conservation of fish and wildlife, the protection of natural resources, and the conservation of threatened or endangered species.”

USFWS policy directs that wildlife population levels on national wildlife refuges be maintained

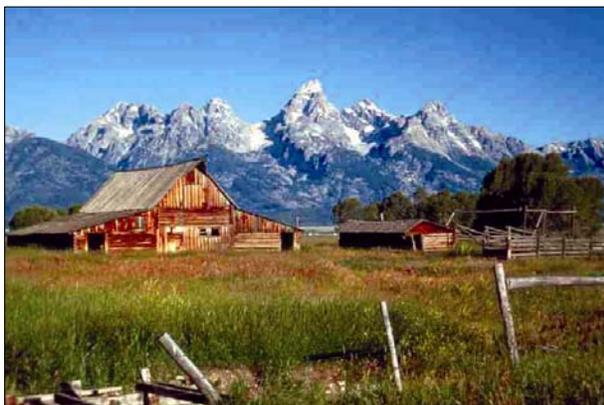
at levels consistent with sound wildlife management principles, that populations be managed for natural densities and levels of variation, and that population management activities contribute to the widest possible natural diversity of indigenous fish and wildlife, even when population management activities are implemented for a single species.

However, USFWS policy also requires that wildlife densities do not reach excessive levels that would result in adverse effects on habitat and other wildlife species, including increased disease risks.

Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway

The purpose of national parks, as stated in the NPS Organic Act, is “to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”

Grand Teton National Park is dedicated to the preservation and protection of the Teton Range and its surrounding landscapes, ecosystems, and cultural and historic resources. The singular geologic setting makes the area and its features unique. Human interaction with the landscape and ecosystem has resulted in an area that is rich in natural, cultural, and historic resources and that represents the natural processes of the Rocky Mountains and the cultures of the American West. The purpose of Grand Teton National Park is to



Moulton barn in Grand Teton National Park.

protect the area’s native plant and animal life, its cultural and historic resources, and its spectacular scenic values, as characterized by the geologic features of the Teton Range and Jackson Hole.

John D. Rockefeller, Jr., Memorial Parkway was established to commemorate the contributions to the cause of conservation made by John D. Rockefeller, Jr. The purpose of the parkway is to conserve the scenery and natural and historic resources and to provide for their use while leaving them unimpaired for future generations.

In accordance with NPS *Management Policies 2006*, the focus of natural resource conservation in all National Park System units will be at an ecosystem level, emphasizing natural abundance, diversity, and genetic and ecological integrity of native species in an ecosystem. Normally, the Park Service will not intervene in natural biological or physical processes except when an ecosystem’s functioning has been disrupted by human activities or when park-specific legislation authorizes particular activities (such as livestock grazing and elk herd reductions in Grand Teton National Park).

For migratory species, such as the elk and bison in Grand Teton, NPS policies encourage the adoption of resource preservation and use strategies to maintain natural population fluctuations and processes. The survival of the species in national parks also depends on the existence and quality of habitats outside the parks. Thus, the Park Service must work with other land managers to encourage the conservation of the populations and habitats of these species outside parks whenever possible.

PLANNING PROCESS

PUBLIC, TRIBAL GOVERNMENTS, AND OTHER STAKEHOLDER ISSUES

Seven significant issues were identified during the public involvement process and tribal government consultation. These issues were considered in the formulation of the objectives and strategies for the plan.

1. *Bison and Elk Populations and Their Ecology* — Most members of the public generally want healthy bison and elk herds,

whether for the abundance of recreational opportunities or for the benefit of the animals themselves and the ecosystem. There was no agreement about how many animals should be in each herd, or how to reach those numbers.

2. *Restoration of Habitat and Management of Other Species of Wildlife* — Some people want to see habitat restored and improved, but opinions differ on the specifics of this goal.
3. *Winter Feeding Operations for Bison and Elk* — Some stakeholders disagree with the concept of providing supplemental feed to elk and bison, while others believe supplemental feed should be provided every year.
4. *Disease Prevalence and Transmission* — Brucellosis and the high rates of infection in both the bison and elk herds is of concern because of the economic effect it could have on livestock producers if cattle contract the disease. Some stakeholders are concerned about the potential of more serious non-endemic diseases, such as bovine tuberculosis or chronic wasting disease, getting into the herds.
5. *Recreational Opportunities* — Many people are concerned that changes in the management of elk and bison on the National Elk Refuge and in Grand Teton National Park would impact hunting and viewing opportunities.
6. *Cultural Opportunities, Traditions, and Lifestyles* — Tribal representatives and other members of the public have stated that American Indian tribes should be actively



Elk feedline on the refuge.

involved in decisions regarding bison. Some Native Americans have traditions and spiritual values that are closely associated with both elk and bison. Local residents are also concerned about how changes in elk and bison management would affect their own traditions and lifestyles, which are in part dependent on wide-open spaces and plentiful wildlife.

7. *Commercial Operations and the Local and Regional Economy* — Wildlife viewing and hunting opportunities contribute to the local economy, and many businesses, including outfitters and dude ranchers, depend on abundant wildlife.

COMMENTS AND RESPONSES ON THE DRAFT AND FINAL ENVIRONMENTAL IMPACT STATEMENTS

Draft Environmental Impact Statement

The *Draft Bison and Elk Management Plan and Environmental Impact Statement* was available for public review from July 21, 2005, to November 7, 2005. In late August 2005 the U.S. Fish and Wildlife Service and the National Park Service held a series of public open houses and formal hearings in Bozeman, Montana; Jackson, Wyoming; and Riverton, Wyoming. In addition to the public hearing testimony, public comments were also received in the form of letters, e-mails, form letters, and petitions.

During the comment period, the agencies received over 11,900 written comments and public testimony from 241 individuals, 37 governmental agencies and organizations, and 1,751 form letters or petitions. While many issues were raised, most of the concerns focused on the following topics:

- Population management
- Habitat management
- Supplemental feeding
- Disease
- Public use and economics
- Legal mandates and jurisdiction
- Native American tradition and history

The most common concerns or issues expressed in individual comments (including form letters) were:

1. Support for protecting and restoring wildlife migration routes

2. Opposition to the use of existing vaccines
3. Suggestion that bison should be managed like other big game species
4. Suggestion that supplemental feeding should be phased out
5. Suggestion that populations should be managed with hunting and habitat protection
6. General concerns about disease
7. Concern that a disease outbreak could jeopardize local outfitting and ranching opportunities
8. Support for supplemental feeding
9. Concern about impacts to other species if elk and bison feeding was reduced
10. Support for reducing the size of the bison herd

This list does not include issues in letters from agencies or organizations, which were responded to separately.

Final Environmental Impact Statement

Responses by the U.S. Fish and Wildlife Service and the National Park Service to all substantive comments (including individual comments, agency comments, and form letters) on the *Draft Environmental Impact Statement* were included in the *Final Environmental Impact Statement*. A list of the significant changes made from the *Draft Environmental Impact Statement* can be found in the “Planning Process” chapter of this document.

The *Final Bison and Elk Management Plan and Environmental Impact Statement* was published on February 2, 2007, and the 30-day waiting period ended on March 12, 2007. A total of 938 e-mails were received from individuals and 5 letters from organizations. The majority of e-mails were petitions in support of Alternative 6 with changes, while two individuals opposed hunting. A total of 4,738 comments (including signers of petitions) were recorded. In addition, a meeting was held with the Shoshone-Bannock Tribes on March 9, 2007, at Fort Hall, Idaho, to discuss the tribes’ concerns about the *Final Plan and Environmental Impact Statement*.



Moose in Grand Teton National Park.

Comments on the *Final Plan and Environmental Impact Statement* focused on the following concerns:

- Supplemental feeding
- Adaptive management framework
- Legal mandates
- Fencing
- Bison
- Vaccination
- Tribal concerns
- Hunting

Issues raised about supplemental feeding, legal mandates, bison population objectives, habitat modeling assumptions, vaccination, and hunting were addressed in *Volume 2: Responses to Comments on the Final Plan and Environmental Impact Statement*, and changes were made in the final plan. Other issues that warrant further clarification are discussed below.

- *Adaptive Management Framework* — The plan does not identify whether or not feeding will be phased out within 15 years; instead, it focuses on achieving the desired conditions that have been identified through an adaptive, progressive, and collaborative approach that incorporates different objectives and tools (strategies) for managing these populations.



Riparian habitat along Pilgrim Creek in Grand Teton National Park.

- *Fencing* — The need for additional fencing on the refuge other than that identified in the final plan is not anticipated, but there is flexibility to work with adjacent landowners, the state, and others to identify strategies (including fencing) for reducing elk and bison conflicts on private lands.
- *Tribal Concerns* — The option of potentially allowing the tribes to take a small number of bison for the purposes of a ceremonial event remains a sensitive issue for the state as well as the tribes. The population objectives for bison and the subsequent analysis would remain unchanged regardless of whether a small taking for ceremonial purposes was eventually allowed, and discussions with the tribes will continue. Other tribal concerns were addressed in volume 2 of the *Final Plan and Environmental Impact Statement*.

RECORD OF DECISION

The “Record of Decision” for the plan was signed by the Regional Directors of the U.S. Fish and Wildlife Service and the National Park Service on April 26, 2007.

The “Record of Decision” provides a summary of the planning and analysis process, including the purpose of and need for the plan, the issues identified during the public process, the alternatives that were considered and analyzed in the *Final Environmental Impact Statement*, the public input process, and the basis for the decision to implement the Preferred Alternative — Adaptively Manage Habitat and Populations, as

described in this document under “Management Direction.”

MANAGEMENT DIRECTION

DESIRED CONDITIONS

By the end of the 15-year implementation period, the National Elk Refuge and Grand Teton National Park provide winter, summer, and transitional range for large portions of the Jackson bison and elk herds. The environment supports a full complement of native plant, wildlife, and breeding bird species. Refuge and park staffs, working with others, adaptively manage bison and elk in a manner that contributes to the state’s herd objectives yet allows for the biotic integrity and environmental health of the resources to be sustained. As a result, the public enjoys a variety of compatible, wildlife-dependent recreational opportunities.

MANAGEMENT GOALS

Four goals for the bison and elk management plan have been established. They are based on the purposes of the National Elk Refuge and Grand Teton National Park, the missions of the National Wildlife Refuge System and the National Park System, and other legal and policy directives. The goals also consider input from stakeholders.

Goal 1: Habitat Conservation

National Elk Refuge — Provide secure, sustainable ungulate grazing habitat that is characterized primarily by native composition and structure within and among plant communities and that also provides for the needs of other native species.

Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway — In concert with restoring and perpetuating natural ecosystem functioning in Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway, restore and maintain the full range of natural structural and compositional characteristics of native habitats used by bison and elk, emphasizing the plant species diversity that native habitats would support.

Goal 2: Sustainable Populations

National Elk Refuge — Contribute to elk and bison populations that are healthy and able to adapt to changing conditions in the environment and that are at reduced risk from the adverse effect of non-endemic diseases.

Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway —

Perpetuate to the greatest extent possible natural processes and the interactions of bison and elk with natural environmental fluctuations that are influenced by fire, vegetation succession, weather, predation, and competition. At the same time support public elk reductions in Grand Teton National Park, when necessary, to achieve elk population objectives that have been jointly developed by the Wyoming Game and Fish Department, Grand Teton National Park, and the National Elk Refuge. Support elk hunting in the John D. Rockefeller, Jr., Memorial Parkway that is consistent with its establishing legislation.

Goal 3: Numbers of Elk and Bison

Contribute to the WGFDF herd objectives for the Jackson elk and bison herds to the extent compatible with Goals 1 and 2, and the legal directives governing the management of the National Elk Refuge and Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway.

Goal 4: Disease Management

Work cooperatively with the state of Wyoming and others to reduce the prevalence of brucellosis in the elk and bison populations in order to protect the economic interest and viability of the livestock industry, and reduce the risk of adverse effects for other non-endemic diseases not currently found in the Jackson elk and bison populations.

MANAGEMENT PLAN OVERVIEW: ADAPTIVELY MANAGE HABITAT AND POPULATIONS

The Jackson bison and elk herds and their habitat will be adaptively managed on the refuge and in the park, with an emphasis on improving winter, summer, and transitional range in the park and on the refuge and on ensuring that the biotic integrity and environmental health of the resources will be sustained over the long term. A dynamic framework for decreasing the need for supplemental feeding on

the refuge will be developed and implemented in close cooperation with the Wyoming Game and Fish Department and will be based on existing conditions, trends, new research findings, and other changing circumstances. Population management, vegetation restoration, ongoing monitoring, and public education will be integral components of this framework.

The U.S. Fish and Wildlife Service and the National Park Service will collaborate with the Wyoming Game and Fish Department to maintain the Jackson elk herd at the state's objective of approximately 11,000 animals. Following the initial implementation of a phased approach, approximately 5,000 elk will be expected to winter on the refuge. As herd sizes and habitat objectives are achieved, further reductions in feeding or elk numbers may occur based on established criteria and changing social, political, or biological conditions. Bison and elk hunting on the refuge, and when necessary, the elk herd reduction program in the park, will be used to assist the state in managing herd sizes, sex and age ratios, and summer distributions.

The park and refuge will work with the Wyoming Game and Fish Department to maintain and ensure a genetically viable population of approximately 500 bison.

The Wyoming Game and Fish Department will be permitted to vaccinate elk and bison for brucellosis on the refuge as long as it is logistically feasible. Management actions will not be designed to specifically facilitate vaccination.



Elk in Grand Teton National Park.

SUPPLEMENTAL ACTIONS

The following ongoing activities will be taken independent of the plan:

- *Invasive Weed Control, Nonnative Plant Species Control, and Integrated Pest Management* — The control of invasive weeds and integrated pest management for both the refuge and the park will continue. The U.S. Fish and Wildlife Service and the National Park Service will continue working together and with the Teton County Weed and Pest Control District, the U.S. Forest Service, the Wyoming Game and Fish Department, and private landowners to manage invasive species. Efforts to eradicate cheatgrass and crested wheatgrass will continue on the refuge, much as they have in the recent past.
- *Jackson Hole Interagency Habitat Initiative* — The U.S. Fish and Wildlife Service and the National Park Service will continue to work cooperatively with other agencies in identifying opportunities to improve habitat for elk and bison.
- *Jackson Elk Studies Group and Greater Yellowstone Interagency Brucellosis Committee* — The U.S. Fish and Wildlife Service and the National Park Service will continue to participate in these groups to assess the risk for brucellosis transmission from elk or bison to livestock.
- *Livestock Grazing* — The plan will not change livestock grazing practices in the park, nor will it mandate that such use continue.
- *Chronic Wasting Disease* — Efforts will be coordinated with the Wyoming Game and Fish Department to increase the surveillance of elk

for chronic wasting disease. If infection is found, WGFD strategies for state feedgrounds will be used to reduce the transmission risk. These strategies include removing infected elk, removing 50 animals within 5 miles when an infected animal is found, and removing an additional 50 animals within 10 miles if another infected animal is found during collection of the initial 50; enforcing carcass movement and disposal restrictions; decreasing duration of feeding and expanding the distribution of feeding to the extent possible; and potentially decreasing elk densities through hunting or other management strategies. Plans to follow the state CWD management plan have been made in deference to the state and could change if the National Park Service and/or the U.S. Fish and Wildlife Service adopted servicewide management requirements that differed from what is currently being done. Potential changes would be communicated to the state.

- *Strategies for Hunting/Reduction Programs* — The U.S. Fish and Wildlife Service and the National Park Service will work cooperatively with the Wyoming Game and Fish Department to achieve population objectives (including herd ratios and elk herd segment sizes), to develop hunting or reduction seasons, and to evaluate hunting or elk reduction areas. The Wyoming Game and Fish Department will formally establish objectives and strategies after public review and approval by the Wyoming Game and Fish Commission.

PLAN IMPLEMENTATION

Selected management actions and projects will be implemented as funds became available. This document does not constitute a commitment for funding, and future budgets could influence implementation priorities.



Elk with chronic wasting disease.

Photo courtesy of Terry J. Kreeger, WGFD