

# 5 Environmental Consequences



Scott Ralston/USFWS

*Forest prairie view from hiking trail.*

This chapter provides an analysis of the potential effects on environmental resources associated with the implementation of the management alternatives for Sullys Hill National Game Preserve. The Service assessed the environmental consequences of implementing each of the alternatives on the biological, physical, social, economical, cultural, and historical resources of the refuge.

## 5.1 METHODS

The determination of effects is evaluated at several levels, including whether the effects are adverse or beneficial and whether the effects are direct, indirect, or cumulative with other independent actions. The duration of effects also is used in the evaluation of environmental consequences.

Direct effects are those where the impact on resource would be immediate and a direct result of a specific action or activity. Examples of a direct effect include the effect of trail construction on vegetation along the trail or the effect of hunting on wildlife.

Indirect, or secondary effects, are those that are induced by implementation actions, but occur later in time or farther removed from the place

of action through a series of interconnected effects. Examples of indirect effects include the downstream water quality effects from an upstream surface disturbance or the impact that recreational use along a trail may have on nearby plant communities.

A cumulative effect is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future action regardless of what agency (federal or nonfederal) or person undertakes such other actions” (40 CFR 1508.7).

Impacts are often described in terms of their context, intensity, and duration. The duration of effects are described as either short term or long term. Short-term effects would persist for a period of 3–5 years and consist primarily of temporary disturbance to habitat restoration or facility construction and subsequent revegetation efforts. Long-term effects would last more than 5 years after project initiation and may outlast the 15-year life of the CCP. Many long-term effects would be in the form of long-term benefits to wildlife habitat resulting from habitat management actions.

## 5.2 EFFECTS COMMON TO ALL ALTERNATIVES

A few potential effects would be similar under each of the alternatives.

- The implementation of any of the alternatives would follow the refuge's best management practices.
- The alternatives would avoid and minimize impacts on federally threatened and endangered species, to the extent possible and practicable.
- The refuge, contractors, researchers, and other consultants would continue to acquire all applicable permits, such as for future construction activities.

The sections below describe other effects expected to be similar for each alternative.

### **REGULATORY EFFECTS**

As indicated in chapter 1, the Service must comply with a number of federal laws, administrative orders, and policies in the development and implementation of its management actions and programs. Among these mandates are the National Wildlife Refuge System Improvement Act of 1997, the Endangered Species Act of 1973, the Clean Water Act of 1977, and compliance with Executive Orders 11990 (Protection of Wetlands) and 11988 (Floodplain Management), and the National Historic Preservation Act, etc. The implementation of any of the alternatives described in this environmental assessment would not lead to a violation of these or other mandates.

### **ENVIRONMENTAL JUSTICE**

Within the spirit and intent of Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations," no actions being considered in this environmental assessment would disproportionately place any adverse environmental, economic, social, or health effects on minority or low-income populations compared to the general public.

The Service is committed to ensuring that all members of the public have equal access to America's fish and wildlife resources, as well as equal access to information that would enable them to participate meaningfully in activities and policy shaping.

### **CULTURAL RESOURCES**

As a whole, cultural resources would be enhanced through protecting known significant resources and extending protections to newly discovered significant cultural resources.

Cultural resource investigations at the refuge have been limited and there are probably many unrecorded resources. All undertakings (as defined by Section 106 of NHPA) require cultural resource review and may necessitate survey, research, and/or excavation to satisfy provisions of NHPA, NEPA, and other applicable historic preservation acts and laws.

Potential adverse effects to a significant resource from an undertaking would be addressed by the regional archaeologist (region 6) in consultation with the North Dakota State Historic Preservation Office, tribal historic preservation offices, and other interested parties.

### **GLOBAL WARMING**

The actions proposed in this draft CCP and EA would conserve or restore land and habitat, thus retaining existing carbon sequestration at the refuge. This action would contribute positively to efforts to mitigate human-induced global climate change.

The use of prescribed fire, which releases CO<sub>2</sub>, would result in no net loss of carbon because new vegetation would quickly replace the burned-up biomass. Overall, there should be little to no net change for carbon sequestered at the refuge from any of the management alternatives. As it relates to global climate change, the documentation of long-term changes in vegetation, species, and hydrology is an important part of research and monitoring. Adjustments in management may be necessary over time to adapt to a changing climate.

### **GEOLOGY AND SOILS**

All alternatives would positively affect soil formation processes on the refuge lands. Some disturbances to surface soils and topography would occur at those locations selected for (1) administrative, maintenance, and visitor facilities; (2) introduced and invasive species removal and eradication; and (3) restoration of native habitat.

### **WATER QUALITY, WETLANDS, AND FLOODPLAINS**

All alternatives would positively affect water quality. Positive effects are anticipated from protecting groundwater recharge, preventing

runoff, retaining sediment, and minimizing nonpoint source pollution. The management alternatives are not anticipated to have any adverse effects on the area's wetlands and floodplains.

## 5.3 DESCRIPTION OF CONSEQUENCES BY ALTERNATIVE

Management actions are prescribed as a means for responding to problems and issues raised by Service managers, the public, and governmental partners. Because management would differ for each alternative, the environmental and social effects resulting from implementation would likely differ as well.

The following section provides an analysis of the effects estimated to result from alternative A (no action), alternative B, and alternative C (proposed action). A summary of this narrative is contained in table 2 in chapter 3.

### **WOODLAND HABITAT**

#### **Alternative A (No Action)**

Ungulates would be maintained at historical levels and allowed to graze all season, with no time or space restrictions. This would continue to impede the development of understory and midstory forest layers and inhibit forest regeneration, thus limiting available habitat for forest-interior breeding birds.

Wildfires (primarily caused by vandalism) would continue to cause the tree rows in shelterbelts to deteriorate and increase noxious weed invasion between and adjacent to the rows. Until these trees die and decay, these tree rows would also continue to fragment grassland habitats.

With current staffing limited management, monitoring, and research would occur, making it difficult to monitor the impacts of management decisions and take the necessary management actions to correct them.

#### **Alternative B**

Most of the forested lands would continue to provide adequate forest-breeding bird habitat. Establishing woodland restoration units, totaling 80 acres, and using exclusion fences and appropriate management techniques would provide additional habitat for interior-forest breeding birds. Wildfires would be reduced in the windbreaks in the hay units, allowing for increased sustainability of the tree rows and reduced noxious weed invasion.

Increased staffing would allow for the implementation of proposed management of habitat improvement.

#### **Alternative C (Proposed Action)**

Consequences would remain the same as those for alternative B except that ungulate populations would be reduced to levels that would allow for more understory and midstory growth in the woodland areas outside of the 80-acre restoration units, for the benefit of interior-forest breeding birds. Forestry stand improvements would provide optimal habitat for migratory birds that use all levels of the forest structure.

Removal of selected tree rows would increase the central core area of grasslands, benefitting grassland-nesting birds and decreasing fuels for wildfires, while allowing the refuge to control invasive plants on newly-exposed ground.

### **PRAIRIE HABITAT**

#### **Alternative A (No Action)**

If ungulates are allowed to continue to graze without restrictions of time or space, undesirable plants would increase, including invasive species. There would be a loss of native grassland plant species and structure, making the area less attractive to migratory birds dependent on forest-edge habitat and other grassland-dependent wildlife and insects.

Extensive grazing would result in an increase in soil erosion, causing a loss of nutrient-rich topsoil while increasing siltation in surrounding waters. There would be a reduction in plant vigor and regrowth, especially in dry years. This would not only impact grassland-dependent migratory birds, but would also reduce the quality and quantity of forage for the refuge's ungulates.

Prescribed fires would continue to be used at appropriate times as a disturbance tool to mimic natural processes and stimulate the regrowth and diversity of native vegetation. However, uncontrolled wildfires (caused by vandalism) occurring at inappropriate stages of vegetation growth may actually increase invasive species such as smooth brome, Kentucky bluegrass, and noxious weeds. These nonnative species have the potential to out-compete the native plant species, creating a monotypic stand of grass that is less attractive to grassland-dependent birds.

Noxious weeds and encroaching woody species would continue to be controlled, maintaining the integrity and structure of the grassland.

Annual haying of the hay unit would provide winter food for ungulates in the big game unit; however, because of the annual defoliation of the vegetation on this site, residual wildlife cover would be limited.

### Alternative B

The use of prescribed grazing (controlling numbers of ungulates, rotation, and exclusion fences) and prescribed fire would improve the emulation of historical conditions under which the wildlife and vegetation of the prairie evolved, while improving the diversity of native grasses and forbs. These management tools will control invasive species, such as smooth brome grass, provide necessary disturbance to invigorate the growth of native plant species, and prevent the encroachment of woody species into the grasslands.

Installing and rotating exclusion fences would be labor intensive and costly but would also control grazing in less than ideal habitats, reduce soil erosion, and improve wetland water quality. Controlling noxious weeds and invasive plant species would allow for restoration of native plants. All of these activities would increase plant vigor for ungulate grazing and wildlife use.

Reducing hazardous fuels through prescribed burning and mechanical methods would minimize

threats to life and property on the refuge and surrounding land. Rotational haying would provide ungulates with adequate winter food and improve residual cover for wildlife.

### Alternative C (Proposed Action)

Consequences would remain the same as those for alternative B except that the structure of the enhanced native prairie would be more representative of a historical mixed-grass prairie, providing increased opportunities for forest-edge and grassland-dependent bird use and a unique opportunity to research and monitor healthy native prairie in the northeastern mixed-grass prairie zone. This monitoring would serve as a baseline for grassland restoration efforts across the Devils Lake WMD Complex and the region. Selected hayland acres would be dedicated to migratory bird habitat through the restoration to a diverse mixture of native herbaceous prairie vegetation.

## WILDLIFE POPULATION MANAGEMENT

### Alternative A (No Action)

The current level of overgrazing and overbrowsing would continue, and prairie and forest habitat would provide reduced benefits to targeted migratory birds. Herd health history would continue to be provided to appropriate state and federal agencies so that diseases, such as CWD, may be monitored and controlled. At current levels, winter supplemental feeding would put animals at higher risk for certain diseases and parasites.

The refuge would continue to participate in the bison conservation initiative by monitoring and maintaining the genetic integrity of its bison herd. Prairie dog populations would continue to expand in adjacent grassland areas, altering grassland habitats and leaving them devoid of vegetation. The refuge's boundary fences would be maintained, thereby reducing trespass, disease transmission, and animal escape.



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*Photographer.*

**Alternative B**

Consequences would remain the same as those for alternative A except that reduced ungulate numbers would provide improved habitat for migratory birds by reducing demands on forest browse and grassland plants. The prairie dog population would not expand beyond the original 1.5 acre boundary and would not negatively impact adjacent grassland areas.

**Alternative C (Proposed Action)**

Consequences would remain the same as those for alternative B except that lower levels of ungulates would further increase refuge floristics that support migratory bird nesting and migration habitat. Reduced supplemental feeding of ungulates would result in improved health, specifically for elk. Disease episodes would be reduced and prevented as surveillance increases, and necessary and appropriate treatments are used.

Genetics of each bison on the refuge would be known and would be the basis for transfers of animals to other refuges. Genetic health would be maintained with periodic ungulate introduction.

**ENVIRONMENTAL EDUCATION  
AND OUTREACH****Alternative A (No Action)**

There would continue to be a lack of input into programs presented in the refuge classrooms by outside partners, resulting in missed opportunities to educate the public about the refuge and its purposes, promote wetland and grasslands conservation, and gain support for the Refuge System.

A lack of staff and structured programs would result in lost opportunities to reach and educate more students in the surrounding communities through consistent in-school programs. Without adequate staff available, there would be no guarantee that the current two annual events would continue. This would result in a net loss of reaching and educating over 2,500 adult and children annually.

Continued seasonal visitation would result in a loss of opportunities to reach the area's winter visitors. Also, this independent visitor experience affords no methods to monitor and evaluate the visitor's experience at the refuge to ensure that the refuge's education and outreach goals are being met.

Continuing to provide American Indian programs at refuge events would allow visitors to learn

about the culture and traditions of the Spirit Lake Nation.

Sullys Hill National Game Preserve is very dependent on the volunteer "friends group" to ensure that refuge visitor services programs are carried out. Although this makes the programs somewhat vulnerable, it has also been a great asset to each and every program.

**Alternative B**

Consequences would remain the same as those for alternative A except that this alternative would ensure that all education programs presented on the refuge by other partners support the refuge's environmental education themes of promoting wetland and grassland conservation. Limited off-site programs would expand environmental education opportunities for surrounding youth, teaching them about the benefits of conserving wetlands and grasslands. Actively pursuing relationships with surrounding teachers and providing them with specific programs would impact a larger group of area students with a consistent environmental education message.

Additional visitor services staff and resources would allow the current annual events to continue while ensuring that a consistent message is presented at each of these events. Providing and maintaining more consistent education and visitor center hours would eliminate some frustrations expressed by disappointed visitors while providing for additional environmental education opportunities.

A more developed cultural program would reach more visitors and students, creating a greater understanding of the Spirit Lake Nation's history and traditions. Regular contact with the media would ensure that the public is kept informed on refuge programs and visitor services activities. Providing support to the "friends group" would generate additional funding support for refuge programs.

**Alternative C (Proposed Action)**

Consequences would remain the same as those for alternative A except that programs developed and presented by refuge staff would have the greatest effect on educating students, on- and off-site, about the refuge system, the refuge, and wetland and grassland preservation. In addition, expanding programs off-site would reach the maximum number of students in the surrounding area. Offering well-organized, consistent programs would give adults and children multiple opportunities to learn about Sullys Hill National Game Preserve and its resources and expose

them to conservation opportunities in their communities and homes. Working more closely with the teachers and students while developing refuge and state-specific environmental education programs, would ensure that the maximum number of students are reached with a consistent, relevant message that focuses on wetlands, grasslands, and the conservation role of the Refuge System.

Opportunities would be expanded to recruit American Indian students into local and national employment in the refuge system.

Additional volunteers would allow the refuge visitor services programs to expand, including additional opportunities for the public to learn from and interact with knowledgeable refuge volunteers.

## ***VISITOR SERVICES AND INTERPRETATION***

### **Alternative A (No Action)**

Visitors would continue to be provided limited, inconsistent opportunities to enjoy and learn about the refuge and surrounding resources through interpretive displays and occasional interactions with the refuge staff. There would be lost opportunities for children and adults to independently learn about and explore the refuge and its resources and the many benefits of the National Wildlife Refuge System.

The seasonal closing of the refuge in the winter would continue to result in a significant loss of wildlife viewing and interpretation opportunities during the winter months and many missed opportunities to reach adults and children.

Staff-led interpretive programs would continue to take added time and staff to present information and facilitate the visitor's experience. A lack of staff would continue to result in limited outdoor classroom programs and lost opportunities to provide outdoor interpretive programs highlighting wetland and grassland conservation.

Lack of maintenance may cause loss of building integrity.

### **Alternative B**

Expanded education and visitor center hours and upgraded interpretive displays would provide a more hands-on experience for the visitor to learn about the importance of conserving, and how to conserve wetlands and grassland habitats. The accessible and interpreted trails and overlooks would greatly expand opportunities for visitors of all abilities to independently learn about and understand the refuge and its resources. Students

would be provided expanded opportunities to learn in nature, not just about nature. Upgraded interpretive displays would provide visitors with the most relevant, up-to-date information.

Increased entrance fees and fee compliance would generate the resources needed to provide additional interpretive opportunities. Outdoor programs for visitors of all abilities would be expanded, providing additional quality programs and opportunities. Upgrading visitor services facilities would provide a higher quality experience and improve the visiting public's impression of the refuge.

### **Alternative C (Proposed Action)**

Consequences would remain the same as those for alternative A except that keeping the education and visitor center and facilities open year-round would greatly expand the opportunities to educate more adults and children while providing them a more complete perspective of the conservation role of the refuge and the Refuge System. Additional environmental education equipment would improve the quality of programs while enhancing the visitors experience and ability to learn and understand.

An automated fee collection point would improve fee compliance, thereby generating more revenue and increasing the ability of refuge staff to maintain and improve environmental education and interpretation facilities. An audio-based interpretive system for the auto tour would increase visitor's knowledge of refuge habitats and wildlife, while enhancing overall visitor experience. Regular maintenance of refuge facilities would ensure there is no loss of structural integrity while ensuring visitors and staff are provided a safe and quality environment in which to learn and work.

## ***LAW ENFORCEMENT, FACILITIES, AND MAINTENANCE***

### **Alternative A (No Action)**

It would continue to be a challenge to ensure visitors keep a safe distance from wildlife, particularly bison and elk. Close encounters would continue to be dangerous for both visitors and wildlife. Although there are informational signs, there would continue to be no comprehensive program to inform visitors about the dangers of wildlife encounters to themselves and the wildlife they encounter.

Without consistent patrols, the refuge would continue to serve as a place for unlawful activities, putting wildlife, staff, and visitors at

risk. The lack of law enforcement presence would increase the likelihood that wildlife would be harmed by illegal activities such as poaching.

There would continue to be a significant loss of revenue for refuge programs from loss of entrance fees due to noncompliance with the honor system fee collection program.

Facilities and lands would continue to be at risk due to limited security, the lack of a fire alarm system, and deterioration through lack of maintenance. This lack of maintenance staff would also continue to limit the refuge's ability to keep the roads open in the winter. This results in a loss of opportunities for visitors to view wildlife and learn about the refuge during the winter months.

The locations of all sensitive cultural resource sites would still be unknown, which would inhibit operations and programs and threaten the protection of these sites.

### **Alternative B**

Visitors would be aware of refuge closed areas and warnings regarding improper encounters with wildlife. This would result in an increase in visitor and wildlife safety. Increased law enforcement presence would encourage refuge visitors to comply with regulations, thus protecting visitors, staff, refuge habitats and facilities, and wildlife. Background checks would be conducted on all volunteers to ensure safety of students, visitors, and facilities.

Additional funds would be available for refuge programs if the fee collection booth at the entrance is staffed.

Added maintenance staff and resources would ensure that refuge facilities receive seasonal maintenance. Refuge facilities would remain safe and continue to function as intended. Keeping refuge roads and education and visitor center open in the winter would provide visitors with year-round opportunities to view wildlife and learn about the refuge.

Initiating a comprehensive cultural resources inventory would improve protection and planning for projects and ensure protection of cultural resources. Protecting and cataloging historical documents would retain a written history of Sullys Hill National Game Preserve, management decisions and actions, and the changes in habitat.

### **Alternative C (Proposed Action)**

Consequences would remain the same as those for alternative A except that a more consistent law

enforcement presence during all seasons would further protect refuge resources and improve security, including reducing vandalism and other illegal activities. Collecting 100% of visitor fees would provide additional funds needed to enhance the refuge recreation program and improve visitor and wildlife safety. Regular boundary fence inspections and repairs would minimize impacts from feral animals that could harm native wildlife. Regularly and timely snow removal would provide visitors year-round opportunities to view wildlife and learn about the refuge.

## ***SOCIOECONOMIC IMPACTS***

### **Alternative A (No Action)**

Alternative A may have negative impacts on the local economy because there would be no certainty that refuge programs, including annual events, and facilities would be maintained, given the lack of staff and resources. The education and visitor center hours would continue to be sporadic and opportunistic, dependent on the availability of volunteers. This sporadic schedule would make it difficult for local communities to capitalize on tourism opportunities. In addition, the refuge would remain closed in the winter months because resources would not be available to clear snow from the roads.

### **Alternative B**

Alternative B would provide additional seasonal staff and more emphasis on expanding visitor services programs. Annual events would continue with assistance from the "friends group" and volunteers. This additional staff would recruit more volunteers to provide more consistent education and visitor center hours, making the refuge more attractive, thus bringing more visitors into the local communities.

### **Alternative C (Proposed Action)**

Alternative C would expand the staff by an additional 3.5 positions. These added employment opportunities would have some positive effects on the local economy, but the real benefit would be the added refuge visitor services programs, year-round access to the refuge, and the addition of guided refuge tours. These expanded visitor service opportunities could be promoted by the local chamber of commerce, bringing visitors from outside the area and state to spend their resources at the local restaurants, motels, and other complementary businesses.

## ***CUMULATIVE IMPACTS***

Cumulative impacts include the incremental effects of the actions for an alternative, when these are added to past, present, and reasonably foreseeable future actions. Cumulative impacts can be the result of individually minor impacts, which can become significant when added over time.

The Council on Environmental Quality regulations which implement the National Environmental Protection Act require development of mitigation measures when the environmental analysis process predicts potentially significant impacts on habitat, wildlife, or the human environment. None of the activities proposed are expected to produce significant levels of cumulative environmental impacts that would require mitigation measures. Nevertheless, the final CCP would contain the following measures to preclude significant

environmental impacts from occurring:

- Federally listed species would be protected from intentional or unintended impacts by having activities banned where these species occur.
- All proposed activities would be regulated to lessen potential impacts on wildlife and plant species, especially during sensitive reproductive cycles.
- Monitoring protocols would be established to determine goal achievement levels and possible unforeseen impacts on resources, for application of adaptive resource management to ensure wildlife and habitat resources, as well as the human environment, are preserved.
- The CCP could be revised and amended after 5 years of implementation, for application of adaptive resource management to correct unforeseen impacts that occur during the first years of the plan.



Scott Ralston/USFWS

*Black-tailed prairie dog pups.*

