

# CHAPTER 5— Environmental Consequences



Wyman Meinzer/USFWS

*Sandhill cranes flying overhead.*

This chapter describes the environmental consequences for the management alternatives considered for the three wetland management districts (see chapter 3). The Service assessed the environmental consequences of carrying out each alternative on the biological, physical, social, economic, and cultural resources of the districts.

## 5.1 Effects Common to All Alternatives

All alternatives would have the same effects on the following resource areas, as described in this section:

- climate change
- soils
- water quality, wetlands, and floodplains
- air quality
- cultural resources
- socioeconomics
- public health and safety
- environmental justice

### CLIMATE CHANGE

The actions proposed in this document would conserve or restore land and habitat, thus retaining existing carbon sequestration in the districts. These actions

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 sequestration capacity because new vegetation would quickly replace the consumed biomass. Overall, there should be little or no net change in the amount of carbon sequestered at the districts under 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 monitoring and research. Adjustments in management may be necessary over time to adapt to a changing climate.

### SOILS

All alternatives would beneficially affect soil formation processes on district lands. Some disturbances to surface soils and topography would occur at those locations selected for administrative, maintenance, and visitor facilities; invasive plant removal and eradication; and restoration of native habitat.

### WATER QUALITY, WETLANDS, AND FLOODPLAINS

All alternatives would beneficially affect water quality. Such effects are anticipated to result 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 districts' wetlands and floodplains, pursuant to Executive Order (EO) 11990 and EO 11988.

## AIR QUALITY

No adverse effects on air quality are expected. Short-term effects on air quality from the use of prescribed fire at the districts would not vary significantly between any of the alternatives.

## CULTURAL RESOURCES

Overall, cultural resources would be enhanced through protection of existing resources and extension of such protection to newly discovered cultural resources.

Cultural resource surveys in the districts have been limited on the Service's fee-title lands. Consequently, additional surveys would be required before any new construction or excavation to comply with NEPA and applicable acts and policies related to historical and archaeological resources. Potentially adverse effects from construction of trails or facilities would require review by the regional archaeologist and consultation with the South Dakota State Historic Preservation Office.

## SOCIOECONOMICS

Economic impacts are typically measured in terms of numbers of jobs lost or gained and the associated result on income. None of the alternatives would significantly affect the economics of the local area.

## PUBLIC HEALTH AND SAFETY

None of the alternatives are anticipated to have any adverse effects on the quality of the human environment, including public health and safety.

## ENVIRONMENTAL JUSTICE

None of the alternatives would disproportionately cause any adverse environmental, economic, social, or health effects on minority or low-income populations.

Implementation of any action alternative that includes visitor services and environmental education is anticipated to benefit minority and low-income citizens living near the districts by stimulating the economy and creating jobs.

# 5.2 Description of Consequences by Alternative

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

This section presents an analysis of the effects anticipated to result from the alternatives. Table 3 in chapter 3 summarizes these findings. The effects are

organized to correspond to the presentation of the affected environment in chapter 3.

## ALTERNATIVE A—CURRENT MANAGEMENT (NO ACTION)

### Habitat and Wildlife

The current level of habitat management would be maintained at approximately the same intensity using the same resources (funding and staff). All management activities at WPAs would be prioritized, with only the high-priority WPAs receiving consistent management.

All conservation easements would continue to be monitored annually, and all easement violations would be consistently enforced. Habitat protection through acquisition efforts would focus on high-priority tracts. Only those legally identified invasive plants on high-priority WPAs would be addressed with some type of management. Active management such as prescribed burning, grazing, farming, and invasive plant control would be used to maintain and improve native prairie tracts and tamegrass units. The quality of native vegetation on high-priority WPAs would be improved, and vegetation on medium- and low-priority WPAs would be maintained at current conditions.

District staff would continue the current level of monitoring and documenting the presence and use of district lands by federally listed species, such as piping plover and whooping crane. The staff would continue to impose area closures to public use to protect federally listed species using the districts.

Prescribed burning during the nesting season can lead to nest destruction and/or increased nest production. Destruction is usually caused by burning nests, but islands of unburned areas may be targeted by nest predators (e.g., coyote, skunk, raccoon). However, birds frequently re-nest if the nest is destroyed, although re-nests typically contain fewer eggs. This loss of nests and potential reduction in bird numbers is offset in future years by improved habitat conditions, which lead to improve nesting conditions and numbers.

Prescribed fire's effects on vegetation are influenced by the fire's heat and the phenological state of the vegetation. Grass fires conducted in late spring generally benefit warm-season grasses while decreasing native forbs and cool-season grasses. Late summer burns can reduce woody encroachment.

Fire has little effect on wetland vegetation other than removal of residual cover. However, if wetland soils are dry, fire can burn down into these organic layers and kill cattails and phragmites. Fires during drought conditions may lead to increased soil erosion by reducing regrowth.

Prescribed fire can assist in controlling nonnative vegetation, often in concert with chemical treatment. Prescribed fire in conjunction with chemical or mechanical treatments can be used to reduce hazardous



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*The black-crowned night heron is a wetland inhabitant on several continents.*

fuels and reduce risk of wildfire damage. Prescribed fire reduces wildland fuel loadings leading to a reduction in a wildfire's resistance to control.

Prescribed fire treatments for Huron, Madison, and Sand Lake WMDs range between 1,000 and 2,500 acres per station during the past 5 years depending on management needs, funding levels, and priorities.

### Monitoring and Research

By maintaining the current level of monitoring, inventory, and research, Service staff would be able to use available information and sound science to continue making informed management decisions.

### Visitor Services

The hunting and fishing programs at the WPAs would continue to be valued as two of the six priority public uses and would provide hunters with many opportunities to hunt without compromising the System's mission and goals.

The current level of environmental education and interpretive programs would continue to be priority public uses and would provide visitors with many opportunities to learn about the districts and the Refuge System. Events such as Service-led school visits would be conducted upon request. District staff would occasionally make updates to brochures and publications. Staff would undertake occasional media outreach.

### Partnerships

Existing partnerships would allow district staff to accomplish much more than they could in the absence of partnerships. District staff would continue to improve and build partnerships with the local public, primarily landowners adjacent to the WPAs. Partnerships with SDGFP would help the staff manage hunting at the WPAs.

### Operations

District staff would be maintained at existing levels of personnel, funding, and resources. The districts would continue with the current level of operations and

maintenance, including the maintenance of equipment and vehicles in good working conditions to achieve management goals. Prescribed fire acres treated annually would likely decrease because hazardous fuel treatments and wildland-urban interface treatments must be allocated nationwide, and funding is prioritized as appropriate.

## ALTERNATIVE B—INCREASED EFFICIENCY (PROPOSED ACTION)

### Habitat and Wildlife

Under alternative B, district lands would be managed with an emphasis on establishing and following an improved, science-based priority system to restore prairie habitats to native vegetation for the benefit of waterfowl, State- and federally listed species, migratory birds, and other native wildlife. The focus of this alternative would be to restore ecological processes and native grassland species where possible. District staff would monitor and enforce all conservation easements. Monitoring efforts would evaluate the effects of management and restoration actions on target migratory birds.

Alternative B would offer the potential to increase the quality and distribution of native grasses and forbs, leading to a corresponding decrease in the acreage of nonnative grasses and forbs. Once some degree of success is achieved in this undertaking, it is likely that, through continued management, the degree of future invasion would be minimized.

The management actions specified under this alternative, if successful, would result in improved breeding habitat conditions for the target bird species—waterfowl, shorebirds, and grassland-dependent neotropical migrants—and commensurate increased nest success and nest densities for these groups. Less favorable breeding habitat conditions could be created for certain species, such as nonnative birds.

Predator management through trapping, where feasible and desirable, could lead to a reduction of nest predators (such as skunks, red fox, and raccoon); however, such an approach could also result in expanded populations of small mammals such as shrews and voles as a result of the removal of mid-sized predators.

Removal of trees would result in less favorable habitat conditions for game species such as wintering deer and resident bird species. Landscape fragmentation would be reduced through the replanting of native grass cover in areas where trees are removed, as well as through acquisition of additional lands.

Habitat protection through acquisition would focus on high-priority conservation easements.

In the long term, waterfowl and other grassland birds would benefit from increased areas of native prairie that, otherwise, would be invaded by introduced grasses and forbs.

## Monitoring and Research

District staff would improve their understanding of the effects of management activities in upland communities (for example, prescribed burning, grazing, and haying) on the composition and structure of vegetation communities. Monitoring would also contribute to better understanding of how management activities in both uplands and wetlands affect overall habitat productivity.

Under this alternative, district staff would set priorities and develop strategies regarding the extent of land in the WPAs that is monitored for changes in vegetation structure and composition in wetland and upland habitats. Sustained monitoring activities would lead to an improved understanding of wildlife responses to management activities, facilitating better management decisions that target specific wildlife objectives. This understanding of habitats at the landscape scale would (1) guide acquisition efforts for habitat protection, and (2) promote management-level research to improve understanding of habitat management practices.

Through additional research, district staff would improve their knowledge of the response of migratory birds—particularly waterfowl, shorebirds, and grassland species—to management actions.

## Visitor Services

There would be no change to the priority uses of hunting, fishing, wildlife observation and photography, and environmental education and interpretation. Further fee-title acquisition of lands within district boundaries would consequently provide visitors with enhanced opportunities for the existing compatible wildlife-dependent recreational opportunities.

District staff would have the opportunity to continue organizing and participating in events such as school visits and waterfowl identification workshops. All visitor programs would be evaluated for their effectiveness and, if necessary, would be modified to ensure the continued and expanded quality of programs and visitor experiences. The districts would evaluate community interest in existing and potential new programs to ensure that the CCP's vision and the Service's and System's missions are met. Brochures and publications would be reviewed annually, and updates would be completed as needed.

With expanded and new visitor facilities, district staff would be able to (1) meet the demand for increased visitation, (2) provide infrastructure to conduct education programs for school groups, and (3) host larger, more diverse groups of visitors.

## Partnerships

Maintenance of existing partnerships and pursuit of new ones would increase the Service's ability to provide quality habitats for waterfowl, shorebird, and grassland bird species and improve public use opportunities. District staff would have improved relationships with

a greater number of private landowners, government agencies, and NGOs.

## Operations

Under alternative B, increased funding is not contemplated for staff, equipment, or supplies (such as fuel and native grass seed). Consequently, the districts would rely on increased efficiencies to afford district staff the ability to accomplish goals and objectives associated with habitat and wildlife management, visitor services, monitoring, and research.

Increased efficiencies and partnerships would enable the districts to meet legal and obligated mandates, to provide management at high- and medium-priority WPAs, to use limited resources for other projects, and to provide adequate law enforcement for visitor safety and protection of facilities and wildlife. This alternative would result in both positive and negative effects pertaining to the use of prescribed fire. Increased efficiencies would allow high-priority treatments to be accomplished, but the overall acreage treated with prescribed fire could be reduced due to funding constraints associated with the National Fire Plan.

## ALTERNATIVE C—INCREASED EFFICIENCY WITH EXPANDED RESOURCES

### Habitat and Wildlife

In addition to the effects described for alternative B, alternative C would increase the number of treated units, thereby increasing the acreage of native grasses and forbs. This increase would result in a corresponding decrease in the acreage of nonnative grasses and forbs.

Under this alternative, district staff would expand the use of prescribed fire and of other habitat management tools. This alternative would facilitate a finer scale of restoration, with a greater focus on local genetics and diversity of plant species included in seeding projects. More restoration, albeit partial, would occur on more lands under this alternative.

Use of IPM activities would provide for a more proactive and effective treatment program.

Because degraded wetlands would be proactively identified and treated to improve their condition under this alternative, it is expected that a more robust and diverse population of waterfowl, other waterbirds, neotropical migrants, and other wildlife would make use of these habitats.

### Monitoring and Research

District staff would improve their understanding of the effects of management actions on vegetation composition and structure. Specific research would be conducted to answer management questions and improve understanding of native prairie habitat. Under this alternative, district staff would complete baseline inventories and would refine ongoing inventory efforts, thus allowing for increased knowledge of the natural

resources in the districts and increased efficiencies in subsequent land management treatments.

Grassland-, wetland-, and wildlife-monitoring activities would be increased through additional funding and resources. Vegetation transects on native prairie habitats would be expanded to include more district lands and would be surveyed annually. Ultimately, this alternative would result in an improved understanding of wildlife responses to management activities, allowing for better management decisions that target specific wildlife objectives. The result would be improved habitat throughout the districts and a better ability for staff to maintain and improve recruitment of target wildlife populations.

Through additional research, district staff would improve their knowledge of the response of migratory birds—particularly waterfowl, shorebirds, and grassland species—to management actions.

### Visitor Services

In addition to the effects described for alternative B, enhanced outdoor education opportunities would enable students to gain an improved understanding of South Dakota's natural history, wildlife biology, the history and qualities of Service lands, and the missions of the Service and the System.

Public use would be enhanced, outdoor classroom activities would be developed, and interpretive exhibits and displays would be added to improve the public's understanding of South Dakota's prairie system and associated wildlife. District staff would be increasingly able to conduct or support more events, such as school outdoor lab activities and waterfowl identification sessions.

These changes would give the districts the potential to generate greater support for future district and System programs.

### Partnerships

Maintenance of existing partnerships and pursuit of new ones would increase the Service's ability to provide quality habitats for waterfowl, shorebird, and grassland bird species and improve public use opportunities. District staff would have improved relationships with a greater number of private landowners, government agencies, and NGOs.

### Operations

In addition to the effects described for alternative B, increased funding would be available for facility and program development, as well as for possible increased costs for operations and staff. Increased resources would enable district staff to monitor and enforce all conservation easements.

## 5.3 Cumulative Impacts

Cumulative impacts are the potential effects of each alternative in combination with past, present, and future actions. NEPA regulations define cumulative effects as “the impact on the environmental which results from the incremental impact of the actions when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over time.” (40 CFR 1508.7.)

The cumulative effects analysis for this draft CCP and EA is based on reasonably foreseeable future actions that, if carried out, would contribute to the effects of the alternatives. No reasonably foreseeable actions are anticipated. Impacts would be monitored during implementation of the final CCP. Implementation over an extended period would reduce the likelihood of negative cumulative impacts.

NEPA requires mitigation measures when the environmental analysis indicates possible adverse impacts on habitats, wildlife, or the human environment. All activities that constitute the Service's proposed action (alternative B) are not expected or intended to produce significant levels of environmental impacts that would require mitigation measures. Nevertheless, the final CCP will contain the following measures to preclude significant environmental impacts from occurring:

- Federally listed species will be protected from intentional or unintentional adverse effects by banning or restricting activities where these species occur.
- All proposed activities will be regulated to reduce potential effects on wildlife and plant species, especially during their sensitive reproductive cycles.
- Hunting safety regulations will be closely coordinated with and enforced by district staff and SDGFP personnel.
- Monitoring protocols will be established to determine goal achievement levels and possible unforeseen effects on resources. Results of monitoring will be used in developing and implementing adaptive management measures to ensure that habitat and wildlife resources, as well as cultural resources, are preserved.
- The final CCP can be revised and amended after 5 years of implementation for application of adaptive management to correct unforeseen effects that occur during the first years of the plan.

