

# MANAGEMENT DIRECTION

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# OVERVIEW OF THE PLAN

## DESIRED CONDITIONS

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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.

## BISON AND ELK MANAGEMENT PLAN: ADAPTIVELY MANAGE HABITAT AND POPULATIONS

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The Jackson bison and elk herds and their habitat will be adaptively managed on the National Elk Refuge and in Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway, with an emphasis on improving winter, summer, and transitional range on refuge and park lands, while at the same time 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.

### HABITAT CONSERVATION

- Habitat restoration projects will be initiated to improve native and cultivated forage and achieve desired conditions and goals.



Wetland woodland habitat in good condition.

- Woody vegetation on the refuge will be protected by rotating small exclosures until habitats have recovered. Prescribed fire may be used and logging allowed on the refuge inside exclosures.
- About 4,500 acres of previously cultivated areas in Grand Teton National Park will be restored to native plant communities.
- The U.S. Fish and Wildlife Service and the National Park Service will work with private and agency partners to minimize bison/elk conflicts with adjacent landowners (e.g., by providing human and/or financial resources to manage co-mingling and reduce crop depredation by elk and bison on private lands).
- A public education effort will be initiated to build understanding of natural elk and bison behavior, ecology, distribution, disease implications, and effects to other species
- Criteria for beginning and ending feeding each year will be identified in consultation with the Wyoming Game and Fish Department.
- A structured framework of adaptive management actions will be developed in collaboration with the Wyoming Game and Fish Department and will include established criteria for progressively transitioning from intensive supplemental winter feeding to greater reliance

on free-standing forage, based on some or all of the following considerations:

1. level of forage production and availability on the National Elk Refuge
  2. desired herd sizes and sex and age ratios
  3. effective mitigation of bison and elk co-mingling with livestock on private lands
  4. winter distribution patterns of elk and bison
  5. prevalence of brucellosis, chronic wasting disease, and other wildlife diseases
  6. public support
- The U.S. Fish and Wildlife Service and the National Park Service will work in collaboration with the Wyoming Game and Fish Department to maintain the Jackson elk herd objective of 11,000 (after the initial phased approach, approximately 5,000 elk would be expected to winter on the refuge). As herd sizes and habitat objectives are achieved, feeding or elk numbers will be further reduced, based on established criteria and changing social, political, or biological conditions. Hunting will be used on the refuge, and when necessary, the elk herd reduction program in the park, to assist the state in managing herd sizes, sex and age ratios, and summer distributions.
  - The agencies will recommend that the Wyoming Game and Fish Department establish a genetically viable bison herd of approximately 500 animals, with as close to an even sex ratio as possible to maximize maintenance of genetic variation over time. A WGFD-administered bison hunt will be initiated on the refuge.
  - The Wyoming Game and Fish Department will be allowed to vaccinate elk and bison for brucellosis on the refuge as long as logistically feasible.

#### OTHER WILDLIFE-DEPENDENT RECREATION

- Over time wildlife viewing opportunities will be concentrated during some winters and will be more natural and sporadic during milder winters.
- The agencies will build public understanding and support for bison and elk management actions.

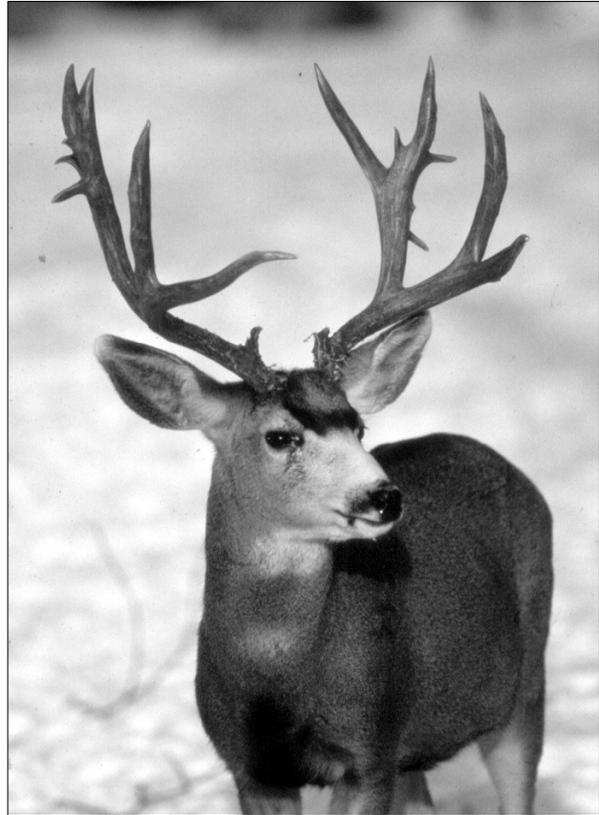
#### SUPPLEMENTAL ACTIONS

The following ongoing activities are independent of the bison and elk management actions:

- *Invasive Weed Control / Integrated Pest Management* — The control of invasive weeds and integrated pest management for both the refuge and the park will continue much as it has in the recent past using a variety of tools, including biological control, mechanical control, grazing by goats or sheep, and herbicides. The U.S. Fish and Wildlife Service and the National Park Service will continue to work in partnership with each other and with the Teton County Weed and Pest Control District, the U.S. Forest Service, the Wyoming Game and Fish Department, and private landowners.
- *Nonnative Plant Species Control* — Similar to the invasive weed control program, efforts to eradicate cheatgrass and crested wheatgrass will continue on the refuge, much as they have in the recent past. Management tools used may include mechanical control, herbicides, and biological control.
- *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 the Jackson Hole Elk Studies Group and the Greater Yellowstone Interagency Brucellosis Committee. As committee members, both agencies will pursue the development of risk assessment for brucellosis transmission from elk or bison to livestock.
- *Livestock Grazing* — The plan will not change livestock grazing practices in the park, nor is such use mandated to continue.
- *Chronic Wasting Disease* — Efforts will be made to coordinate with the Wyoming Game and Fish Department to increase surveillance in elk for chronic wasting disease (CWD), a fatal transmissible disease

of white-tailed deer, mule deer, and elk. The objective of surveillance will be to provide a 95% confidence level of discovering infection at 1% prevalence in the Jackson elk herd. If infection is found, strategies from the state's *Chronic Wasting Disease Management Plan* (WGFD 2006) will be implemented to reduce transmission. These strategies include removing clinically consistent elk, removing 50 animals within 5 miles of the index case, and another 50 within 10 miles if an additional positive animal is found during collection of the first 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's *Chronic Wasting Disease 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 differ from what is currently being done. Potential changes will be communicated to the state.

- *Winter Severity* — When winters are referred to as average, above-average, or severe in the text, snow accumulations would be similar to those used in modeling for the impact analysis (Hobbs et al. 2003). These rankings were based on 50 years of measuring inches of snow-water equivalent (the amount of water stored as snowpack) at the Hunter-Talbot hayfields in Grand Teton National Park (Farnes, Heydon, and Hansen 1999). Although various factors affect winter severity, snow-water equivalent was considered the best measure for predicting how ungulates would respond to winter conditions. Based on rankings of snow severity using the data by Farnes, Heydon, and Hansen, the winter of 1996 was designated as average, 1982 as above average, and 1997 as severe. (For more detailed information, see "Climate" on page **Error! Bookmark not defined.**)



Mule deer — another ungulate species on the refuge.

Determining when or if supplemental feeding will begin in a given winter will be based on specific criteria, including pre-winter forage production, forage amounts, snow quality and depth, ambient temperature, and elk behavior and body condition. Mortality is not one of these criteria.

- *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 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.

Map

Management Plan Overview

# PLAN GOALS, OBJECTIVES, AND STRATEGIES

Four goals for the bison and elk management plan were developed based on the desired conditions and 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 the input received from the public, American Indian tribes, and other stakeholder groups during the prescoping and scoping phases of the planning process. While public and tribal opinions vary greatly on how to manage the bison and elk populations, all recognize the significant resource and heritage values of these herds to the Jackson area, the state, tribal governments, and the nation. The plan is based on specific objectives and strategies to achieve these goals.

## GOAL 1: HABITAT CONSERVATION

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**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.

***Basis and Intent for the Goal:*** Based on the legal policy mandates for the National Elk Refuge, a balanced conservation program is one that will ensure the following:

- Healthy, productive grassland and woodland habitat will be sustained for the benefit of elk and bison as an overriding target, which will also benefit other native wildlife communities.
- All activities aimed at sustaining elk and bison numbers above the natural carrying capacity of the land (e.g., farming and irrigation, winter feeding) will not prevent the Fish and Wildlife Service from accomplishing other refuge purposes and other legal directives pertaining to other wildlife 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 the 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.

***Basis and Intent for the Goal:*** The conservation of park resources and values, and the maintenance of resources and values in an unimpaired condition, are the primary responsibilities of the National Park Service. Specifically, NPS managers are required to preserve natural components and processes of ecosystems in natural condition to the greatest extent possible, including natural change over time (NPS 2006, sec. 4.1).

Furthermore, the National Park Service does not attempt to solely preserve individual species (e.g., bison and elk) outside the context of preserving natural ecosystems. Rather, it attempts to maintain all components and processes of naturally evolving park ecosystems. This is why the goal to restore and maintain natural habitat conditions for bison and elk is prefaced by “in concert with restoring and perpetuating natural ecosystem functioning in Grand Teton National Park.”

## OBJECTIVES AND STRATEGIES

### National Elk Refuge

#### ***Land Protection on the Refuge***

##### ***Objective***

- ◆ Within one year identify any private lands within the approved boundary of the refuge that could be protected through a habitat-protection partnership, a trade, or a willing-seller / willing-buyer transaction to prevent development of these lands and to provide additional elk winter range.

***Rationale:*** This management plan does not constitute a commitment for funding the protection of additional lands within the approved refuge boundary. The Fish and Wildlife Service’s land acquisition policy is to obtain the minimum interest necessary to



Flood-irrigated field on the National Elk Refuge.

satisfy refuge objectives. If lands within the approved boundary become available, the service will seek ways to either protect them or acquire them for additional elk winter range.

#### Strategies

- ❖ Educate stakeholders at local, regional, and national levels as to the importance of protecting private lands within the refuge to sustain the Jackson elk and bison herds, breeding habitat for birds, and habitat for other native wildlife.
- ❖ Identify future funding necessary to acquire lands.
- ❖ Work with local landowners to identify and carry out mutually acceptable options to minimize adverse impacts on wintering elk and bison.

#### **Elk and Bison Grazing Habitat**

##### Objectives

- ◆ Based on annual monitoring of transitional and winter range and starting the first phase of plan implementation, annually produce on sprinkler-irrigated fields on the refuge an average of 5,000 pounds of forage per acre on about 400 acres and an average of 2,500 pounds per acre on 700 acres. Plant communities in these areas will be dominated by species with a high level of palatability and preferred by wintering elk and bison, will have high nutritional value and productivity, and will be able to remain upright under moderate snowpack.
- ◆ Based on annual monitoring of transitional and winter range and starting the first phase of

plan implementation, on flood-irrigated fields annually produce a minimum average of 2,500 pounds of forage per acre on up to 500 additional acres on the refuge, with the plant communities in these areas dominated by species exhibiting the characteristics listed above.

- ◆ For all plant communities that are grazed by elk and bison on the refuge, annually minimize the composition of invasive nonnative plant species; specifically:
  - ◇ Prevent new infestations of noxious weeds (spotted knapweed, diffuse knapweed, Russian knapweed, leafy spurge, dyer's woad, field bindweed, musk thistle, Canada thistle, sow thistle), crested wheatgrass, and cheatgrass.
  - ◇ Within 15 years restore to native species approximately 250 acres of cheatgrass and about 650 acres of crested wheatgrass.
  - ◇ Continue to restore native plant species in refuge areas currently dominated by spotted knapweed in the Gros Ventre River drainage at the rate of 2 acres per year for the next 15 years.

***Rationale:*** Producing high-quality standing forage on existing cultivated fields, using plant species that remain upright under moderate snowpack, will provide nutritional grazing habitat longer in late fall and early winter, thereby allowing supplemental feeding to be delayed and reducing concentrations of elk and bison. Increasing forage production will also provide the foundation for changing elk and bison management and will be an initial step in overall plan implementation. Invasive nonnative species are currently controlled in part because they hinder the production of preferred forage species in cultivated areas and reduce the prevalence of native forage species on native habitat.

##### Strategies

##### Irrigation and Farming:

- ❖ Use a variety of tools, including prescribed fire, irrigation, harrowing, and fertilizing, as well as blading in cultivated areas, to decrease crusting effects.

- ❖ As necessary, irrigate a minimum of 1,600 acres and increase sprinkler irrigation to 1,100 acres per year of the 1,590 acres that could be sprinkler irrigated. Enhance the flood-irrigation delivery system to irrigate an additional 500 acres.
- ❖ Use a combination of center pivot, side-roll, and hand-line sprinklers to replace flood irrigation. Use center pivots to irrigate approximately 290 acres in the McBride area, 200 acres in the Chambers area, 160 acres in the Peterson area, and 250 acres in the Nowlin area. Use supplemental side-roll and hand-line sprinklers to irrigate approximately 450 acres in the Ben Goe area and 240 acres in the Headquarters area (see the “Irrigation Project Areas of the NER” map).
- ❖ Improve delivery efficiency for flood irrigation by installing delivery pipes to the fields to replace delivery canals and ditches

#### Grazing Habitat:

- ❖ Restore winter and transitional grazing habitat on the refuge that has become dominated by nonnative species.

#### Native Winter Range:

- ❖ Fund a biological technician position to assist in establishing experimental plots to determine optimum species composition of acres to be restored. Use existing staff for restoration.
- ❖ Use native seed mixes of the intermountain west.
- ❖ Control wildland fires.

#### **Addressing Habitat Problems Related to Unnaturally High Elk and Bison Numbers on the Refuge**

**Background.** Woody vegetation on the refuge is adversely affected by high concentrations of animals. If a sufficient amount of woody vegetation starts to recover as the number of elk on the refuge declines, the objective number of elk may be revisited concurrent with an assessment of disease prevalence (see strategies under Goals 2 and 4). If sufficient habitat recovery does not occur after lowering elk and bison numbers on the refuge to objective levels, then numbers identified in the objectives may be further reduced.

#### Objectives

- ◆ Over the life of the plan protect sagebrush and grassland communities from degradation, maintain native structural and compositional characteristics, and allow degraded areas to recover, especially areas used by sage grouse and other sagebrush-dependent species. By year 5 of the plan define the desired characteristics of sagebrush and grassland communities for the development of the comprehensive conservation plan for the refuge.
- ◆ Over the life of the plan limit cultivated areas on the refuge to 2,400 acres that are already under cultivation.

**Rationale.** There are no objectives for balancing the needs of elk and bison with those of other wildlife. However, the National Elk Refuge has goals and objectives for perpetuating the migratory bird resource and preserving and enhancing related habitat



Side-roll sprinkler irrigation on the refuge.

Map

Irrigation Project Areas of the NER

(USFWS 1999b). Furthermore, the 1974 cooperative agreement between the U.S. Fish and Wildlife Service and the Wyoming Game and Fish Department recognizes the detrimental effects that large numbers of elk can have on habitat conditions.

- ◆ Restore 800 acres of willows to Class I or II condition (see **Error! Reference source not found.**, page **Error! Bookmark not defined.**, for a description of habitat classes).
- ◆ By year 15 of the plan allow for a sufficient level of aspen recruitment — including a minimum of 800 stems/acre that reach a height of 80 inches (2 meters) so as to be out of reach of ungulate browsers, at some point within each 100-year period. Maintain approximately 1,000 acres of aspen in Class I or II condition over the long term.

**Rationale:** Because individual aspen stems generally live about 150 years and the last major stand replacement fire on the refuge occurred 120 years ago, aspen recruitment in many aspen stands will need to occur within the next 30 years. (Within-community characteristics will be specified in the upcoming comprehensive conservation plan for the refuge.)

- ◆ By year 15 of the plan allow for a sufficient level of cottonwood recruitment — including a minimum of 0.17 stem/meter that reaches a height of 80 inches (2 meters) so as to be out of reach of ungulate browsers at some point within each 100-year period — throughout each cottonwood stand in order to maintain approximately 1,000 acres of cottonwood in Class I or II condition over the long term. (Within-community characteristics will be specified in the upcoming comprehensive conservation plan for the refuge.)

**Rationale:** The 100 acres of proposed cottonwood fencing will be for the upper Flat Creek riparian area. Most of the 1,000 acres in Class I or II condition will be in the Gros Ventre River bottom. The Gros Ventre receives considerably less elk use than the Flat Creek riparian area and is topographically separated from feedgrounds. Some of the Gros Ventre River bottom is already in Class II to III condition under the current management regime. With reduced elk numbers, the

recovery of cottonwoods in the Gros Ventre River bottom to Class II condition will be possible. Unlike aspen, narrowleaf cottonwood is not typically a palatable plant for elk or bison. It is only eaten when elk or bison are at unusually high densities and consuming an unusual diet (pellets), as found near feedgrounds.

- ◆ By year 5 of the plan maintain at a minimum the existing proportion of the wet meadow community that remains ungrazed to lightly grazed each year (an estimated 15%–20%) and collect a sufficient amount of field data on vegetation and wildlife use within the community type, as well as published literature, to formulate a quantitative objective for the upcoming comprehensive conservation plan for the refuge.
- ◆ Limit cultivated areas on the refuge to 2,400 acres that are already under cultivation.

#### Strategies

##### Winter Supplemental Feeding:

- ❖ Provide supplemental feed away from riparian areas.

##### Water Management:

- ❖ Enhance the restoration of narrowleaf cottonwood communities along Flat Creek above the intake from the Gros Ventre River by reducing the amount of water that is diverted from the upper creek for irrigation on the refuge. Use sprinkler irrigation systems more frequently to increase water-use efficiency.

##### Woody Vegetation:

- ❖ Initially, fence approximately 500 acres of former willow habitat, 100 acres of remnant cottonwood communities along upper Flat Creek, and 1,000 acres of aspen habitat to exclude elk and bison so that these communities can recover. As grazing pressure decreases, reduce the amounts of fencing and/or rotate enclosures.

**Rationale:** Stands of woody vegetation in Jackson Hole likely received some level of browsing pressure historically, but browsing pressure was low enough at times to allow

successful recruitment and maintenance of willow, aspen, and cottonwood stands on the refuge (Dobkin, Singer, and Platts 2002). Exclosures will not encompass the entire historical distribution of willows, aspen, and cottonwoods. The somewhat unnatural situation within the exclosures will compensate for heavily browsed stands and the complete loss of other stands outside the exclosures.

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

#### **Objectives**

- ◆ Restore and perpetuate a natural mosaic of climax and seral vegetation within each vegetation type used by bison and elk.
  - ◇ On grassland, meadow, sagebrush, and early seral forest communities within transitional and winter ranges in Grand Teton National Park, ensure that a natural amount and quality of forage is available for bison and elk during fall migration and wintering periods.

**Rationale:** Converting formerly cultivated areas to native plant communities will be the best long-term strategy to control invasive plants. Habitat restoration in the park, including invasive weed control, will continue for native wildlife communities. Elk and bison will continue to benefit from prescribed fire, invasive weed control, and research into the most effective applications of both programs to benefit elk, bison, and their native habitats.



Condition of habitat on the National Elk Refuge.

#### **Strategies**

- ❖ Begin conversion of all formerly farmed and irrigated areas in the southern portion of the park (approximately 4,500 acres) to native plant communities.
- ❖ Seek funding for a study involving experimental plots to determine the most efficient and acceptable methods of eradicating smooth brome and other agricultural plant species (needed prior to reseeding efforts), and to determine which native species would have the highest probability of successful reestablishment.

### **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.

**Basis and Intent for the Goal:** The mission of the National Wildlife Refuge System requires that refuges sustain healthy populations of wildlife (16 USC 668dd(a)(2), 668dd(a)(3)(A), 668ee(4)), to the extent consistent with refuge purposes (16 USC 668dd(4)(D)). In general, a healthy population refers to a population that continues or is sustainable over the long term, with minimized risks of irreversible or long-term adverse effects to the herds and other species (50 CFR 100.4). The purpose of this goal is to contribute to sustaining a healthy population because the National Elk Refuge is only part of the area inhabited by the Jackson herds and cannot, by itself, sustain the entire bison or elk population.

**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 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,



Elk feeding on alfalfa pellets.

Jr., Memorial Parkway that is consistent with its establishing legislation.

***Basis and Intent for the Goal:*** NPS policies require that elk and bison be managed in such a manner that their populations will be perpetuated or sustained over the long term. Because most of the elk and bison summering in Grand Teton National Park and John D. Rockefeller, Jr., Memorial Parkway overwinter on the National Elk Refuge, the successful achievement of Goal 2 for the refuge is critical to meeting NPS mandates for the park.

## OBJECTIVES AND STRATEGIES

### Background

To achieve the desired conditions for this plan, it is critical to conserve a suitable habitat base and adapt to changing conditions in the environment. The following objectives and strategies are supplementary to the objectives and strategies in Goal 1, which would have to be met in order for Goal 2 to be achieved.

### Objectives

- ◆ By year one, develop a structured framework, in collaboration with the Wyoming Game and Fish Department, of adaptive management criteria and actions for transitioning from intensive supplemental winter feeding of bison and elk herds to greater reliance on natural forage on the refuge. Establish objective criteria for when supplemental feeding will begin and end in years when needed on the refuge.

***Rationale:*** The agencies will work in collaboration with the Wyoming Game and Fish Department to develop the framework but will inform stakeholders prior to finalizing or implementing this framework. All decisions as to when to start or end feeding will be made by the refuge manager in consultation with the WGFD regional wildlife supervisor for Jackson/Pinedale and will be documented in a new memorandum of understanding between the agencies.

- ◆ Implement a phased approach to reducing the number of animals on feed while achieving the state's population objectives. The first phase objective will be to reduce the number of elk on feed on the National Elk Refuge to approximately 5,000 and achieve a target population of approximately 500 bison (see recommendation to the Wyoming Game and Fish Department below). The second phase objective will be to adaptively manage bison and elk populations to achieve desired conditions, with animals relying predominantly on available native habitat (on refuge, park, and forest lands) and cultivated forage (on the refuge).

***Rationale:*** The elk numbers assume that the Wyoming Game and Fish Department's elk herd objective of about 11,000 has been achieved and that higher numbers of elk would subsist on natural forage during winter. The objectives are based on current science and knowledge, but it is recognized that as conditions or knowledge change, various factors could result in different management actions. Depending on weather, success of forage cultivation on the refuge, and other factors, adaptively implementing the second phase of this plan could result in other necessary modifications of the Jackson elk herd objective. This would occur only at the state's prerogative following a comprehensive public review process, but would be encouraged by the U.S. Fish and Wildlife Service and the National Park Service if required to achieve desired conditions.

- ◆ For the park segment of the Jackson elk herd only, work cooperatively with the Wyoming Game and Fish Department to achieve desired bull-to-cow ratios that are more reflective of non-hunted populations (the initial recommendation will be 35 bulls to 100 cows in summer only).

- ◆ For the bison population, work collaboratively with the Wyoming Game and Fish Department to maintain and ensure a genetically viable population of approximately 500 animals (five-year average), with as close to an even sex ratio as possible to maximize maintenance of genetic variation over time; and work cooperatively with the department to achieve this objective.
- ◆ Within one year initiate a public education effort to build understanding of natural bison and elk behavior, population fluctuations, and ecological relationships with other species. Over the life of the plan work in collaboration with local governments to maintain opportunities for compatible wildlife observation during the winter.

### **Strategies**

#### Elk Population Control:

- ❖ Work with the Wyoming Game and Fish Department to increase harvest efficiency, such as by expanding hunting areas and opportunities on the National Elk Refuge and by continuing to target cows on the refuge as well as in Grand Teton National Park. It will be the responsibility of the Wyoming Game and Fish Department to formally establish objectives and strategies after public review and approval by the Wyoming Game and Fish Commission.
- ❖ Work with private and agency partners to minimize conflicts with adjacent landowners (e.g., by providing human and/or financial resources to reduce crop depredation by elk and/or bison on private lands).
- ❖ Initiate a public education effort to build understanding of natural elk behavior, ecology, distribution, population dynamics, and expected herd fluctuations.
- ❖ Consider options on the southern end of the refuge designed to increase harvest opportunities for early migrating elk, such as implementing an early season hunt or other management options (e.g., public educational activities on the refuge).
- ❖ As population level and harvest demands allow, consider temporary or adaptive closures of the Blacktail Butte/Kelly hayfields area in the park to the elk herd reduction program, as well as the

northern portion of the refuge to hunting, to increase the use of transitional and winter habitat.

- ❖ Continue hazing elk off refuge lands (on a case-by-case basis) during the growing season to prevent grazing of winter forage.

#### Bison Population Control:

- ❖ Working cooperatively with the Wyoming Game and Fish Department, implement a public hunt on the refuge to achieve a population objective for the bison herd of approximately 500. Manage the hunt in accordance with state licensing regulations and procedures. Determine start and end dates in collaboration with WGFD personnel. Prior to implementation, develop a refuge hunting step-down plan (see “Other USFWS Policy Constraints,” page **Error! Bookmark not defined.**, on step-down plan requirements).
- ❖ In addition, potentially allow the removal of up to five bison annually on the National Elk Refuge for ceremonial purposes by Native American tribes.
- ❖ Continue hazing bison off refuge lands (on a case-by-case basis) during the growing season to prevent grazing of winter forage.

#### Winter Supplemental Feeding:

- ❖ Based on established objective criteria developed in collaboration with the Wyoming Game and Fish Department, implement actions to phase in a transition from intensive supplemental winter feeding to a greater reliance on free-standing forage that could include the following: delay the



Bison on Antelope Flats in Grand Teton National Park.

onset of feeding each year, decrease the average daily ration per elk or bison (adjusted for winter severity), decrease the number of days of supplemental feeding, decrease the frequency of years of providing supplemental feed, increase harvest levels, and implement mitigation measures with the Wyoming Game and Fish Department to reduce conflicts created by the redistribution of elk and bison.

- ❖ Consider factors such as the amount of forage produced on the refuge, snow conditions, and numbers of overwintering elk and bison in determining whether or not to provide supplemental food.
- ❖ In cultivated areas with high forage production that become inaccessible to elk because of crusting events, use mechanical means to increase access to forage.
- ❖ As habitat and population objectives are achieved, decrease reliance on intensive supplemental winter feeding, including complete transition to free-standing forage if and when several established criteria are met, including support from the Wyoming Game and Fish Department and the public.

**Rationale:** Implementing a phased transition from intensive supplemental winter feeding to greater reliance on free-standing forage will help maintain lower elk numbers on the refuge as a result of behavioral changes (fewer elk would know about supplemental feeding on the refuge and more should remain on native winter range). Reduced concentrations of wintering animals on supplemental feed would also be expected to reduce the transmission of wildlife diseases.

### **GOAL 3: NUMBERS OF ELK AND BISON**

**National Elk Refuge and Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway.** Contribute to the WGFD 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, Grand Teton National Park, and John D. Rockefeller, Jr., Memorial Parkway.

**Basis and Intent of the Goal:** Both the U.S. Fish and Wildlife Service and the National

Park Service are required to work with other agencies managing the same resources. The Fish and Wildlife Service is required to coordinate the development of comprehensive conservation plans with state wildlife conservation plans to the extent practicable and not inconsistent with legal directives (16 USC 668dd(e)(3)(B)). Contributing to WGFD herd objectives is consistent with the USFWS policy calling for refuges to contribute to natural population densities and natural levels of variation at larger landscape scales, especially when habitat has been lost in the surrounding landscape or ecosystem (USFWS 2001, sec. 3.7.C, 3.14.C). USFWS policy allows higher winter densities of elk and bison on the refuge in order to allow natural densities to be sustained during other seasons in the southern greater Yellowstone ecosystem, providing that the refuge is managed primarily to fulfill refuge purposes and to achieve the mission of the National Wildlife Refuge System (16 USC 668dd(a)(3)(A)).

NPS policy speaks generally to contributions that national parks make to conserving species at larger landscape scales. For example, “in addition to maintaining all native plant and animal species and their habitats inside parks, the [National Park] Service will work with other land managers to encourage the conservation of the populations and habitats of these species outside parks whenever possible” (NPS 2006, sec. 4.4.1.1). However, there are no allowances for permitting elk or bison populations to exceed natural densities in Grand Teton National Park, even when this would contribute to natural population levels for the larger landscape. Public Law 81-787 requires the National Park Service, in cooperation with the Wyoming Game and Fish Department, to implement a program for ensuring the permanent conservation of elk within Grand Teton National Park. Therefore, the park’s contribution to WGFD herd objectives will be dictated by natural population densities and natural population fluctuations in the park and parkway (see Goal 2).

## OBJECTIVES AND STRATEGIES

### Contributions to WGFD Herd Objectives

#### Objectives

- ◆ Work collaboratively with the Wyoming Game and Fish Department to achieve a herd objective of about 11,000 elk for the Jackson herd.
- ◆ Work cooperatively with the Wyoming Game and Fish Department to maintain and ensure a genetically viable population of approximately 500 bison.

**Rationale:** Achieving the objectives and strategies outlined under Goals 1 and 2 will also enable Goal 3 to be accomplished, and additional objectives or strategies would not be necessary.

#### Strategies

##### Winter Supplemental Feeding:

- ❖ Work with the Wyoming Game and Fish Department to determine start and end dates for feeding.

## GOAL 4: DISEASE MANAGEMENT

**National Elk Refuge and Grand Teton National Park / John D. Rockefeller, Jr., Memorial Parkway.** 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 to reduce the risk of adverse effects for other non-endemic diseases not currently found in the Jackson elk and bison populations.

**Basis and Intent of the Goal:** Elk and bison management on the refuge and in the park are not limited to actions taken to benefit these species. Their management also involves mitigating unintended consequences of past, present, and potential future management of elk and bison on the refuge and in the park. For example, winter feeding is responsible for a high prevalence of brucellosis in elk and bison. Brucellosis does not pose a risk to the elk and bison populations inhabiting the refuge and the park (Smith and Robbins 1994; B. L. Smith 2001; NPS and USFWS 1996), and it is widely viewed that brucellosis is

primarily an issue of importance to the livestock industry (Thorne et al. 2002; Hendry 2002; Ragan 2002a and 2002b). Because of the potentially severe effects that brucellosis outbreaks in cattle could have on the Wyoming livestock industry, the *Draft and Final Environmental Impact Statements* examined a range of alternatives for addressing this issue.

The “economic interest and viability of the livestock industry” in the State of Wyoming is directly tied to maintaining the regional class-free designation for the state by the Animal and Plant Health Inspection Service. Class-free status could be affected by the way in which elk and bison are managed on the refuge and in the park because the potential exists for infected elk or bison to transmit the disease to susceptible livestock (those that either have no natural immunity, have not been vaccinated, or have been vaccinated but the vaccination did not impart immunity).

## OBJECTIVES AND STRATEGIES

#### Objectives

- ◆ For the life of the plan continue efforts to lower the risk of brucellosis transmission to livestock by concentrating elk and bison on the refuge and keeping them separated from livestock during the first part of the critical period of potential transmission (February–March).
- ◆ For the life of the plan conduct winter feeding activities in ways that reduce brucellosis transmission within the elk and bison herds.
- ◆ Annually work in collaboration with WGFD personnel to inform hunters about elk and bison disease status and potential human and/or wildlife health hazards, health risks, and recommended handling practices.

**Rationale:** In the short term diseases will be managed in much the same way they are now. Over the long term the focus will be on implementing new disease control measures and working with partners to correct the underlying causes of elevated disease prevalence and transmission rates. It is recognized that there is little that the Fish and Wildlife Service or the Park Service can do to actually prevent the introduction of new diseases.

## Strategies

### Disease Control and Prevention:

- ❖ Eliminate the use of all equipment that has been previously used in areas and facilities with known occurrences of non-endemic invasive diseases.
- ❖ For disease control, continue winter supplemental feeding at four areas on the refuge; change feeding sites daily in each area; spread feed along long meandering lines; and separate elk and bison to the extent possible.
- ❖ Allow WGFD personnel to use Strain 19 on elk and RB51 on calf and nonpregnant female bison along feedlines during feeding operations, but phase out if logistics prevent effective deployment or when other more effective strategies are found.

**Rationale:** This program will be conducted until more efficacious vaccines are found. Despite the low efficacy of Strain 19 in elk and the lack of consensus about the efficacy of RB51 in bison, this plan assumes that (1) the benefits to the livestock industry stemming from even a small reduction in brucellosis prevalence will outweigh the expense of the program, and (2) activities associated with vaccination will not adversely impact elk or bison on the refuge. The Wyoming Game and Fish Department will provide funding, staff, and equipment for any vaccination program. The vaccination program will not influence the frequency or duration of feeding operations (i.e., the desire to vaccinate will not under any circumstances be used as a justification to begin winter feeding).

- ❖ As more effective vaccines are developed, potentially use them to reduce the prevalence of brucellosis in the elk and bison herds. Work cooperatively with the Wyoming Game and Fish Department and others to research vaccines and delivery systems for elk and bison that have efficacies greater than 50%, that will be safe, and that can be administered without hindering the accomplishment of other goals and objectives for elk and bison.

**Rationale:** At present no known brucellosis vaccine approaches 50% efficacy in elk or bison, and research is continuing on vaccines and delivery systems for both species. (Some RB51 research results show potential, but other

research shows little, if any, efficacy.)

Furthermore, despite the availability of Strain 19 for elk, vaccinating elk on the refuge will not be a high priority for several reasons. As noted by Thorne (2001), “any brucellosis control or eradication effort would have to involve all susceptible species and populations simultaneously within a geographic area sufficiently large to assure no interchange with other exposed or affected populations in order to prevent reinfection.” Bison inhabiting the refuge and the park have a considerably higher prevalence of brucellosis than do elk in this area. Even if vaccination begins to reduce brucellosis prevalence in elk, bison will be a constant source of reinfection. Therefore, without concurrently reducing brucellosis prevalence in bison, Strain 19 is not expected to reduce prevalence in elk to any large degree over the long term.

When a vaccine that is at least 50% efficacious has been developed, animals will be vaccinated during winters when supplemental forage is provided on the refuge. They may be vaccinated in other years if a sufficiently effective oral vaccine is found, along with a safe and effective method of distributing it on a wider scale than on the feedgrounds. If the vaccine is only effective for one of the two species, research will continue until an efficacious vaccine is found for the other species. The GYIBC technical committee will be used to provide guidance on the use of brucellosis vaccines.

- ❖ In cooperation with other federal and state agencies and other partners, explore a variety of techniques (e.g., vaccination, selective fertility control, age- and sex-specific harvest) to further reduce the prevalence of brucellosis in bison.

**Rationale:** Developing a structured framework for adaptive management actions may make other limited actions more appropriate for reducing brucellosis prevalence in bison.

- ❖ Increase surveillance for chronic wasting disease to a 99% confidence level of detecting prevalence at 1% in the Jackson elk herd.

### Livestock Grazing Practices (Grand Teton National Park):

- ❖ Work with livestock permittees to minimize conflicts and contact between elk/bison and livestock.

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